

# SOFT LANDING OR ABRUPT AWAKENING?

## Chapter 1 at a Glance

- With core inflation still high and declining only slowly in many advanced economies, central banks may need to keep monetary policy tighter for longer than is currently priced in markets. In emerging market economies, progress on lowering inflation appears to be more advanced, although there are discrepancies across regions.
- Yet, optimism about a soft landing of the global economy has fueled risk asset valuations since the April 2023 *Global Financial Stability Report*. A sudden reassessment of the monetary policy outlook following upside inflation surprises could challenge this narrative, resulting in a potentially sharp repricing of assets.
- While acute stress in the banking system has subsided, a weak tail of banks remains in some countries. In addition, cracks in other sectors may also become apparent and could turn into worrisome fault lines. In the event of an abrupt tightening of financial conditions, adverse feedback loops could be triggered and again test the resilience of the global financial system. On balance, risks to global growth continue to be skewed to the downside, similar to our assessment in April.
- A number of sectors show weakness. The global credit cycle has started to turn as borrower debt repayment capacity diminishes. Residential home prices are declining more quickly in countries with a higher share of variable rate mortgages, defaults are rising in commercial real estate markets, and cash buffers of corporations are eroding as debt-service burden continues to get heftier.
- A number of shocks—such as an escalation of the war in Ukraine and continued stress in the Chinese property sector spilling over more extensively to the financial sector and local governments—could adversely affect financial stability.
- The synchronization of global monetary policy is starting to fade. This has potential implications for asset prices, investor exposures across countries and asset classes, and capital flow volatility.
- Some lower-rated emerging markets continue to be in debt distress and have difficulties accessing external financing.
- Financial institutions face higher funding costs, and a deterioration of asset quality could lead to losses and reduce credit extension to the macroeconomy. Those employing leveraged investment strategies predicated on swift disinflation may be forced to unwind positions should inflation stay doggedly high.

## Policy Recommendations

- Ultimately, sustainable economic growth requires both price and financial stability. Central banks must remain determined in their fight against inflation until there is tangible evidence of inflation moving sustainably toward targets. The stance of monetary policy, however, should reflect a country-specific pace of economic recovery and disinflationary processes. Communication remains crucial to convey policymakers' resolve.
- Emerging markets remain vulnerable to a sharp tightening in global financial conditions. Progress on inflation in a number of countries is welcomed, but central banks should be cautious not to ease policy rates too aggressively.
- In China, robust policies to restore confidence in the real estate sector will be critical to limit the risk of negative spillovers to the financial sector, firms, and local governments.
- The sizable tail of weak banks in the global financial system and the risk of contagion to healthy institutions highlights the urgent need to enhance financial sector regulation and supervision.
- Continued vigilance is warranted in monitoring vulnerabilities in the commercial real estate sector to minimize potential risks to bank and nonbank lenders.

## Introduction

The soft-landing narrative, wherein disinflation continues apace and a recession is avoided, has dominated markets' views since the April 2023 *Global Financial Stability Report*, boosting investor optimism and lifting risk assets. Supported by market expectations of policy rate cuts in coming quarters and a compression of risk premiums, financial conditions—the cost of funding for households and firms through markets like the stock and bonds markets—have resumed the easing trend that started in 2022, complicating central banks' quest to return inflation back to targets. Further supporting risk appetite, a major curtailment in bank lending feared after the banking turmoil in March has not materialized, even though more recent forward-looking indicators like loan officer surveys point to significantly slower demand for credit and tightening of underwriting standards. Since September, however, investors have pulled back on risk taking as rising long-term real rates, especially in the United States, have challenged asset valuations.

In many advanced economies, core inflation continues to be stubbornly high, and upside surprises to the inflation outlook would challenge the soft-landing narrative and could lead to a potentially sharp repricing of assets. In emerging markets, progress on lowering inflation appears to be more advanced in some economies, with the benefits of early rate hikes becoming apparent. However, there are discrepancies across regions. Widening divergence of inflation and economic outlook could mark the beginning of the desynchronization of global monetary policy. Some central banks in emerging markets have begun cutting policy rates as inflation pressures appear to abate. Such increased heterogeneity in the monetary policy outlook has implications for asset prices, investor positioning, and capital flow volatility.

While acute stress in the global banking system has subsided, a weak tail of banks remains in some countries (see Chapter 2). In addition, cracks in other sectors may also become apparent and could turn into worrisome fault lines. In the event of an abrupt tightening of financial conditions, adverse feedback loops could be triggered and again test the resilience of the global financial system. For example, the credit cycle has started to turn as signs that higher interest rates are weighing on the repayment capacity of households and corporations, especially those servicing floating rate debt. The IMF's growth-at-risk (GaR) measure

summarizes this assessment, indicating that risks to global growth are skewed to the downside, similar to the assessment in April. In a scenario wherein financial conditions tighten toward their long-term averages, the GaR forecasts the growth distribution to be even more firmly skewed to the downside.

Over the past year, the transmission of policy rate hikes to tighter financial conditions appears to have been dulled by several factors. Some households and corporations took advantage of exceptionally low borrowing costs over the preceding decade to extend their debt maturities. Others may have used the savings accumulated during the pandemic to shore up their balance sheets or meet higher interest payments. However, these factors may not be sufficient to stave off a deterioration in the credit outlook. In countries where variable rates account for a larger share of the mortgage market, real residential home prices are declining quickly. The commercial real estate (CRE) sector in Europe and the United States is entering a period of rising defaults given fast-declining property prices, substantial maturing debt, and stricter lending standards from bank lenders. Cash buffers of firms and businesses are beginning to erode as interest coverage ratios are declining and earnings are expected to fall.

A number of adverse shocks could materialize and adversely affect the economic outlook and financial stability. A sudden intensification of the war in Ukraine could disrupt commodities markets and put upward pressures on food prices, slowing or even undoing progress on inflation. In China, continued turmoil in the property sector could spread to the financial sector and to local governments with significant dependence on property-related revenues, weighing on the already weakening recovery. Other medium-term challenges could have a more immediate effect than anticipated. For example, rising geopolitical tensions have intensified concerns about global economic and financial fragmentation. Manifestations of climate change have become even more evident in the summer, adding a new sense of urgency to the need to address climate risks and channel much-needed private capital to emerging market and developing economies (see Chapter 3).

Many major emerging markets have benefited from the proactive monetary policy response to rising inflation back in 2021. The currencies of some of these countries have strengthened this year, their sovereign spreads have remained at or near all-time lows, and

inflows have begun to return to local currency bond markets. In contrast, global interest rate hikes have made conditions more difficult for frontier markets, with many facing high repayment burdens, debts set to come due in the near term, and unfavorable conditions for issuing hard currency sovereign bonds. For countries in or near debt distress, access to external financing could be severely impeded.

The majority of global banks emerged from the March banking turmoil largely unaffected. Banking systems in many countries have prudently added provisions for higher expected defaults, and loan-loss reserves seem adequate to cover nonperforming loans. Higher rates should also support net interest margins on new bank loans. That said, history has shown that credit exposures can deteriorate rapidly, hurting bank profitability and prompting depositor outflows and stock price declines for weaker banks. To bring these risks together, Chapter 2 assesses the quantum of banks vulnerable in a scenario of heightened duration, credit, and funding liquidity risks.

## Monetary Policy and Inflation

### Central Banks in Advanced Economies Expected to Cut Rates Soon Despite Stubborn Core Inflation

Even though core inflation remains stubbornly high in many countries, investors remain hopeful that central banks in advanced economies will manage to engineer a soft landing, allowing them to start cutting policy rates in coming quarters. The market-implied expected path of monetary policy has shifted up since April 2023 in most advanced economies (except for Japan). Yet, a peak in the tightening cycle is expected toward the end of 2023 or in early 2024, at which point monetary authorities are anticipated to gradually ease policy (Figure 1.1). Notwithstanding some third-quarter repricing, this benign outlook—consistent with the belief that aggregate demand will gradually slow, labor market tightness will ease, and price pressures fade (Figure 1.2, panel 1)—has boosted investor risk appetite, fueling the rise in risk asset prices seen since April 2023.

But the outlook for inflation remains highly uncertain. Despite gradual declines, core inflation is still elevated, and pressures could persist for longer than currently priced in financial markets, leaving the global economy susceptible to inflationary shocks such as food and energy price spikes. Reflecting the uncertainty, pricing

from inflation options markets suggests that investors disagree about the most likely inflation outcomes expected over the next five years (Figure 1.2, panel 2). Investor disagreement appears to have widened since April 2023 in the euro area, whereas US investors still converge at about a 3 percent outcome—still well above the Federal Reserve's 2 percent target.

Since April 2023, the Federal Reserve has raised the target range for the federal funds rate by 50 basis points to 5.25–5.50 percent as economic indicators have surprised on the upside, on net. The European Central Bank has also hiked policy rates 100 basis points, with the deposit facility rate now at 4.00 percent, the highest value in the history of the institution. After pausing, the Reserve Bank of Australia and the Bank of Canada resumed rate hikes in the second quarter, while recent policy meetings saw the Bank of England, the Norges Bank, Sveriges Riksbank, and the Swiss National Bank tighten policy by 25 basis points.<sup>1</sup> Taking a longer view, advanced economies' central banks have delivered a combined 3,915 basis points of policy rate hikes since September 2021, with the Federal Reserve hiking at a faster pace compared with the previous tightening cycles.

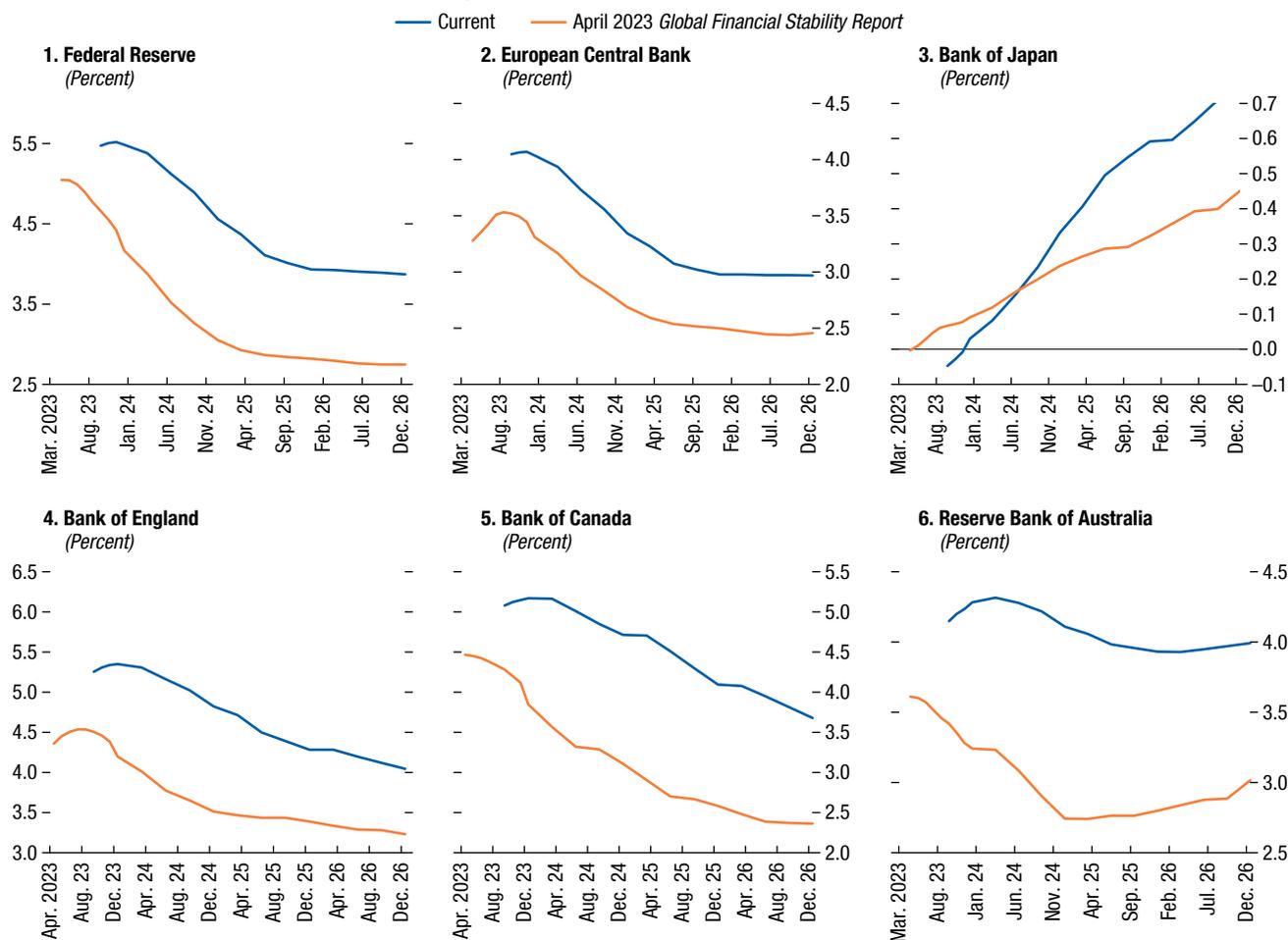
The Bank of Japan remains an outlier, keeping its short-term policy rate unchanged in negative territory. The Bank of Japan indicated it will continue with yield curve control as long as necessary for sustainable and stable attainment of its price stability target of 2 percent.<sup>2</sup> In July 2023, the Bank of Japan announced that it will conduct yield curve control policy with greater flexibility and raised the upper bound of the fluctuation range of 10-year Japanese government bond yields at which it will offer unlimited purchase of 10-year Japanese government bonds to 1 percent instead of the previous 0.5 percent. The Bank of Japan emphasized that these changes were made to “enhance the sustainability of monetary easing under the current framework,” rather than to signal a phasing out of yield curve control. Expectations for increased volatility drove yields on long-term Japanese government bonds to a nine-year high (Figure 1.3, panel 1). Boosted by expectations of continued accommodative policy, Japanese equities have outperformed markets of other

<sup>1</sup>The sample is composed of G10 central banks plus Australia, New Zealand, and Norway.

<sup>2</sup>See the Bank of Japan's Statement on Monetary Policy, July 28, 2023: [https://www.boj.or.jp/en/mopo/mpmdeci/mp\\_r\\_2023/k230728a.pdf](https://www.boj.or.jp/en/mopo/mpmdeci/mp_r_2023/k230728a.pdf).

**Figure 1.1. Policy Rate Expectations in Advanced Economies**

Market-implied paths for policy rates have shifted significantly over recent weeks.



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

advanced economies in 2023: the Nikkei 225 Index has surged by more than 20 percent partly because Japanese corporations made more share buybacks relative to global peers. Meanwhile, the yen has weakened, as investors expect the interest rate spread between domestic and overseas interest rates to persist over the next few years (Figure 1.3, panel 2). In September, after the news reporting Bank of Japan’s comment on a hint of a future policy shift, the yen advanced against the dollar while Japanese bond yields increased.

With risk asset prices increasingly predicated on a soft-landing scenario and expectations of rate cuts in coming quarters, how likely from a historical perspective is such an outcome? More specifically, past soft-landing episodes—as defined in Blinder

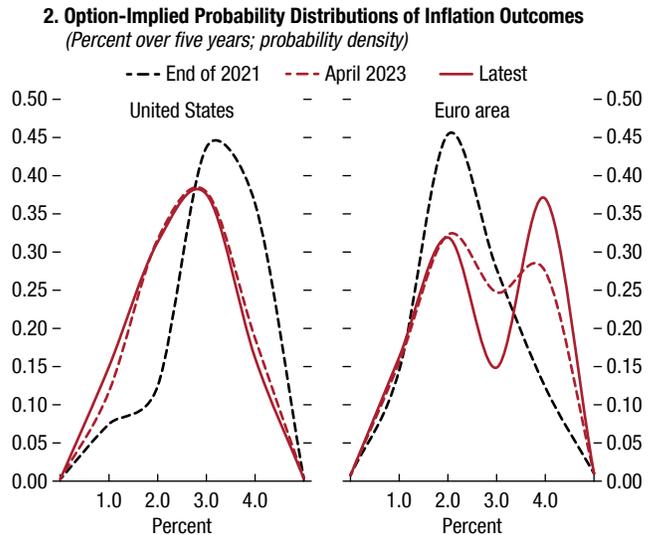
(2023)—were generally associated with positive real interest rates. That is, excessively easy monetary policy (negative real rates) was typically not required during those episodes (Figure 1.4, panel 1). Second, inflation expectations were fairly modest during soft landings (the yellow dots in Figure 1.4, panel 1). By contrast, cycles ending with hard landings were associated with high inflation expectations (blue dots). Current developments in the US economy (rightmost green dot) point to a situation close to past soft-landing episodes. However, such an outcome is not a foregone conclusion; rather, whether the US economy can avoid a recession will depend on whether inflation continues to decelerate in line with market expectations—a development that would

**Figure 1.2. Market-Based Inflation Expectations**

Inflation swaps show that market participants expect inflation to continue to moderate one year ahead ...



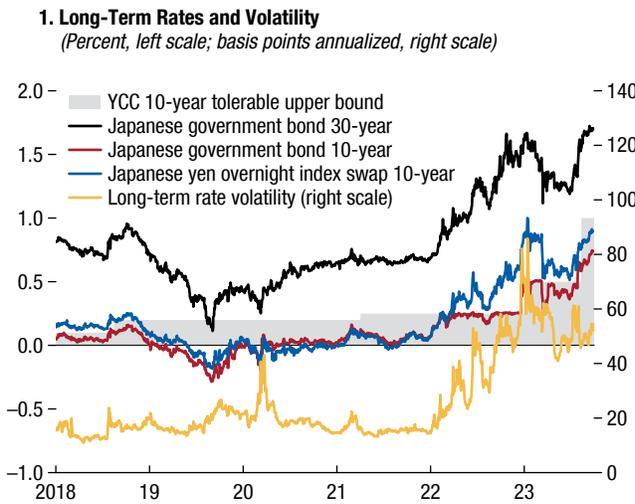
... however, investor disagreement around most likely inflation outcomes over the next five years continues to be notable.



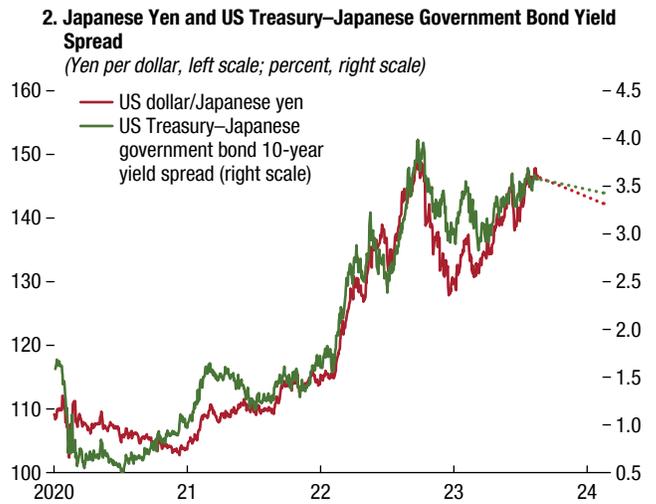
Sources: Bank for International Settlements; Bloomberg Finance L.P.; Haver Analytics; IMF, International Financial Statistics database; and IMF staff calculations. Note: “Latest” refers to the time of publishing the October 2023 *Global Financial Stability Report*. Probability densities shown in panel 2 are based on inflation caps and floors. Results are potentially sensitive to the underlying methodology used to estimate the option-implied densities.

**Figure 1.3. Japanese Markets and Bank of Japan Yield Curve Control**

Long-term rates surged and volatility increased after the YCC change in July.



The yen has weakened as investors expect the gap between domestic and overseas interest rates to persist.



Sources: Bank of Japan; Bloomberg Finance L.P.; and IMF staff calculations. Note: In panel 1, “volatility” is market-implied volatility by a three-month option on a 10-year overnight index swap rate (three-month option on 10-year LIBOR before 2022). In panel 2, the dotted lines show market-implied forward rates. YCC = yield curve control.

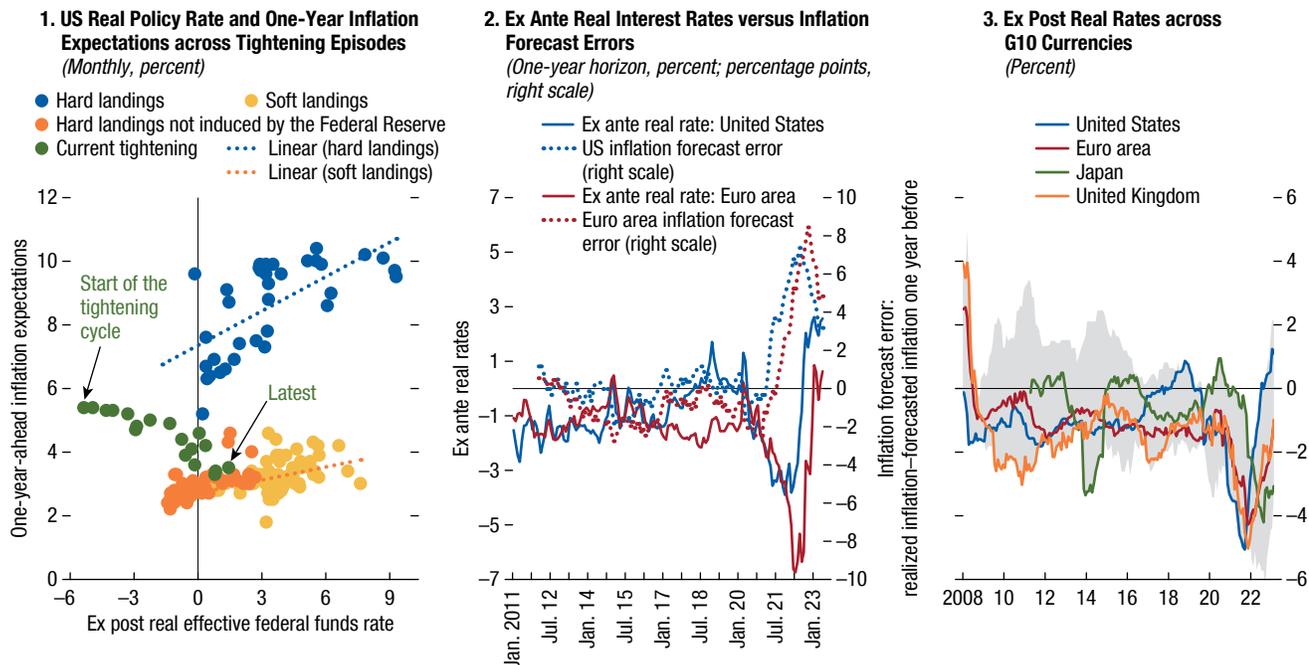
allow the Federal Reserve to end its tightening cycle in coming quarters.

The current tightening cycle has been unusual from a historical perspective. In the United States, the real federal funds rate has continued to be negative

since the first quarter of 2022, even as the Federal Reserve embarked on one of the most aggressive hiking cycles for decades (leftmost green dots in Figure 1.4, panel 1). A similar picture appears in other advanced economies. This may help explain—at least

**Figure 1.4. Soft-Landing Scenario: How Likely Historically?**

Current conditions portend a soft landing, but this tightening cycle began late and monetary policy may not be tight enough to return inflation to targets.



Sources: Bloomberg Finance L.P.; Federal Open Market Committee; Federal Reserve Bank of St. Louis; Haver Analytics; JPMorgan; Blinder 2023; and IMF calculations.

Note: In panel 1, ex post real effective federal funds rate is measured using year-over-year core personal consumption expenditure inflation. Episodes of monetary policy tightening are identified as in Blinder (2023), using real GDP, the civilian unemployment rate, and the NBER business cycle dates. A hard landing is defined as an episode during which GDP declines by more than 1 percent or there is a NBER recession for at least a year after a Federal Reserve tightening cycle. Hard-landing and soft-landing episodes are defined as in Blinder (2023), using the definitions of soft and soft-ish landings in Table 1. Each dot does not correspond to a landing episode but rather a monthly observation in either hard- or soft-landing episodes. One-year-ahead inflation expectations are derived from the Surveys of Consumers, University of Michigan, University of Michigan: Inflation Expectation, retrieved from Federal Reserve Economic Data (FRED), Federal Reserve Bank of St. Louis. In panel 2, ex ante real rates are based on expected inflation over the next 12 months (that is, a one-year period) from current date. Real rates shown for advanced economies are computed using one-year inflation swaps, whereas inflation forecast errors are calculated using the difference between year-over-year CPI inflation and the forward annual inflation as priced in one year prior. In panel 3, nominal one-month money market rates are adjusted by headline inflation. The shaded area denotes maximum and minimum real policy rates across G10 currencies. CPI = consumer price index; G10 = Group of 10; NBER = National Bureau of Economic Research.

partially—why inflation has been stubbornly elevated in many countries. For example, while ex ante real rates<sup>3</sup>—computed using one-year-ahead inflation expectations—are above zero in the euro area and nearly 3 percent in the United States, the ex post measures (based on actual, realized inflation) are materially lower, at -1 percent in the euro area and 1 percent in the United States (Figure 1.4, panels 2 and 3). Since the pandemic, inflation expectations have frequently undershot realized inflation. An assessment of the stance of monetary policy based on real rates, computed using these expectations, should therefore be

complemented by an assessment based on ex post real rates (Figure 1.4, panel 3).

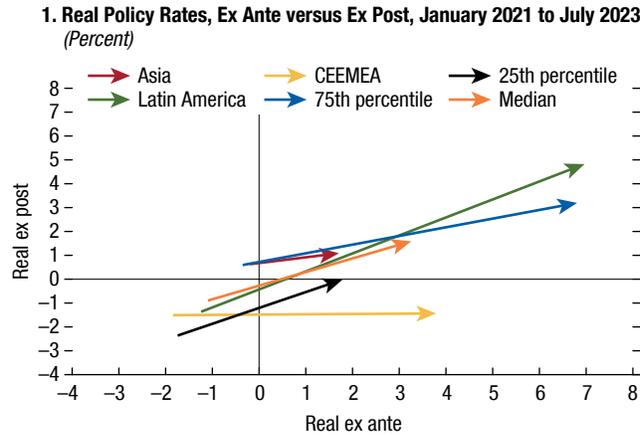
**Emerging Market Central Banks Have Room to Ease Monetary Policy**

In many major emerging markets, real policy rates have risen substantially since 2021 and inflation has declined over 2023, prompting investors to price in substantial rate cuts in the coming year. Inflation has eased markedly in many emerging markets, notably in Latin America, although survey-based expectations suggest inflation will remain above target through 2024 in several countries (for example, Colombia, Hungary, Poland, and Romania). This environment

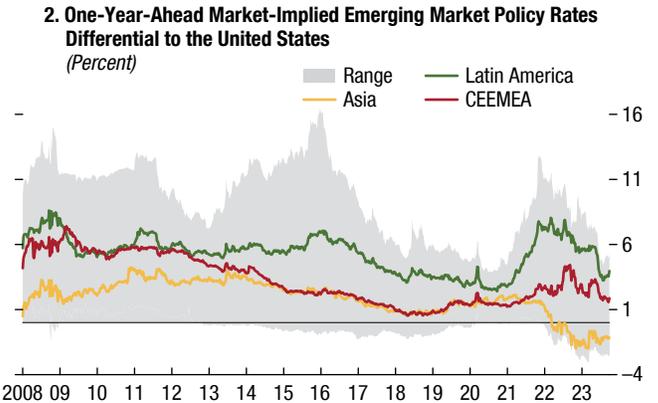
<sup>3</sup>Ex ante real rates are defined as the difference between the nominal rate and market-based inflation rate expectations.

**Figure 1.5. Emerging Market Policy Outlook**

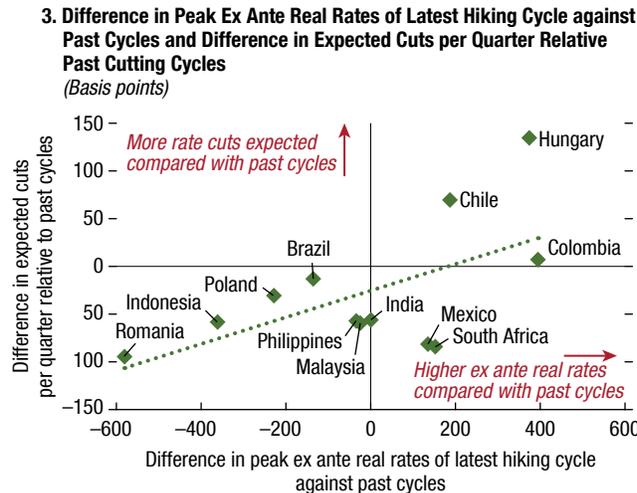
Real rates have risen on both an ex post and an ex ante basis ...



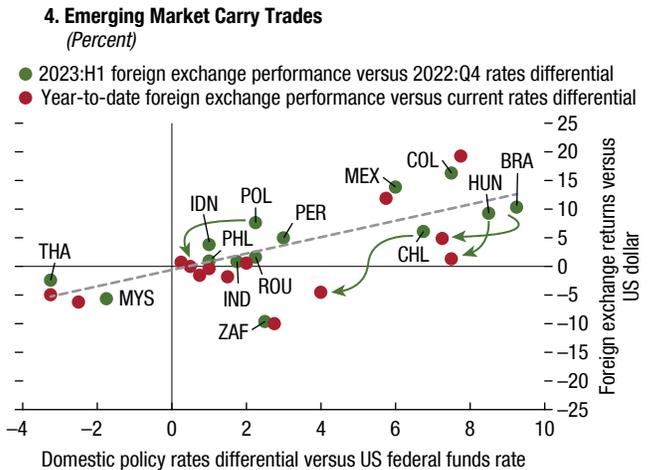
... while market pricing suggests policy buffers will unwind, alongside stark regional differentiation.



Many emerging markets are expected to embark on a rapid easing cycle.



Emerging market currencies have benefited from positive carry trades, although outperformance may fade going forward.



Sources: Bloomberg Finance L.P.; national sources; and IMF staff calculations. Note: Panel 1 includes a sample of 14 large emerging markets. Panel 2 includes 12 countries with forwards from interest rate swaps, not adjusted for term premium. Ex ante rates are calculated as policy rates minus one-year-forward consensus inflation expectations; ex post rates are policy rates minus realized inflation. Panel 3 looks at the peak in ex ante real rates in the past 10 years. Data labels in panel 4 use International Organization for Standardization (ISO) country codes. CEEMEA = Central and Eastern Europe, Middle East, and Africa; H1 = first half; Q = quarter.

has supported emerging market currencies, but these gains could be at risk if interest rates remain high in advanced economies and policymakers in certain emerging markets cut interest rates without clear evidence that the war against inflation has been won.

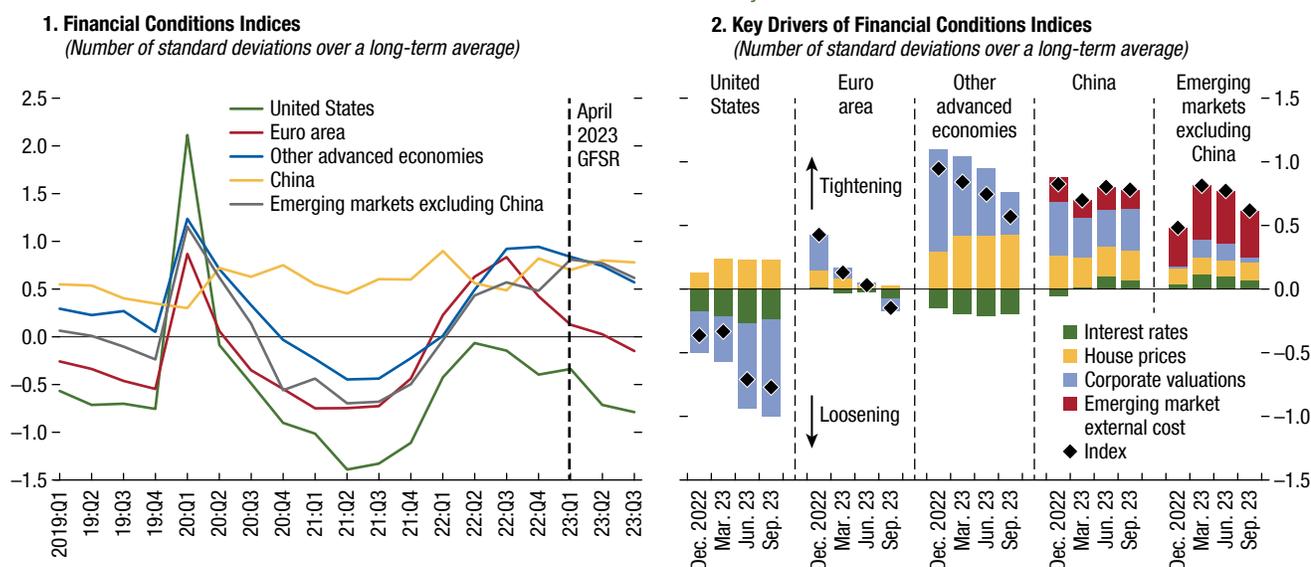
Yet, early and aggressive monetary policy tightening in emerging markets has driven real rates significantly higher on both an ex ante and an ex post basis in most countries (Figure 1.5, panel 1). Countries with elevated real rates have started the easing cycle (for example,

Brazil, Chile, and Uruguay) or are expected to embark on a period of rapid policy normalization. Regional differentiation remains, in both policy risks and market pricing (Figure 1.5, panel 2). Many emerging markets appear to have hit the natural peak in their tightening cycle, as policy rates and real interest rates both appear at or near historical highs. In addition, those countries where markets expect an unusually rapid pace of cuts should have the policy space to do so, as they also face unusually high ex ante real rates. However, policymakers will need to

**Figure 1.6. Financial Conditions Indices**

After facing brief episodes of uncertainty in 2023, risk assets are back on track driving financial conditions easier.

In particular, corporate valuations, including higher equity valuations, lower volatility, and narrower corporate bond spreads, led advanced economy financial conditions easier.



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

Note: The FCIs are calculated using the latest available variables. Standard deviations are calculated over the period from 1996 to present. The IMF FCI 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 Online Annex 1.1 in the October 2018 *Global Financial Stability Report*. FCI = financial conditions index; GFSR = *Global Financial Stability Report*; Q = quarter.

carefully manage this easing cycle, particularly given the potential spillover effects from higher-for-longer interest rates in advanced economies (Figure 1.5, panel 3). High interest rate differentials and lower market volatility have driven strong gains for emerging market currencies through carry trades, although recent pullbacks in some emerging market currencies point to choppier conditions in coming quarters (Figure 1.5, panel 4).

### Soft Landing and Financial Markets

#### Financial Conditions Are Easing, But Lending Conditions Could Get Tighter

Financial conditions—measuring the cost of funding in capital markets—have eased in advanced economies (Figure 1.6, panel 1), especially in the United States, despite ongoing monetary tightening. Such easing is unusual when compared with past monetary tightening cycles and has been largely predicated on investor expectations. Hopes are that inflationary pressure will abate quickly, and central banks will engineer a soft landing—a scenario that would allow central banks to begin cutting rates in coming quarters. The compression of risk

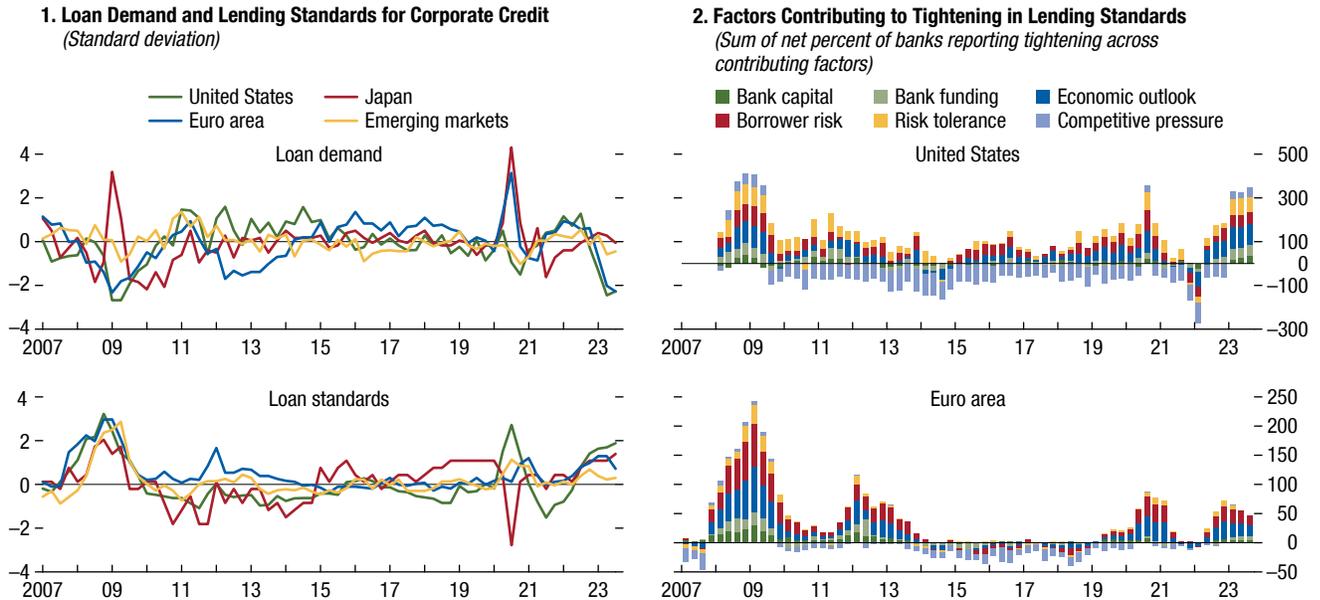
premiums in equity and corporate bond markets (see the “Risk Assets Are Increasingly Exposed to Repricing Pressures” section) has been a tailwind to corporate valuations in the IMF’s financial conditions index,<sup>4</sup> particularly for the United States and the euro area (Figure 1.6, panel 2). By contrast, in China, despite some recent modest easing of monetary policy, concerns about the sluggish economic recovery and financial stability risks associated with property market stress have hurt risk assets and investor confidence. In other emerging markets, expectations for rate cuts and higher corporate valuations have loosened financial conditions, on net, even though external costs continue to be a source of headwinds.

Meanwhile, lending conditions continued to tighten globally. Standards and terms have become more restrictive, even though the material contraction in bank credit growth feared in the aftermath of the banking turmoil in March has not materialized.

<sup>4</sup>The IMF’s financial conditions index captures 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 Online Annex 1.1 in the October 2018 *Global Financial Stability Report*.

**Figure 1.7. Bank Lending Standards and Reported Bank Loan Demand**

Lending standards continue to tighten, and loan demand is declining across the globe.



Sources: Federal Reserve; national central banks; and IMF staff calculations.

Note: For loan demand, positive values indicate stronger demand; negative values indicate weaker demand. For loan standards, positive values indicate tighter standards; negative values indicate looser standards.

Loan standards tightened in the euro area, the United States, and some emerging markets in the first half of the year, whereas loan demand is reportedly materially weaker in the euro area and the United States (Figure 1.7, panel 1). Concerns about the economic outlook, increased borrower risks, and more challenging bank funding conditions were cited by euro area and US lenders as driving tighter lending standards. In the United States, lower bank risk tolerance also played a role (Figure 1.7, panel 2). The tightening standards and dropping demand are most vivid in CRE loans in the United States likely because of weaker borrower profiles and expected deterioration in the sector.

### Risk Assets Are Increasingly Exposed to Repricing Pressures

Risk assets have continued to appreciate, on net, since April 2023, resulting in an easing of financial conditions, especially in the euro area, Japan, and the United States.<sup>5</sup> Equity prices have increased notably

<sup>5</sup>After a strong start in 2023, crypto assets have lost momentum and traded range bound since April 2023, showing low volatility. Higher expected policy rates and idiosyncratic factors related to the future of the industry have deterred investors.

in these economies while corporate credit spreads have tightened on net. This rally has been supported by progress on inflation and growing investor expectations of a soft landing that could allow the central banks tightening monetary policy to conclude doing so soon and potentially begin easing in the coming quarters. With valuations stretched in many assets, the risk of a sharp repricing of risk assets remains, should inflation be stickier than markets anticipated and hopes for a soft landing fail to materialize. Historically, equities tend to underperform after the end of a tightening cycle in a more inflationary environment (Figure 1.8, panel 1).

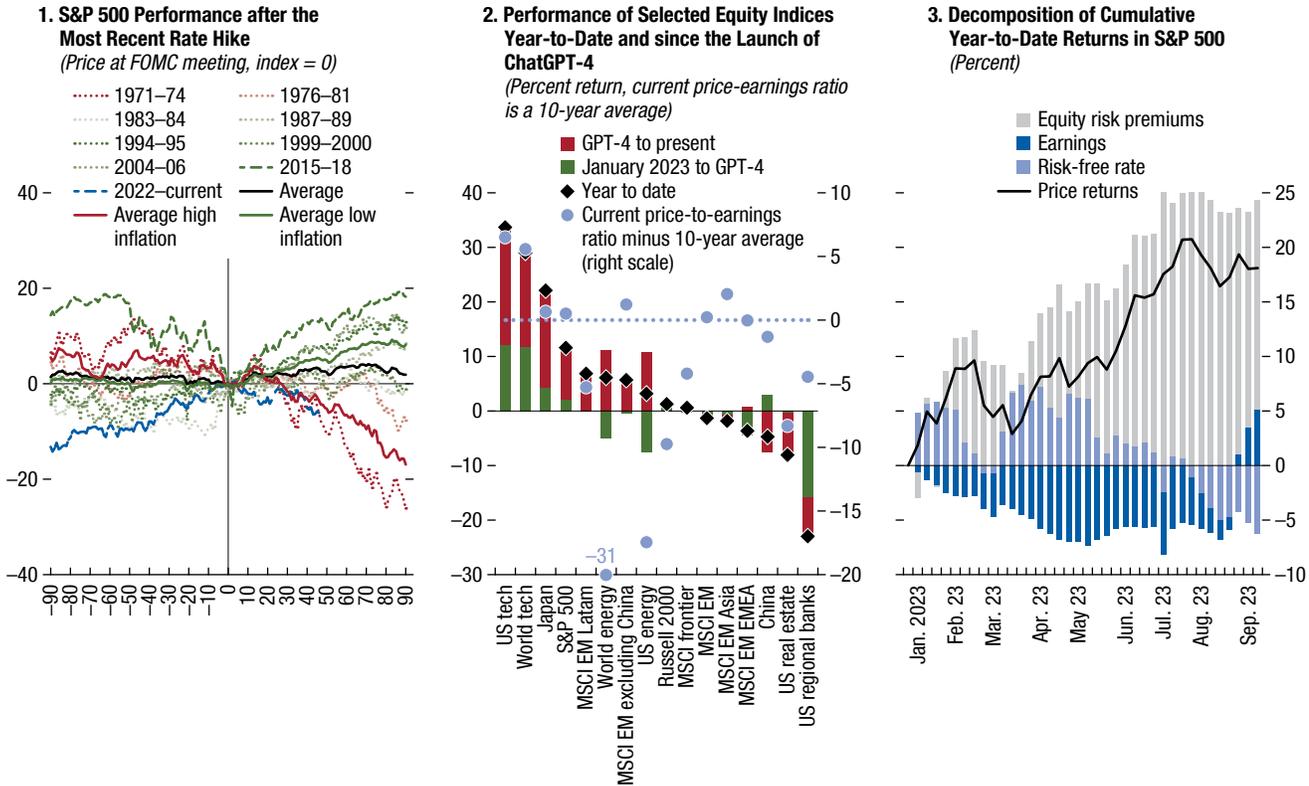
Equity valuations have recovered to the levels before COVID-19. Since the beginning of the year, US equity prices have climbed more than 10 percent (Figure 1.8, panel 2). Gains in technology stocks, boosted by the artificial intelligence boom, have pushed global equity markets higher after June. Since September, however, investors have pulled back on risk taking as rising long-term real rates, especially in the United States, have challenged asset valuations. In Japan, equities have outperformed other advanced economies, supported by continued monetary policy accommodation, a weak yen that made Japanese stocks more attractive to foreign investors, stronger corporate profits, and a high level of share buybacks.

**Figure 1.8. Equity Markets' Rally Led to Increasingly Stretched Valuations**

Equity performance toward the end of a tightening cycle depends on the inflationary environment.

Artificial intelligence and technology soared after release of ChatGPT-4.

Equity market performance this year is largely driven by lower risk premiums.



Sources: Bloomberg Finance L.P.; Haver Analytics; and IMF staff calculations.  
 Note: In panel 2, the launch of ChatGPT-4 was set to March 14, 2023. In panel 3, data are as of September 26, 2023. Lower equity risk premiums, lower risk-free rates, and higher earnings contribute positively to stock market returns, and vice versa. EM = emerging market; EMEA = Europe, the Middle East, and Africa; FOMC = Federal Open Market Committee; Latam = Latin America; tech = technology.

Emerging markets such as Chile, Hungary, India, Mexico, and Poland have also seen notable equity price increases, consistent with the appreciation of most major emerging market currencies in the first half of the year.

After net gains since April 2023, valuations appear significantly stretched in the technology sector. In the United States, this sector is trading close to 30 times earnings, above the 10-year historical average of 22 times earnings (Figure 1.8, panel 2), although still well below its 1999 peak. The broader S&P is also somewhat above historical averages. Based on a standard discount cash flow model, the rise in the S&P 500 is primarily driven by investors' risk appetite and optimism—proxied by a compression of risk premiums (Figure 1.8, panel 3, gray bars).

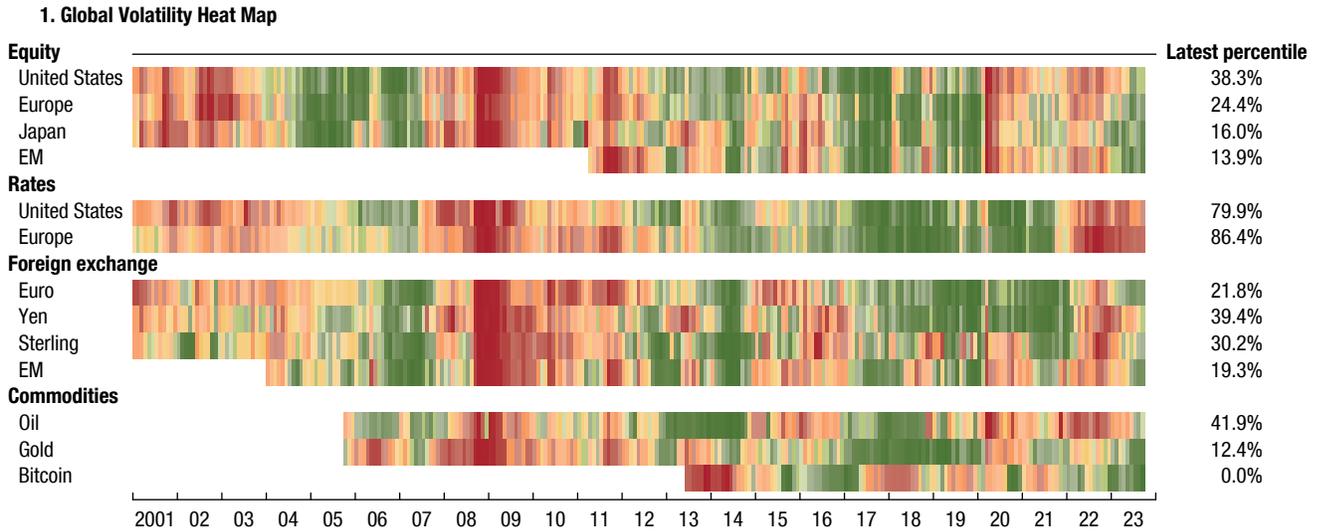
Investor optimism about the economic outlook has helped compress market volatility (Figure 1.9, panel 1). Before recent deterioration in market sentiment, the decline in volatility was most notable in US equity

markets, where both realized and implied volatility were in the lowest historical quartile. In addition, the term structure of US equity implied volatility has returned to an upward slope since April 2023 (Figure 1.9, panel 2). Investor positioning—for example, trend-following investors (commodity trading advisors and volatility-targeting funds) and market participants reportedly selling short-dated volatility to boost returns—appears to have also asserted downward pressure on near-term volatility. Volatility risk premiums, measured as the spread between market-implied volatility and model-based fair value, have continuously dropped across maturities over the last year, particularly in shorter-dated volatility (Figure 1.9, panel 3).<sup>6</sup>

<sup>6</sup>Volatility risk premiums seem to have dropped based on a Glosten-Jagannathan-Runkle generalized autoregressive conditional heteroskedasticity (GARCH) volatility model.

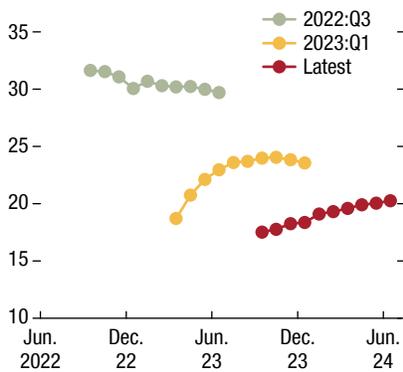
**Figure 1.9. Market Volatility**

Market volatility has declined across asset classes, except in interest rate markets.



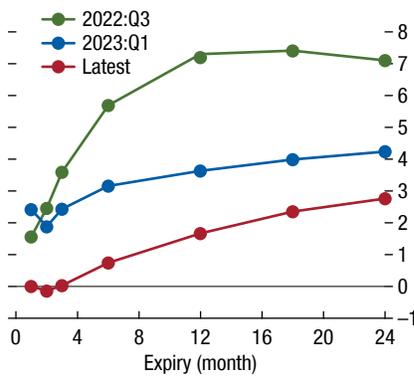
In equity markets, the volatility term structure has normalized.

**2. Volatility Index Futures Term Structure**  
(Percent annualized)



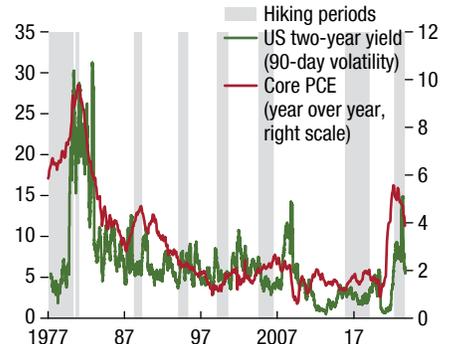
Investor optimism and positioning has compressed near-term volatility risk premiums.

**3. Spread between S&P 500 Option-Implied and Model-Based Volatility**  
(Percent annualized)



Interest rate volatility tended to rise when inflation still ran high after the rate hikes ended.

**4. 90-Day Volatility of Two-Year US Treasury Yield and Year-over-Year Change in Core PCE Index**  
(Percent)



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

Note: The heat map shows the percentile of implied volatility against own history across asset classes, with red (green) denoting high (low) volatility. The underlying volatility measures include the following: equities are based on a 15-day moving average of implied volatility; rates are based on implied volatility; foreign exchange is based on implied volatility; commodities are based on implied volatility; and Bitcoin is based on 180-day realized volatility of weekly returns. Panel 3 shows the difference between S&P option implied volatility and a forward-model-based volatility estimated using the Glasten-Jagannathan-Runkle generalized autoregressive conditional heteroskedasticity (GARCH) model. EM = emerging market; PCE Index = personal consumption expenditure price index; Q = quarter.

Most recently, markets have become more volatile. A sudden change in sentiment or a reassessment of the policy or economic outlook could result in a decompression of volatility—made worse by an unwinding of investor positions—and a sharp tightening of financial conditions.

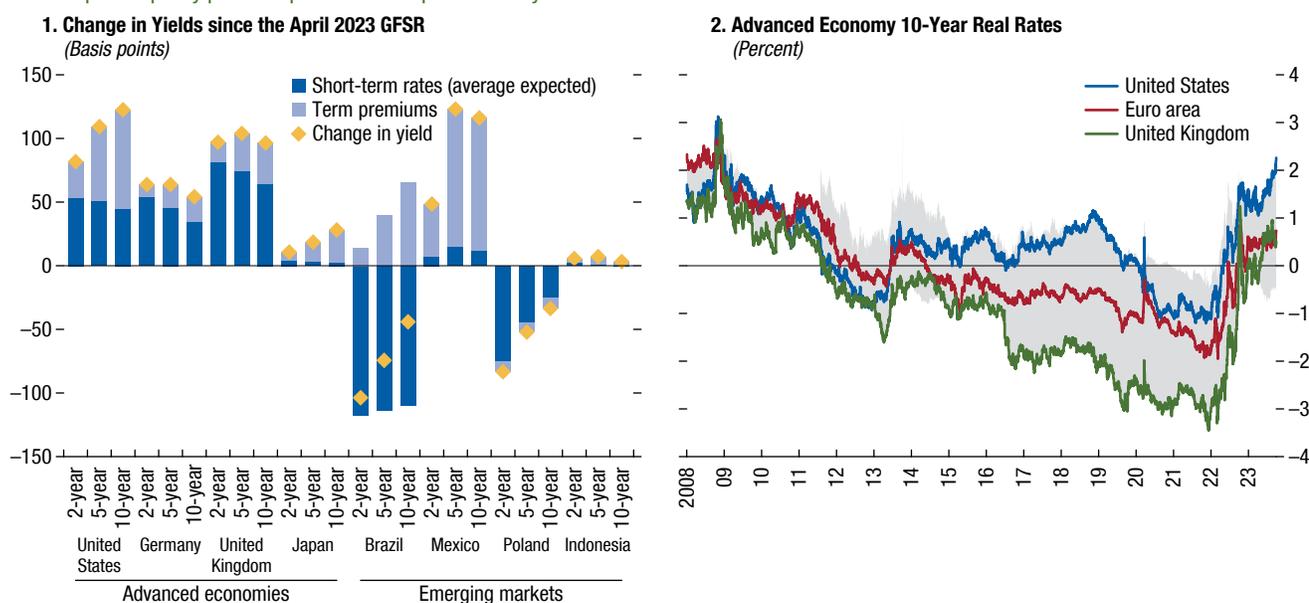
By contrast, volatility in interest rate markets has remained elevated, reflecting continued uncertainty about the policy outlook. In past US tightening cycles, interest rate volatility tended to rise when inflation was still

running high after the end of rate hikes, such as in late 1970s and 1980s (Figure 1.9, panel 4). A similar dynamic seems evident during this cycle: with core inflation still high, Treasury yields gyrated midyear as investors pondered when peak policy rates would be reached and whether the Federal Reserve would begin easing policy.

On net since April 2023, medium- to longer-tenor bond yields have risen noticeably across advanced economies (Figure 1.10, panel 1). A decomposition

**Figure 1.10. Government Bond Yield Changes and Decompositions**

In advanced economies, yield rises were driven by both higher expected policy rates and term premiums, whereas in some emerging markets, a lower expected policy path has put downward pressure on yields.



Sources: Bloomberg Finance L.P.; national central banks and authorities; and IMF staff calculations.

Note: In panel 2, the gray range represents minimum and maximum 10-year real rates across Australia, Canada, the euro area, Japan, the United Kingdom, and the United States. For the euro area, real rates reflect the difference between nominal interest rate swaps and inflation swaps. For the other countries, real rates are based on inflation protected government securities. Given data limitations, real rates for Japan start from 2013 onward. GFSR = *Global Financial Stability Report*.

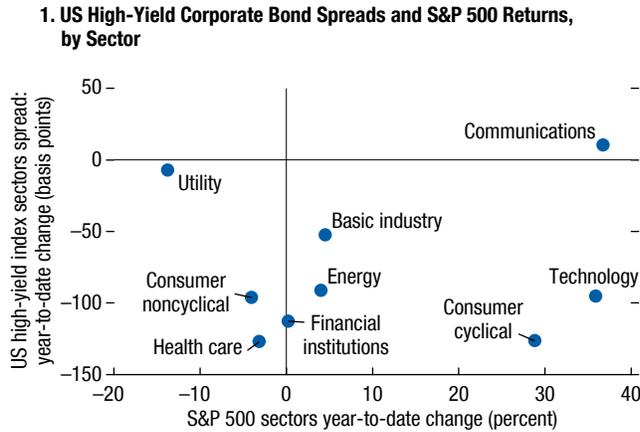
of the increases into the expected short-term rates and term premium components shows that upward shifts of the market-implied expected path of policy account for large shares of the increase (see the “Central Banks in Advanced Economies Expected to Cut Rates Soon Despite Stubborn Core Inflation” section).<sup>7</sup> Increases in term premiums, however, have also played a role, especially for bond yields in the United Kingdom, the United States, and to some extent Japan, reportedly reflecting in part deteriorating fiscal conditions and other central bank actions, like quantitative tightening and, in Japan, a more flexible implementation of the yield curve control policy. With the rapid rise of bond yields in advanced economies, longer-tenor real rates have also increased markedly (Figure 1.10, panel 2). A continuation of this rise could weigh on the valuation of risk assets, especially growth assets such as information technology stocks. By contrast, bond yields have fallen in several emerging markets, pushed down by expectations of rate cuts, particularly in Brazil and Poland.

<sup>7</sup>Term premiums represent the compensation investors seek to bear the risk that interest rates may change over the life of the bond.

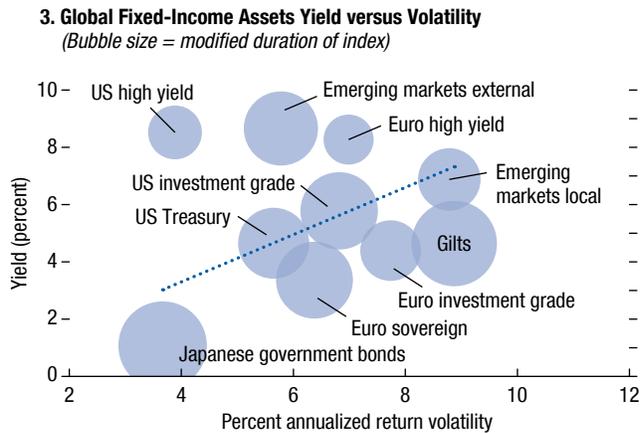
Global corporate bonds have also rallied since April 2023, with spreads narrowing below long-term averages, particularly in the high-yield segment. By sector, spreads have outperformed the most in the consumer cyclical and technology sectors on a year-to-date basis, in line with equity performance, reflecting strength in the household sector and artificial intelligence–related investor enthusiasm (Figure 1.11, panel 1). However, narrower spreads have not translated into cheaper corporate funding costs, as absolute yields remain elevated. After accounting for the increase in government yields since the beginning of the policy-hiking cycle, speculative-grade corporate borrowing costs are approaching the level seen during the COVID-19 pandemic and investment-grade yields are already higher than their levels at the height of that crisis (Figure 1.11, panel 2). The narrow spreads are therefore indicative of stretched valuations in the corporate market. Indeed, corporate bond spread misalignment—measuring the extent to which spreads are lower than those implied by model values—have become more severe in the euro area high-yield market and in US investment-grade and high-yield markets (Figure 1.11, panel 4).

**Figure 1.11. Corporate Bond Spread Valuations**

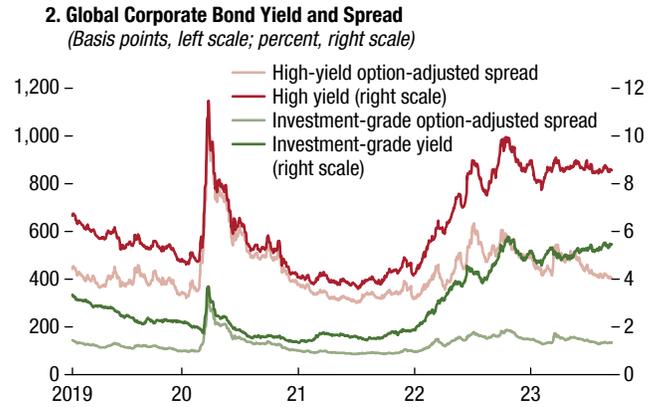
US consumer cyclical and technology sectors have outperformed in corporate bond and stock markets.



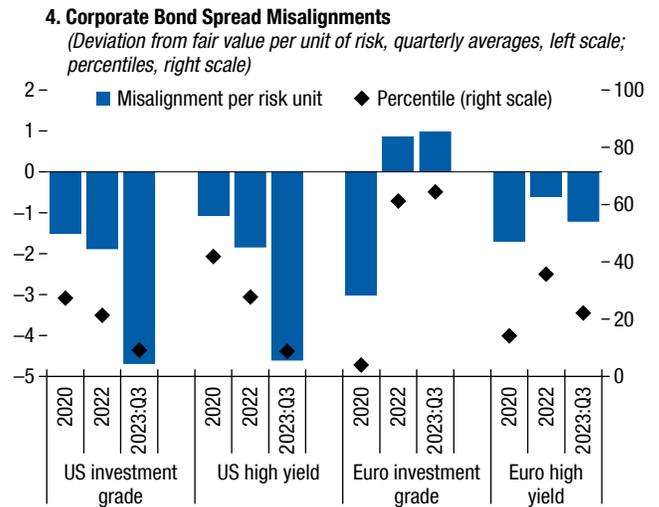
US dollar assets are more attractive than Euro assets, with higher yield and lower volatility, partly explaining stretched valuations.



Despite spreads narrowing, firms are still facing high borrowing costs.



US corporate bond spreads are narrower than model values based on corporate and macrofundamentals.



Sources: Bloomberg Finance L.P.; Haver Analytics; Refinitiv Datastream; and IMF staff calculations.

Note: In panel 1, US high-yield corporate bond sector indices are based on Bloomberg Bond index classification (BCLASS). S&P 500 index sectoral returns are based on the Global Industry Classification Standard (GICS). Panel 4 is scaled by standard deviation to aid comparison across regions where the underlying volatility may differ. See Section 1 of the October 2019 *Global Financial Stability Report's* Online Annex 1.1 for details of the asset valuation models.

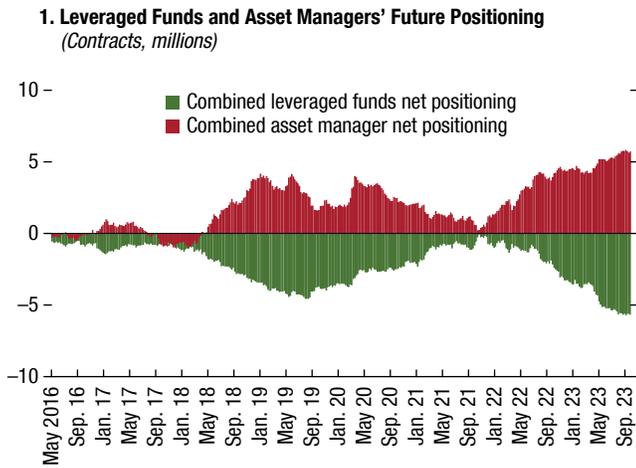
**Leveraged Trading Strategies Could Exacerbate Market Dysfunction**

With market volatility low, some investors have taken large leveraged positions to boost returns on their trading strategies. Outsized leveraged positions are vulnerable to volatility: An unexpected resurgence can force investors to unwind their positions, setting off a feedback loop of deleveraging, forced selling, and further price declines. Policymakers and market participants have recently flagged this risk for the US Treasury market (Bank of England 2023; Federal Reserve 2023).

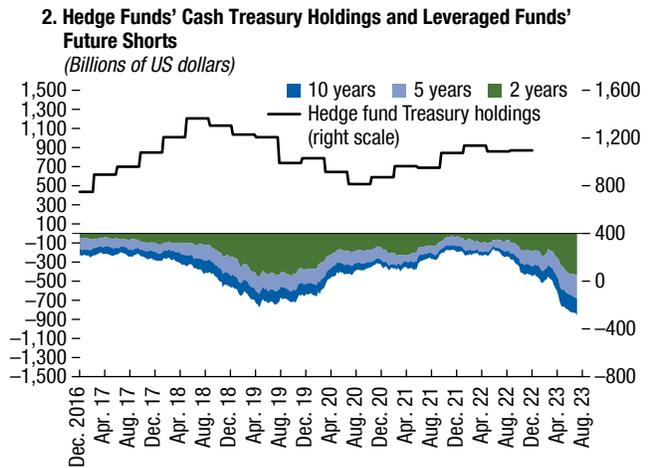
Since the end of 2021, asset managers have increased their long positions in Treasury futures beyond those observed at the 2019 peak, apparently based on the view that the rate hike cycle in the United States will soon end. Leveraged funds have taken the other side of the trade (Figure 1.12, panel 1), as banks and broker-dealers appear to have stepped back because of balance sheet constraints. It is important to note that the increase of leveraged funds' short positions in the futures market has coincided with greater holdings of cash Treasuries (Figure 1.12, panel 2), likely financed by repurchase

**Figure 1.12. Positions of Investors in Treasury Cash and Futures Markets**

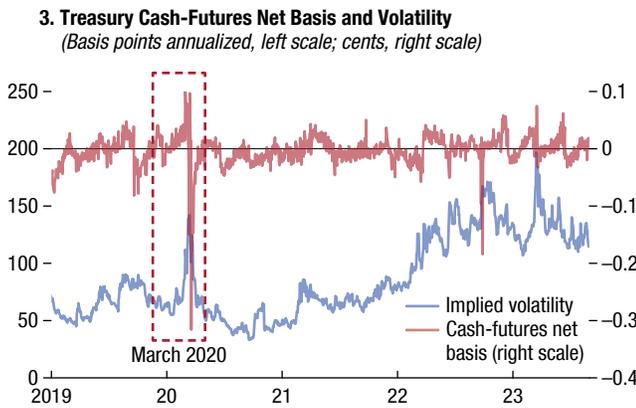
Leveraged funds have increased short positions in Treasury futures, mirroring asset managers' positions.



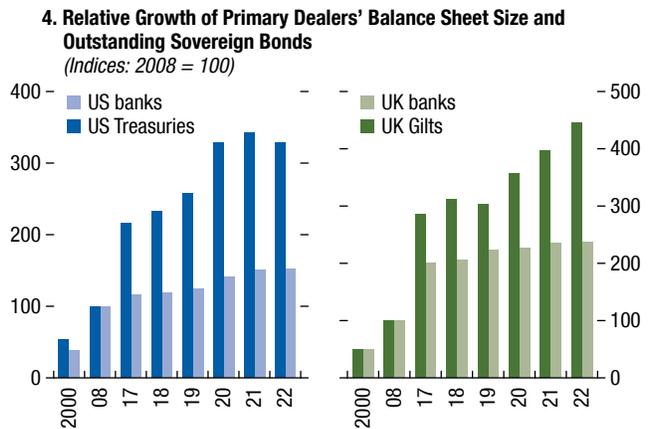
There are signs that hedge funds are engaged in “basis trade.”



A spike in volatility could see forced unwinding of futures positions, amplifying liquidity stress ...



... and growth in outstanding sovereign bonds has outpaced growth of intermediaries' balance sheets.



Sources: Bloomberg Finance L.P.; Federal Reserve; JPMorgan Big Data and AI Strategies; JPMorgan Chase; Nasdaq; Refinitiv Datastream; and IMF staff calculations. Note: In panel 2, the black line shows the aggregate Treasury holdings of all hedge funds that file Form PF with the Securities and Exchange Commission. In panel 3, “Treasury cash-futures net basis” is the spread between the forward price of the futures contract’s cheapest-to-deliver cash security and the futures price adjusted by a conversion factor. “Volatility” is the one-month option on seven-year overnight index swap implied basis point volatility. In panel 4, primary dealer data are estimated based on available data from Bloomberg Finance L.P.

agreement transactions. This suggests that leveraged funds may be conducting basis trades—a strategy based on exploiting the valuation gap between futures and comparable bonds.

Basis trading was prevalent in 2019 and was severely tested during the “dash for cash” in March 2020, when cash Treasury yields spiked, leading to a reversal of the basis (Figure 1.12, panel 3). This price move, together with a jump in volatility, forced many leveraged investors to unwind their basis trade positions to stop losses, meet margin calls on futures positions, or keep their

risk exposures below targets (see the April 2020 *Global Financial Stability Report*).

The current positioning by leveraged investors may similarly be tested by a sudden bout of bond market volatility, forcing them to unwind positions and sell bonds just as prices for these securities fall. Further adding to concerns is limited intermediation of broker–dealers in sovereign bond markets. For example, in the United Kingdom and the United States, primary dealers’ respective Gilt and Treasury balance sheets have been materially

outpaced by the growth in bonds outstanding (Figure 1.12, panel 4).

A deleveraging and forced selling feedback loop could be amplified by insufficient market liquidity. Liquidity conditions—the cost and ease of transacting—have deteriorated across several key financial markets since 2022, driven by the unprecedented pace of removal of monetary policy accommodation (see the “Banks and Markets May Be Affected by Central Bank Balance Sheets” section), uncertainty about the economic outlook, and structural factors such as reduced intermediation capacity of key financial institutions. Stress in the banking sector in March and the US debt ceiling standoff in June further contributed to the liquidity deterioration. While market liquidity since appears to have stabilized in equity and foreign exchange markets, conditions in sovereign bond markets remain challenging. Failed transactions have increased and persist in several markets, suggesting that market functioning remains impaired.

## Credit Quality of Corporate and Household Borrowers

### The Credit Cycle Is Turning as Corporate Cash Buffers Deplete

A sudden tightening in financial conditions, such as the inflation outlook turning less benign than markets currently anticipate, may cause distress in the corporate sector and test the resilience of some firms, particularly those heavily indebted. Corporations have generally managed to protect their profit margins since the pandemic, benefiting from the recent drop in some raw material and energy prices, and have also demonstrated price power by passing some cost inflation to consumers. However, realized earnings show that, despite a slight rebound in the second quarter, US corporate earnings have declined for two consecutive quarters,<sup>8</sup> indicating that the upward trend since 2020 may lose steam. Nonetheless, growing expectations for a soft-landing scenario and expectations that central banks are close to the end of the tightening cycle have further supported one-year-ahead earnings per share forecasts (Figure 1.13, panel 1).

However, interest coverage ratios have declined in both Europe and the United States but remain high

<sup>8</sup>“Gross Domestic Product (Third Estimate), Corporate Profits (Revised Estimate), and GDP by Industry, First Quarter 2023,” Bureau of Economic Analysis, US Department of Commerce, news release, June 29, 2023, [https://www.bea.gov/sites/default/files/2023-06/gdp1q23\\_3rd.pdf](https://www.bea.gov/sites/default/files/2023-06/gdp1q23_3rd.pdf).

by historical standards (Figure 1.13, panel 2). The sector’s large cash buffers, built during the pandemic, have provided financial cushioning. In the United States, corporations held financial assets exceeding total liabilities in 2021, providing resources to weather the adverse effects of higher interest rates (Figure 1.13, panel 3). Abundant interest-bearing assets have helped meaningfully lower net interest payments since 2022, contrary to the previous rate hike cycle when net interest payments increased substantially (Figure 1.13, panel 4). The difference in the interest rate sensitivity of assets and liabilities is a key factor. Corporations have reportedly invested a sizable portion of fixed-rate borrowings during the extremely low-rate period after the pandemic in 2020–21 in variable rate deposits, benefiting from higher rates (Edwards 2023). Of course, such rates are not usual for all corporate assets and liabilities, nor are lower net interest payments guaranteed should rates rise further.

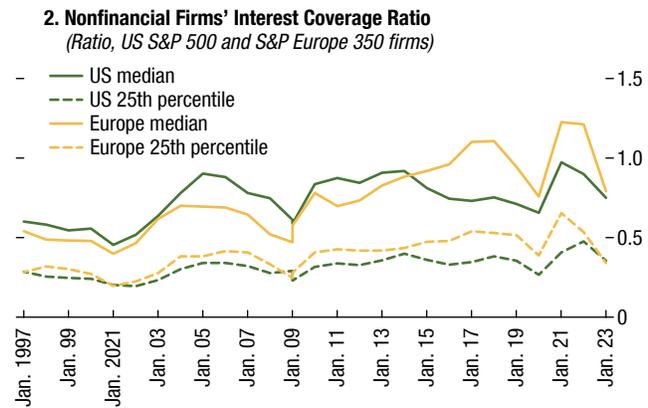
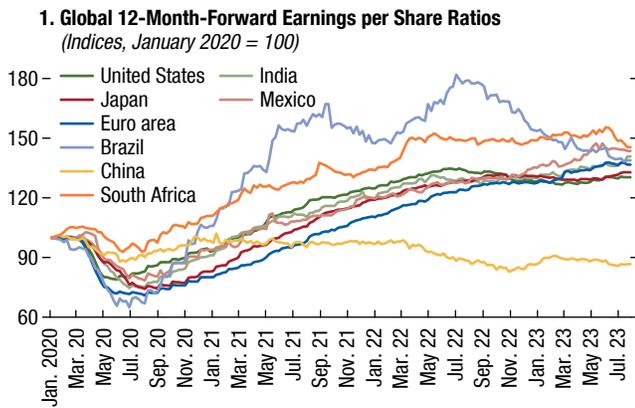
Instead, the risk of declining corporate earnings, combined with tighter funding conditions, will likely continue to erode corporate buffers globally (Figure 1.13, panels 5 and 6). The share of firms with low cash-to-interest-expense ratios—that is, weaker firms with fewer buffers—has rebounded over the past two years. This is especially true among small and medium firms. Reduced buffers could lead to repayment difficulties for these weaker firms (see Chapter 1 of the April 2023 *Global Financial Stability Report*), considering that the corporate sector will be exposed to rollover risks in the coming years. While refinancing is not an imminent problem for the average corporation in most countries, as the tenor of outstanding debt is longer than six years, some companies need to refinance as early as next year. Global corporate refinancing needs in 2024 total more than \$5 trillion, with approximately half accounted for by US companies (Figure 1.14, panel 1). Furthermore, in some countries, floating rate corporate debt represents a considerable share of overall corporate debt, putting firms at risk of a heavier debt-service burden as interest rates climb (Figure 1.14, panel 2). If US interest rates continue to stay high, the potential rise in debt-servicing costs might be more severe for firms with substantial amounts of floating rate US dollar-denominated debt.

These dynamics could be further compounded by negative rating events. Downgraded firms would face much higher funding costs as a significantly higher premium is required for financing (Figure 1.15, panel 1). In the United States, rating downgrades

**Figure 1.13. Corporate Earnings and Debt Servicing**

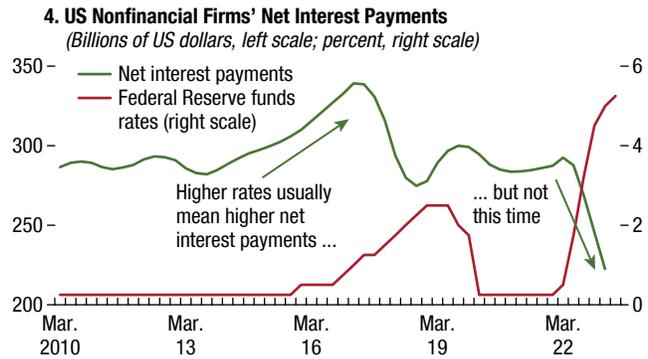
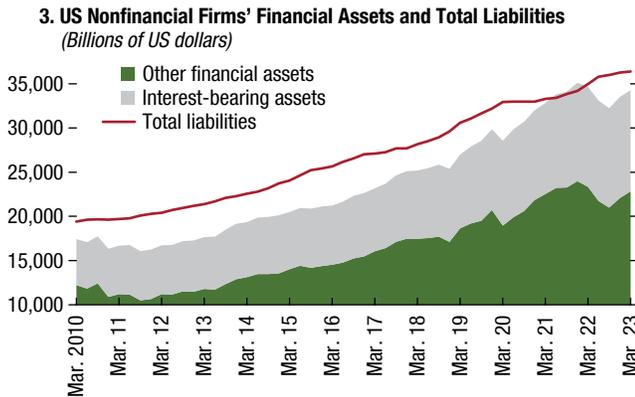
Corporate profitability prospects are close to peak in most jurisdictions.

Interest coverage ratios have declined, but they remain higher than historical averages.



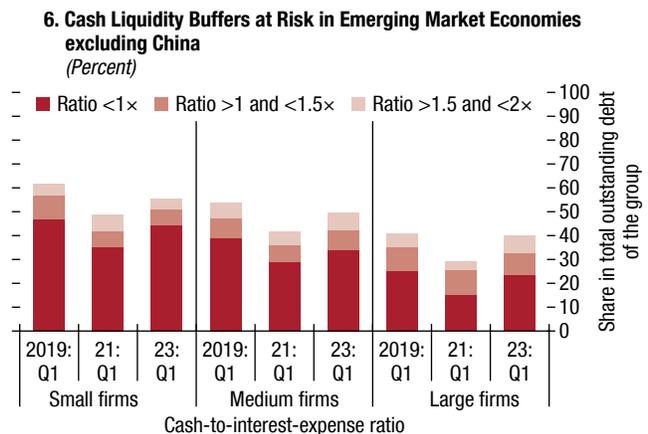
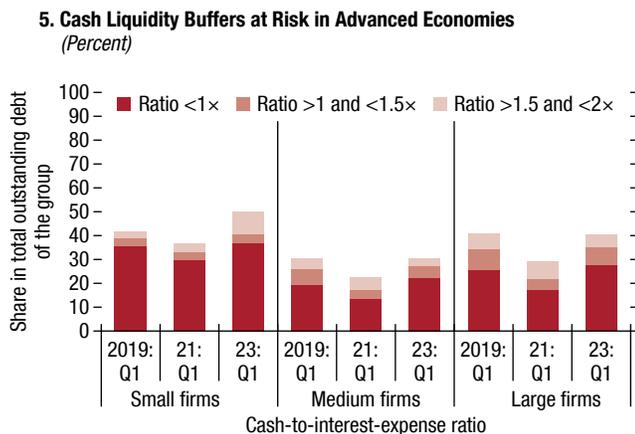
Financial assets of nonfinancial firms, including variable interest rate bearing assets, exceeded the total liabilities in 2021 ...

... as a result, net interest payments have significantly decreased since 2022.



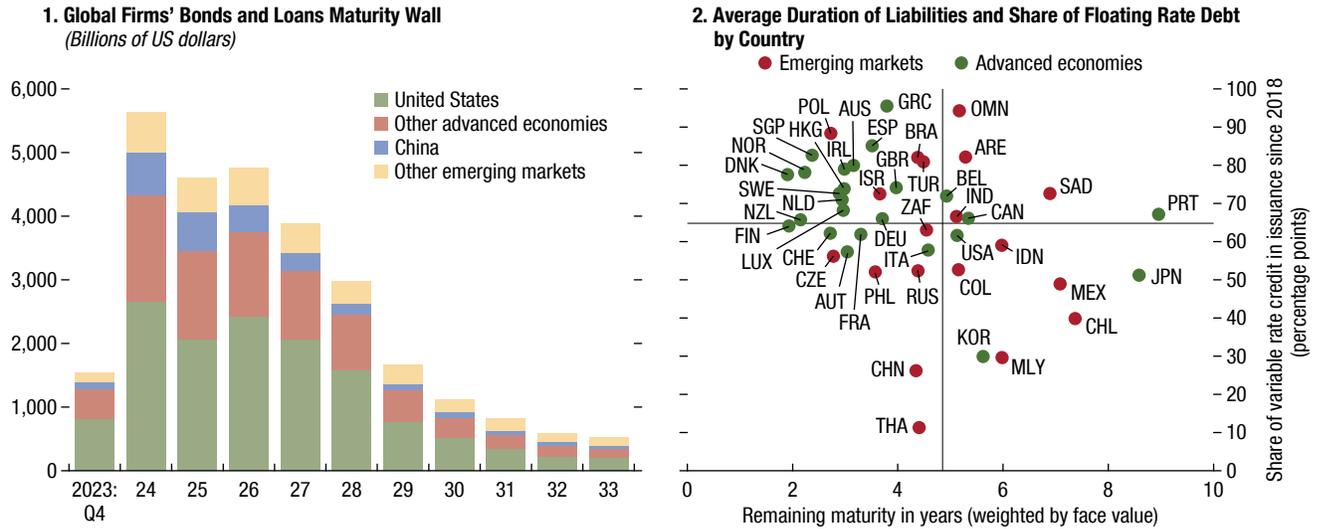
In advanced economies, nearly 40 percent of small firms do not own enough cash liquidity to cover their annual interest expenses ...

... in emerging market economies, the debt-servicing capacity of small and medium firms has also deteriorated.



Sources: Bloomberg Finance L.P.; Bureau of Economic Analysis; Dealogic; Haver Analytics; Refinitiv Datastream; and S&P Global.  
Note: In panel 3, the repayment schedule is based on data available for 163 countries as of August 2023 and includes both loans and bond instruments. For advanced economies, the nonfinancial corporations group either includes private sector utilities, industrial and other companies except those operating in the financial sector (including insurance), and closed-end funds, or is composed of holding companies. In addition to these, the emerging market nonfinancial corporate group includes public sector corporations such as utilities, industrial, and others. Issuances by special purpose financing vehicles are not included for advanced economies and emerging markets. In panels 5 and 6, "cash" includes cash and equivalents. Q = quarter.

Figure 1.14. Corporate Debt Profile



Sources: Dealogic; Federal Reserve Bank of St. Louis; and IMF staff calculations.

Note: In panel 1, remaining tenors as of September 2023 are calculated based on all debt (loans and bonds) issued since 1980. In the absence of information on interest rates on loans, 81 percent of loans (by value) are assumed to carry a variable rate based on the estimates by the Federal Reserve Bank of St. Louis for the United States in 2021. Because of limitations in the coverage of the loan data used to calculate the average duration, for some jurisdictions, the results may differ from other estimates. Panel 2 displays two lines in the chart area: a vertical line representing the debt-weighted average remaining maturity of liabilities and a horizontal line representing the debt-weighted average share of variable rate debts. Data labels in panel 2 use International Organization for Standardization (ISO) country codes.

have recently outpaced upgrades and default rates have gradually increased, partly because the effects of postpandemic fiscal support measures are waning (Figure 1.15, panel 2). The default rate for higher-rated firms has remained low but that for lower-rated firms has already exceeded the long-term average (Figure 1.15, panel 3). A rise in bankruptcies in the euro area and the United States points to a deterioration in conditions, especially for smaller businesses (Figure 1.15, panel 4).

So far, investors have continued to show strong risk appetite, as evidenced by valuations misalignments (see the “Risk Assets Are Increasingly Exposed to Repricing Pressures” section). However, sentiment could change abruptly, leading to a sudden repricing. For example, investment funds and exchange-traded funds (ETFs) with significant exposure to the corporate sector are particularly vulnerable to sentiment shifts. Historically, high-yield bond funds have experienced large outflows during times of stress (see the “Higher Rates Benefit Some NBFIs but Could Exacerbate Structural Vulnerabilities” section). Another source of vulnerabilities is reduced demand for credit assets from insurance firms. Insurers, as large holders of BBB-rated corporate bonds, are sensitive to rating downgrades due to greater capital requirements for sub-investment-grade holdings.

A pickup in policy lapses and surrenders could require insurers to sell credit assets.

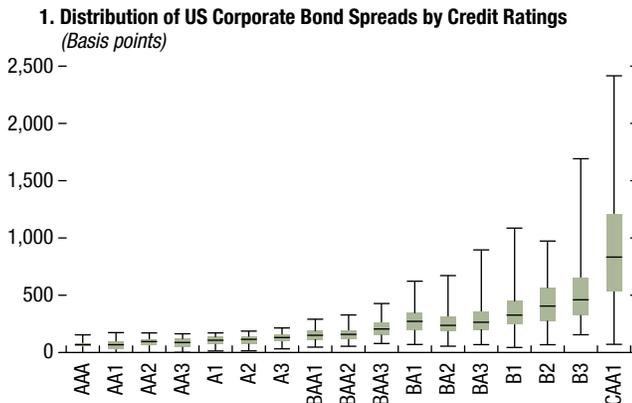
### Higher Interest Rates Keep Housing Affordability under Pressure

Mortgage borrowers will continue to face heavier repayment burdens, leading to a slowdown in housing activity and further declines in home prices. Global real house prices have been declining since late 2022, as major central banks have continued to tighten monetary policy aggressively. In the first quarter of 2023, real house prices fell 5 percent in advanced economies and declined 1.9 percent in emerging markets. This reflects a decline of nominal house prices, which are growing at a slower pace than inflation in most countries (Figure 1.16, panel 1). However, the picture is mixed across and within regions, reflecting both varying degrees of monetary policy tightening and different sensitivity of housing markets to interest rate increases.

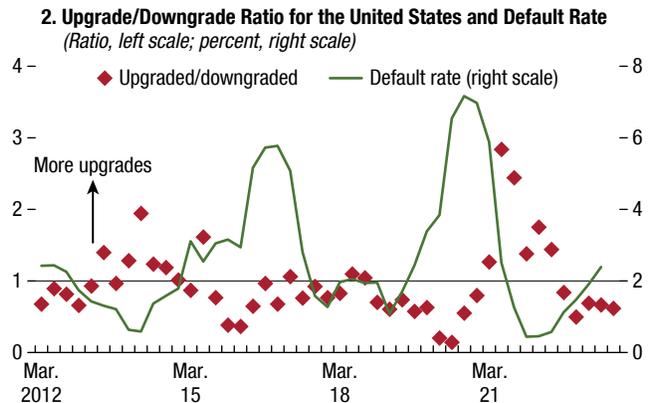
Mortgage rates have risen globally, affecting loan originations, borrower repayment ability, and housing prices. However, the effect varies across economies. Countries with a large share of variable rate mortgages and house prices still above the prepandemic average (for example, Australia, Canada, and New Zealand)

**Figure 1.15. Corporate Performance and Pricing**

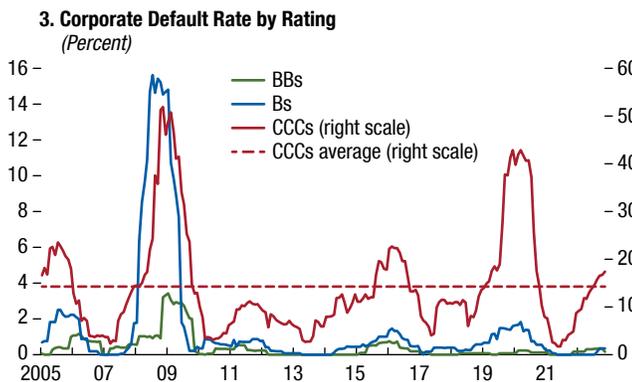
Lower-rated firms are required to pay a significantly increased funding premium on an exponential scale.



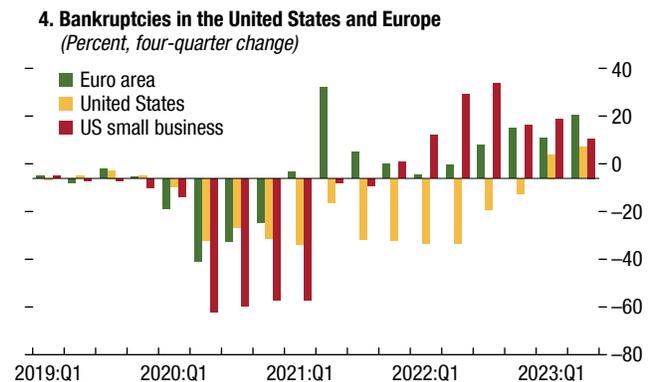
With the policy effects waning, rating downgrades have outpaced upgrades in the United States.



Default rates for lower-rated firms have already exceeded the long-term average.



The rise in bankruptcies indicates that smaller businesses face significant difficulties.



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

Note: In panel 2, upgrade/downgrade ratio is the average of three rating agencies: S&P Global; Moody's Investors Service; and Fitch Ratings. In panel 4, US bankruptcies are counted as the sum of Chapters 7 and 11. US small businesses are proxied by Chapter 13 bankruptcies. Q = quarter.

recorded double-digit declines in home prices since their peak.<sup>9</sup> Countries with these characteristics are likely to experience the largest effect on household debt-service ratios from further increases in interest rates, according to an IMF simulation (Figure 1.16, panel 2; see also Valderrama and others 2023). For example, in an adverse scenario in which interest rates increase by 200 basis points, countries with debt-service ratios already above 10 percent could see an increase in servicing costs of up to 1.8 percentage points. In other countries with high house-price-to-income ratios (for example, Denmark, The Netherlands, Norway, and Sweden), further

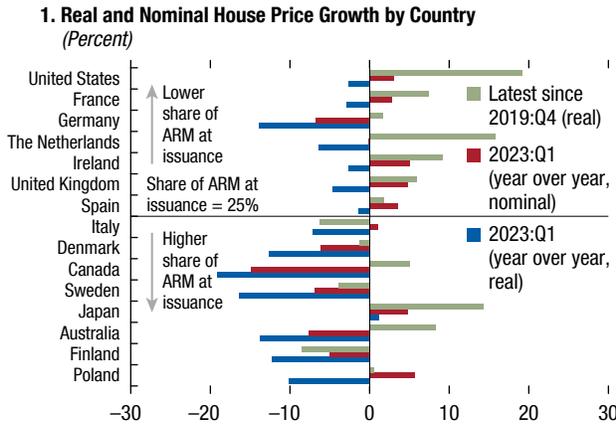
rate rises will lead to heavier mortgage debt-service burdens and could lead to higher defaults. However, a severe increase in defaults remains a tail risk, as underwriting standards remain tighter and household debt is generally lower than before the global financial crisis.

Some housing markets are experiencing unusual dynamics. While higher mortgage rates and lower affordability have suppressed demand, supply constraints have nonetheless contributed to keeping house prices above prepandemic levels in several countries and complicating central bank efforts to bring inflation back to target. In the United States, housing starts have declined while inventory has remained low (Figure 1.16, panels 3 and 4) in part because existing homeowners are deterred from purchasing new properties by the prospect of ending up with a new mortgage with much

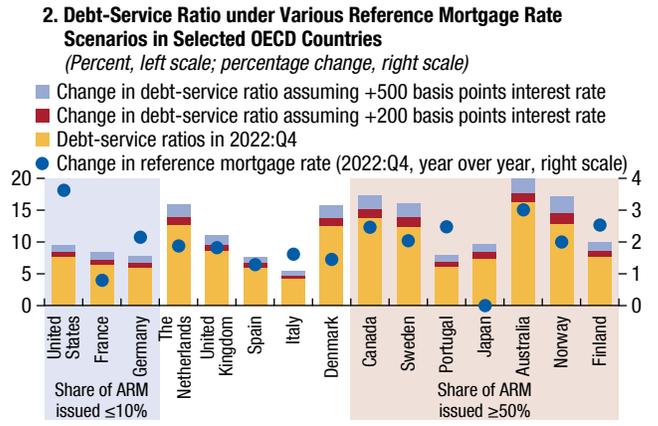
<sup>9</sup>In countries with a prevalence of hybrid mortgage rates (fixed up to five years), such as the United Kingdom, demand from buy-to-let investors could experience the cliff-edge effect of higher interest rates over the medium term as fixed interest rate periods end.

Figure 1.16. Developments in Residential Real Estate Markets

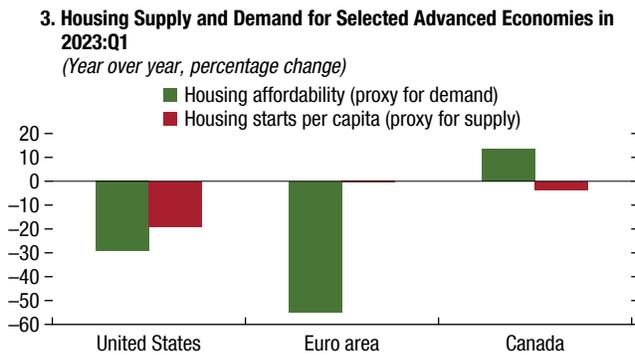
A high-interest-rate environment has weighed on real house prices.



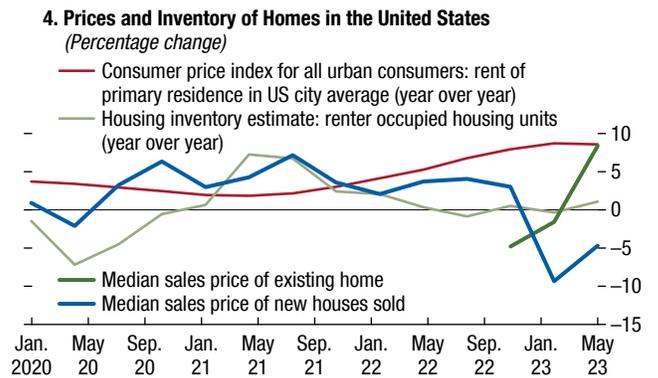
Increasing mortgage rates could result in higher debt-service ratios.



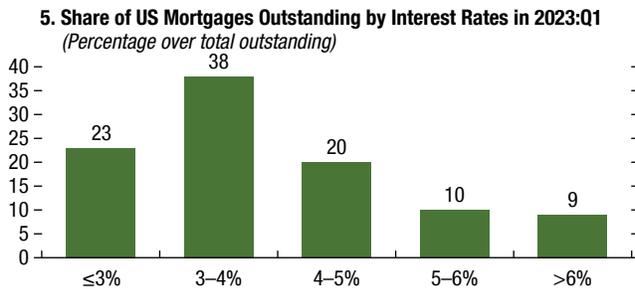
Housing demand and supply conditions vary across jurisdictions.



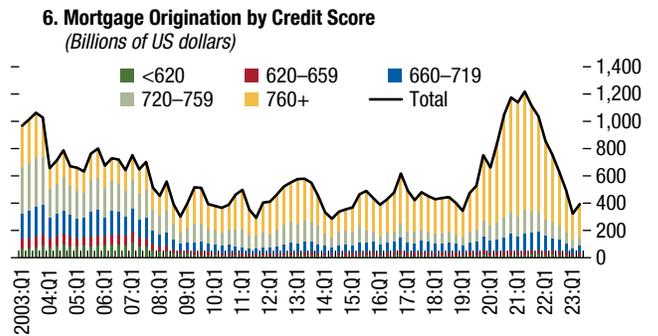
Scarce supply has led to a rebound in US home prices, creating a headwind to the Federal Reserve's efforts to control inflation.



Higher rates reduce homeowners' incentives to sell their current home and buy a new one ...



... while mortgage originations in the United States are slowing down for high-credit-score borrowers.



Sources: Apollo Insights; Bank for International Settlements; European Central Bank; Eurostat; Federal Housing Finance Agency; Haver Analytics (G10 Accounts); National Association of Realtors; New York Fed Consumer Credit Panel/Equifax; UK Office for National Statistics; and IMF staff calculations. Note: In panel 1, the change since the fourth quarter of 2019 is with respect to the average between the first quarter of 2023 (where available) and the fourth quarter of 2022. In panels 1 and 2, ARM loans are new loans issued at variable rate or with an initial rate fixed for a period of up to 1 year, based on the OECD, November 2022. The data refer to 2022 or to the latest available data. For the United States and Poland, data refer to December 2021. In panel 2, the debt-service ratio (DSR) is defined as the ratio of interest payments on the aggregate debt stock plus amortizations to income. The reference mortgage rate in each country is obtained from Haver Analytics' G10 Accounts. For Belgium, Denmark, Finland, France, Germany, Italy, The Netherlands, Portugal, Spain, Sweden, and the United Kingdom, this is represented by a weighted average of the prevailing mortgage interest rates. For Canada, the reference rate is the five-year average residential mortgage lending rate, whereas for the United States it is the 30-year fixed mortgage rate. The panel shows debt-service-to-income ratios in the fourth quarter of 2022, year over year, under two alternative scenarios. The alternative scenarios correspond to an increase of 200 basis points and 500 basis points of the average interest rate paid on the outstanding stock of debt, all else equal. The average remaining maturity of household debt across countries is assumed equal to 18 years. Income is proxied by households' gross disposable income, which proxies for the amount of money available to households to pay debt-service costs. In panel 3, housing affordability for the United States is measured by the Affordability Index of the National Association of Realtors, whereas data for Canada is compiled by Haver Analytics (G10 Accounts). For the euro area, affordability is calculated as Housing Affordability Index = (Median Family Income/Qualifying Income), where qualifying income is derived from the monthly payment on the residential real estate price of new and existing homes, at the reference mortgage interest rate. ARM = adjustable rate mortgages; OECD = Organisation for Economic Co-operation and Development; Q = quarter.

larger monthly payments—the so-called lock-in effect (see Fonseca and Liu 2023). More specifically, about 80 percent of existing mortgages have rates below 5 percent and nearly one-fourth are below 3 percent. With 30-year mortgage rates currently above 7 percent, this would imply a significant increase in monthly payments on a new mortgage (Figure 1.16, panel 5). While present also in other countries, the lock-in effect is more powerful in the United States due to the prevalence of long-term fixed rate mortgages, the larger proportion of mortgage owners, and higher shifting preference to work from home after the pandemic. As a result, mortgage origination has continued to decelerate, especially among high-quality borrowers (Figure 1.16, panel 6), while refinancing applications have declined more than 50 percent relative to a year ago.

### Commercial Real Estate Continues to Face Headwinds

Fragilities in the CRE sector are a major source of credit risk for the financial sector. At the start of 2023, CRE transaction volumes plummeted 55 percent year over year to \$147 billion as investors reevaluate the value proposition of owning CRE properties amid rising funding costs and tighter credit conditions in the sector (Figure 1.17, panel 1).<sup>10</sup> The decline in transaction activity has contributed to a sharp repricing across major CRE markets and CRE segments (Figure 1.17, panel 2). For example, while CRE valuations (in real terms) have declined 1.5 percent in aggregate, high-quality properties owned by real estate investment trusts (REITs) have experienced much larger declines in Europe (more than 26 percent) and in the United States (18 percent) relative to the previous year. Among CRE segments, the office segment has experienced the most pronounced decline in prices on average, followed by retail and multifamily properties.

The outlook for the CRE sector will depend on structural factors and fundamentals as well as funding and credit conditions. Market participants expect supply growth to be limited by pandemic-related structural changes, supply chain issues, labor

<sup>10</sup>CRE transaction activity declined significantly (by 64 percent, year over year) in Europe in the first quarter of 2023, notably affecting the industrial segment with a 70 percent reduction in transaction volumes. The Asia-Pacific region, on average, experienced a somewhat smaller decline of 20 percent (year over year) owing to robust transaction activity in some economies like Japan. In the United States, CRE transaction volume plummeted by 57 percent (year over year), with the largest decline experienced by the office sector, followed by retail.

shortages, rising funding costs, and falling exit values (Figure 1.17, panel 3). At the same time, there are signs that demand in the retail and office sectors may be structurally lower after shifts catalyzed by the pandemic in consumer and worker behavior, respectively. For example, the absorption rate—the rate at which properties sell in a specific market in a given period—has remained negative in these sectors since the pandemic. Economies with strained funding markets amid high volumes of refinancing coming due imminently are vulnerable (see Box 1.2). For example, the CRE sector in the United States is likely to face big challenges as the US banking sectors have tightened lending standards to the CRE (see Figure 1.17, panel 4, and the section “Higher Rates Benefit Some NBFIs but Could Exacerbate Structural Vulnerabilities”).

All told, given fundamentals, the IMF’s CRE price-at-risk model estimates that in a tail scenario, global CRE prices could decline by more than 10 percent over the next year across several segments.<sup>11</sup> This may have a significant effect on small and regional banks, which are generally less well capitalized and have a larger exposure to the CRE sector than large banks, constraining their ability to lend to the CRE sector and potentially creating a vicious cycle of tighter funding conditions, falling CRE prices, and bank losses, with broader implications for macrofinancial stability (April 2021 *Global Financial Stability Report*, Chapter 3).

### Financial Stability Risks Remain Elevated

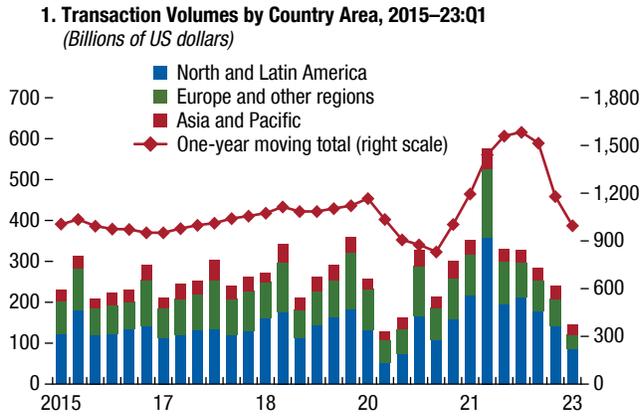
#### Growth at Risk Indicates Risks Are Skewed to the Downside

Given the easing of financial conditions since April 2023, on net, especially in advanced economies, the one-year-ahead forecast distribution of global growth based on a model that includes financial conditions (the pink dashed distribution in Figure 1.18, panel 1) is reasonably symmetric, suggesting that risks to the

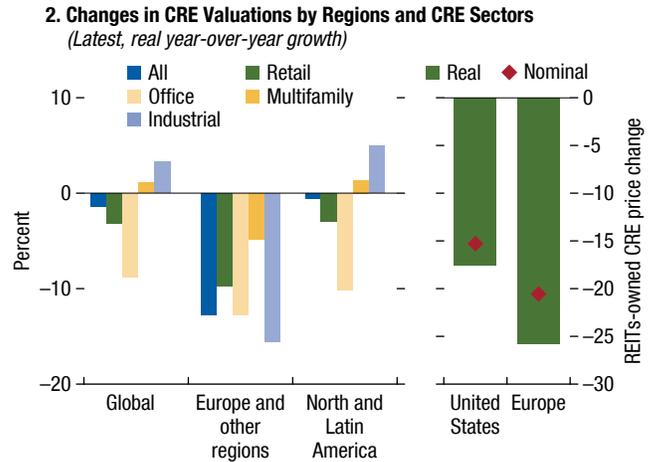
<sup>11</sup>CRE price forecasts are estimated using a CRE price-at-risk model at the country level following the approach described in Deghi, Mok, and Tsuruga (2021) and averaged across country areas using nominal GDP as weights. The model allows prediction of CRE price growth in an adverse scenario, that is, the range of outcomes in the lower tail of the future CRE price distribution. Baseline projections refer to the decline in an adverse scenario with a 5 percent probability (fifth percentile). The baseline model includes selected fundamental factors such as past growth in CRE prices (which captures momentum effects), CRE price misalignment, GDP growth, credit-to-GDP growth, capital-flow-to-GDP ratio, monetary aggregates, and vacancy rates.

**Figure 1.17. Developments in the Commercial Real Estate Sector**

Global commercial real estate transactions fell 55 percent year over year in the first quarter of 2023.



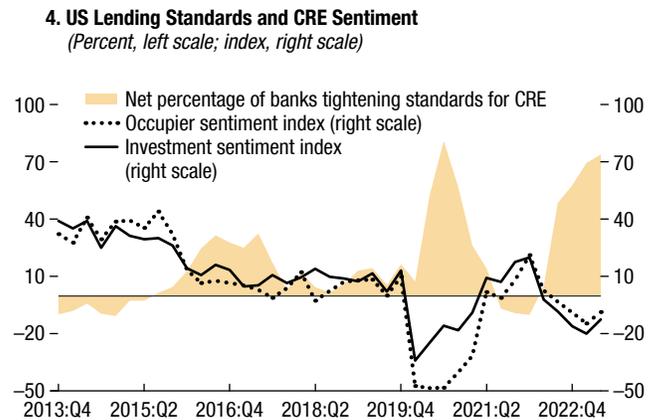
Amid rising funding costs, a repricing is occurring but at different speeds across countries and sectors.



Completions of new space are set to fall back sharply, while demand for multifamily housing is also slowing ...



... due to tighter lending standards and subdued investor sentiment.



Sources: CBRE; Federal Reserve Bank of St. Louis, Federal Reserve Economic Data (FRED); Green Street Advisors; MSCI Real Estate; RICS; and IMF staff calculations. Note: In panel 1, the one-year moving total is a rolling sum of CRE transaction volumes computed on four trailing quarters. In panel 2, CRE price changes by sector are measured as of the first quarter of 2023. Year-over-year growth of appraised value of high-quality properties owned by real estate investment trusts are measured as of May 2023 for the United States and April 2023 for Europe. In panel 3, “absorption” is an index that measures the rate at which properties sell in a market in a given period. The indicator is normalized relative to the historical average. The bars show the overall completions of new space (relative to existing CRE stock). Forecasts are sourced from market agencies. In panel 4, occupier sentiment index is constructed by taking an unweighted average of readings for three series related to the occupier market measured on a net balance basis: occupier demand, the level of inducements, and rent expectations. The RICS Investment Sentiment Index is constructed by taking an unweighted average of readings for three series relating to the investment market measured on a net balance basis: investment inquiries, capital value expectations, and the supply of properties for sale. CRE = commercial real estate; REITs = real estate investment trusts.

economic outlook are more or less balanced, as discussed in the October 2023 *World Economic Outlook*. The distribution points to a GaR metric showing that, with a 5 percent probability, global growth in 2024 is expected to be 1 percent or less (the pink markers in Figure 1.18, panel 1).<sup>12</sup>

<sup>12</sup>The GaR framework assesses downside risks by gauging the range of severely adverse growth outcomes falling within the lower fifth percentile of the conditional growth forecast distribution.

The banking turmoil in March raised concerns about the economic headwinds brought about by a sudden pullback of credit growth, especially among policymakers.<sup>13</sup> Credit growth should therefore be considered in models of downside risks. In this *Global Financial Stability Report*, we introduce an enhanced version of the GaR model

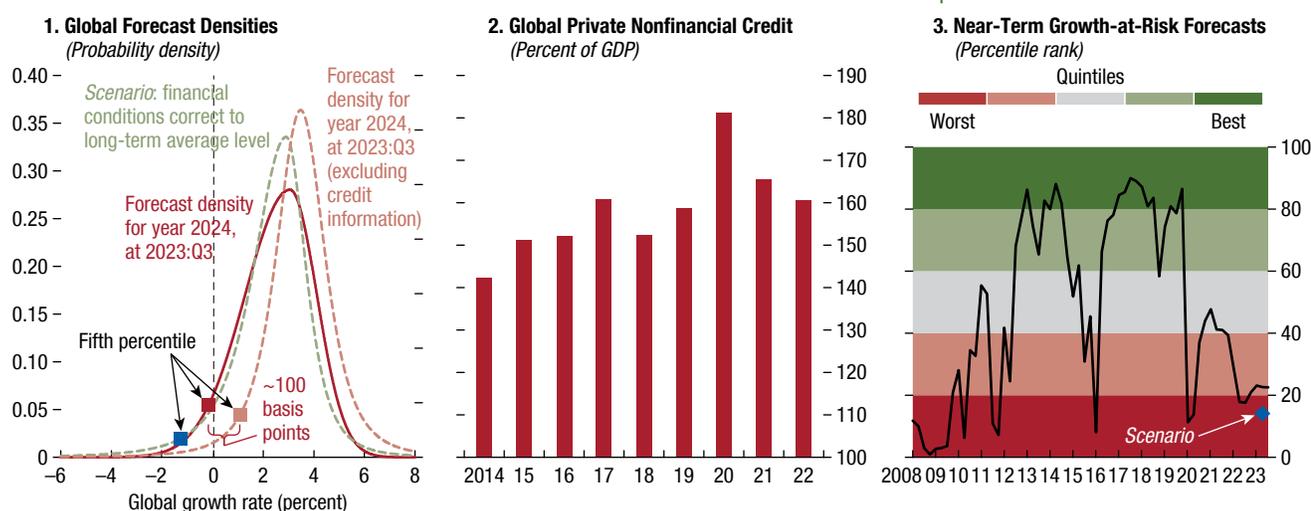
<sup>13</sup>See, for example, the speech “Financial Stability and Economic Development” delivered by Jerome Powell on June 29, 2023.

**Figure 1.18. Global Growth at Risk**

Risk to global growth over the following year is skewed to the downside.

The private debt level helps inform growth at risk.

Growth-at-risk forecasts remain elevated 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: The global conditional forecast density model employed here augments information on current quarter growth and financial conditions (see the April 2018 *Global Financial Stability Report*) with a proxy for global credit growth (see Adrian and others 2022). This credit growth variable is constructed as a PPP-GDP weighted aggregate of country-specific quarterly growth rates in total credit to the private nonfinancial sector, provided by domestic banks and all other sectors of the economy. Credit data are sourced from the Bank for International Settlements. The sample of countries accounts for 90 percent of total GDP of all systemically important jurisdictions, covering all major advanced and emerging market economies. Given lags in availability of the Bank for International Settlements' credit data, credit growth for the current quarter is (conservatively) assumed to be around the average quarterly rate recorded since start of 2022. The mode (that is, the most likely outcome) of the forecast density estimate accords with the October 2023 *World Economic Outlook* forecast for year 2024, as of the third quarter of 2023. In panel 3, the black line traces the evolution of the fifth 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. PPP = purchasing power parity; Q = quarter.

augmented with information on private nonfinancial credit growth in addition to the pricing of risk in global capital markets (that is, financial conditions). Global private nonfinancial credit growth, after increasing briskly during the pandemic, has slowed over the past two years (Figure 1.18, panel 2). Tighter bank lending conditions and a deceleration in bank loan growth will likely slow credit growth further.<sup>14</sup> With the incorporation of information on private nonfinancial credit growth and financial conditions, this enhanced GaR version may more accurately estimate future growth distribution. When credit growth is included, the forecast distribution is skewed to the downside (red distribution in Figure 1.18, panel 1) relative to when the model is informed only by financial conditions.

<sup>14</sup>For example, household loan growth in the euro area has slowed to 1.3 percent in July 2023 from 4.5 percent a year ago, while non-financial corporate loan growth slowed to 2.2 percent in the same month from 7.6 percent a year ago.

Moreover, the GaR metric in this augmented model is slightly below 0 percent (Figure 1.18, panel 1), as the slowdown in credit growth is expected to offset the positive effect of easier financial conditions on growth. In other words, once information about credit growth is included, the distribution of global growth skews leftward, and the GaR metric is 100 basis points lower—that is, downside risks increase, with a 5 percent probability that the global economy in 2024 may contract. This version of GaR is currently at about the 20th percentile of its historical distribution (Figure 1.18, panel 3), similar to where it would have been by the time of the April 2023 *Global Financial Stability Report*.

We also consider an adverse scenario wherein the hoped-for soft landing does not materialize, investors pull back from risk taking, and financial conditions tighten sharply toward their long-term average. As a result, the forecast growth distribution becomes even more firmly skewed to the downside

(the green distribution in Figure 1.18, panel 1), with a GaR metric comparable with the level at the onset of the pandemic (the blue markers in Figure 1.18, panels 1 and 3).<sup>15</sup> Financial stability is therefore susceptible to shocks to investor and credit market sentiments as demonstrated by this scenario.

## Emerging Market Economies

### China Concerns Have Rattled Markets

One source of such shocks could be the Chinese economy. Heightened concerns about China's weakening economic momentum, a deepening property sector downturn, and growing strains on local government financing weighed on global market sentiment in recent months. Disinflationary pressures have intensified, prompting the People's Bank of China to cut policy rates—one of the few central banks to ease monetary policy. In addition, the People's Bank of China has also cut the reserve requirement ratio for foreign currency deposits by banks. However, the announced stimulus measures have not yet restored confidence among businesses and consumers and, importantly, homebuyers. Fading economic momentum and continued property market sluggishness heighten the likelihood of further financial strains. The financial system's resilience could be further tested on top of existing vulnerabilities that include high debt for the whole economy, asset quality pressures, falling bank profitability, and interconnectedness between banks and nonbank financial institutions (NBFIs).

Chinese financial markets have underperformed broader emerging market assets since early 2023. The renminbi has faced notable downward pressure, underperforming most other emerging market currencies in the year to date even in the face of policy measures to stem the depreciation, while equity prices have fallen sharply. Market sentiment was briefly lifted in July after Chinese authorities pledged policy support for various sectors, but quickly faded in August after weak economic data and disappointment about announced policy measures. When a major financial conglomerate suspended payments and redemptions of its wealth management and trust products, some investors turned

their attention to the broader trust sector. With assets under management of about 21 trillion yuan as of the first quarter of 2023, this sector is one of the riskiest segments of China's financial system (Figure 1.19, panel 1).<sup>16</sup> So far, money markets and corporate bond markets have not experienced stress, partly thanks to liquidity injections by the People's Bank of China. However, were the public to lose confidence in wealth management products following future shocks, contagion to widespread financial stress could occur.

One reason for renewed market pessimism is that, after experiencing a short-lived stabilization through the first five months of the year, the property sector has weakened again. Policy support rolled out since late 2022 has not boosted homebuyers' confidence or helped secure financing for property developers. Even state-owned and nondistressed private property developers have seen home sale volumes shrink in recent months (Figure 1.19, panel 2). Furthermore, many property developers are financially weak, and their housing development projects may not be commercially viable (Figure 1.19, panel 3). The largest private property developer missed interest payments on its bonds due in August, increasing risk aversion toward the property sector among both homebuyers and creditors. As developers continue struggling to raise adequate funding, real estate investment and housing starts have declined, affecting local government land sale revenues (Figure 1.19, panel 4).

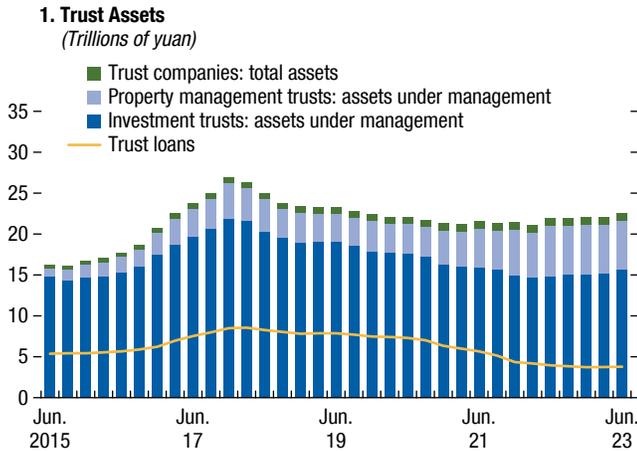
Investors have also become increasingly concerned about the sustainability of the local government financing vehicles (LGFVs) used to fund infrastructure and other investments. LGFVs are highly leveraged, with limited capacity to generate earnings and tend to rely on local government support to service their debt. Some LGFVs in fiscally weaker provinces are facing elevated funding costs and are relying on more debt to cover both expenses and investment (Figure 1.20, panel 1). Total LGFV debt (based on public financial statements) stood at about 45 percent of GDP in 2022. Four-fifths is held by banks, mainly in the form of loans, with the rest in corporate bonds and borrowings from nonbank lenders. On the asset side, two-thirds of LGFV assets are fixed long-term

<sup>15</sup>For the United States, if financial conditions tighten and credit growth slows further by severe but plausible magnitudes, downside risks to one-year-ahead growth could match the hard-landing episode of 1980–81 in the United States (see Box 1.1).

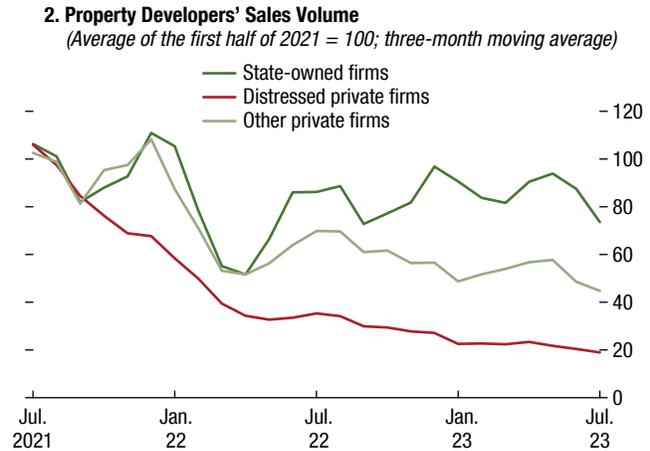
<sup>16</sup>Investment trust products (70 percent of the sector) are privately sold to high-net-worth individuals and professional investors and generally offer high yields through risky investments in liquid and illiquid assets.

**Figure 1.19. Development in China’s Financial Markets and Property Sector**

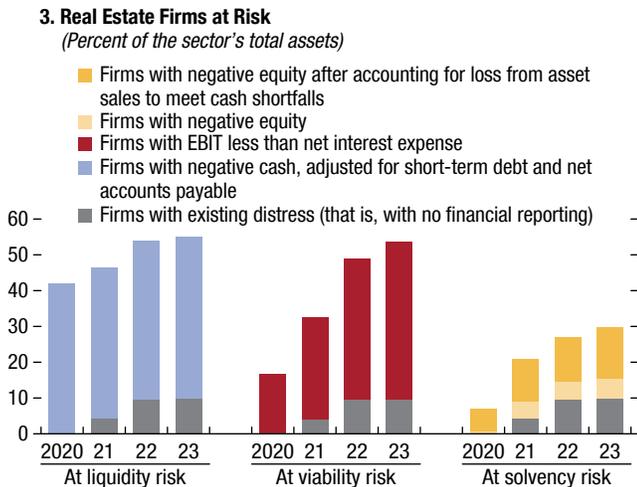
Trust assets start growing again after a multiyear decline, whereas trust loans remain on a declining trend.



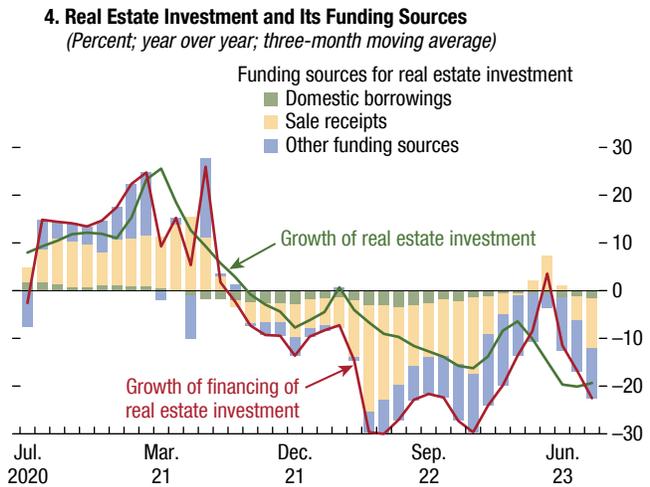
The housing market weakened again, with stronger private and state-owned property developers also facing poor sales performance.



Many property developers are financially weak, undermining homebuyers’ confidence and efforts to deliver unfinished housing.



The decline in real estate investment has deepened as policy support has not been effective in boosting home sales and securing financing for property developers.



Sources: Bloomberg Finance L.P.; CEIC; S&P Global; WIND; and IMF staff estimates.

Note: In panel 1, trust assets are composed of trust companies’ own balance sheets (green bars) and assets under management of trust products (dark blue and light blue bars). “Trust loans” refers to loans extended by trust companies and trust products based on the total social financing statistics. In panel 2, the figure covers the top 50 property developers in terms of sales value in 2020. “Other private firms” does not include firms with indirect government ownership. In panel 3, real estate firms are at (1) liquidity risk if they face cash shortfalls (that is, having a negative cash position after accounting for short-term debt and net accounts payable), (2) viability risk if they lack debt-servicing capacity (that is, having EBIT less than net interest expense), and (3) solvency risk if they have negative equity. The exercise also considers a scenario in which additional losses may occur if real estate firms need to sell assets, subject to a 50 percent haircut, to cover their cash shortfalls. In panel 4, other funding sources mainly include property developers’ own funds, nondebt liabilities (for example, accounts payable), and overseas borrowings. EBIT = earnings before interest and taxes.

investments such as land and infrastructure assets, leaving relatively few liquid assets to meet short-term funding needs. More than 30 percent of LGFV debt has had an interest coverage ratio below 1 for the last three years and can be considered commercially non-viable without government support (sum of yellow bars in Figure 1.20, panel 2). The IMF staff estimates

that over half of the debt cannot be serviced by current earnings alone if average LGFV funding costs are more than 3 percent (most LGFVs currently borrow at rates above this level).

Addressing LGFV debt is a complex challenge requiring a comprehensive approach. In a recent LGFV debt restructuring case, terms on bank loans (the

majority of the debt stock) were modified while bonds were left untouched, despite bank loans' seniority to bonds in most capital structures.<sup>17</sup> However, relying heavily on banks to solve the LGFV debt problem could lead to significant bank losses. If all LGFVs were restructured to ensure financial viability (with current earnings covering interest expenses), losses would be large. If banks were to take half of the responsibility of the debt restructuring cost, they could face impairment charges of about 3.4 trillion yuan, equivalent to a reduction in capital ratios of 1.7 percentage points. Although systemically important banks would be able to manage, local banks could face capital shortfalls, even in relatively fiscally healthy provinces (Figure 1.20, panel 3). With banks already under pressure from deteriorating property assets (see the October 2022 and April 2023 issues of the *Global Financial Stability Report*), this hypothetical exercise—notwithstanding some data limitations (for more details, see note to Figure 1.20)—illustrates the importance of a comprehensive solution for LGFVs.

Another obstacle is the fiscal positions of some Chinese regions. The challenge of bringing the LGFV debt burden to a sustainable level is particularly daunting for fiscally weaker regions. Banks in provinces with higher LGFV bond yields face higher funding costs (Figure 1.20, panel 4). More broadly, evidence shows that provinces with weak fiscal positions tend to experience a more pronounced real estate downturn, weaker economic growth, and a more limited credit expansion, which highlights the role of the property banking–local government nexus in propagating and amplifying financial stress (Box 1.5 in the October 2021 *Global Financial Stability Report*).

### Emerging Market Outlooks Continue to Diverge

Most major emerging markets have been resilient so far in 2023. IMF analysis finds that capital flows at risk have improved marginally since the April 2023 *Global Financial Stability Report*, reflecting strong risk appetite in global markets. The probability of outflows has fallen slightly to 32 percent from 34 percent, with the fifth percentile of outflows

remaining steady at 2.9 percent of GDP (see the April 2020 *Global Financial Stability Report*).<sup>18</sup> Investors continue to differentiate between sovereigns with stronger fundamentals and policy buffers, and those perceived as less resilient and more vulnerable to shocks. Overall, emerging market sovereign credit spreads have remained narrow, in sync with corporate credit spreads in advanced economies, despite the continued tightening of monetary policy and higher yields in advanced economies (Figure 1.21, panel 1). However, the gap remains large between the investment-grade and high-yield segments of emerging market sovereign debt markets, even with material tightening in spreads for many distressed issuers. Investment-grade sovereign spreads have tightened to levels below those of US BBB-rated firms, the lowest since before the global financial crisis, although this may partly reflect the changing composition of the emerging market sovereign ratings universe. This segment now includes several oil exporters with high per capita income, increasing the index share of countries rated single A or higher (Figure 1.21, panel 2).

Portfolio flows into emerging markets have been relatively strong in 2023, despite some renewed outflows in August and September (Figure 1.21, panel 3). Sizable inflows across asset classes have been buffeted by headwinds from more hawkish monetary policy tightening, financial instability concerns, and tepid growth in China at various points in the year. Local currency bond flows have benefited from the perception that inflation pressures are easing amid still meaningful rate differentials. In equity markets, several countries have seen large inflows, notably India. Chinese local currency bonds have faced large outflows since February 2022 (close to \$130 billion) despite a short-lived respite in the second quarter of 2023. Chinese equity outflows accelerated again in August, with over \$15 billion in outflows in August to September alone. Overall, a weaker-than-expected recovery, deepening housing market stress, divergent monetary policy, and rising geopolitical risk concerns continue to be headwinds to portfolio flows into China.

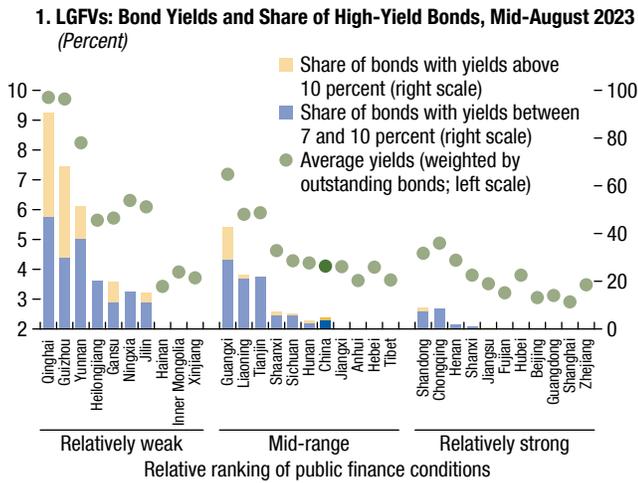
Sovereign hard currency bond issuance has moderated after an exceptionally strong start to the year, with investment-grade issuers accounting for

<sup>17</sup>The restructuring of an LGFV based in the city of Zunyi early in the year—mostly through an extension of the bank loan repayment period from 5 to 25 years, no principal payments due during the first 10 years, and significant reduction in interest rates—has been regarded by some investors as a potential blueprint for how authorities will restructure other LGFVs with unsustainable debt burdens.

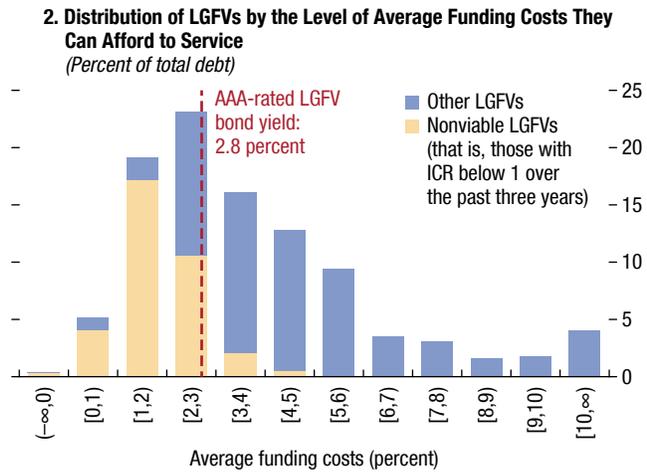
<sup>18</sup>Capital flows at risk are defined as the fifth percentile of the three-quarters-ahead capital flows probability density.

**Figure 1.20. Financial Stability Implications Arising from China’s Local Government Financing Vehicle Debt**

LGFVs in provinces with relatively weak public finances face elevated funding costs.

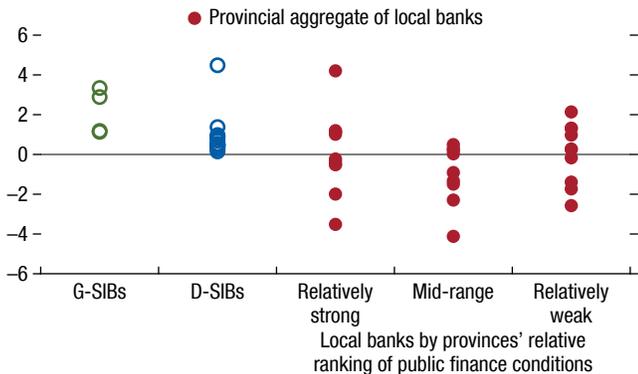


Over half of LGFV debt cannot be serviced by current earnings if LGFVs’ average funding costs are above 3 percent.



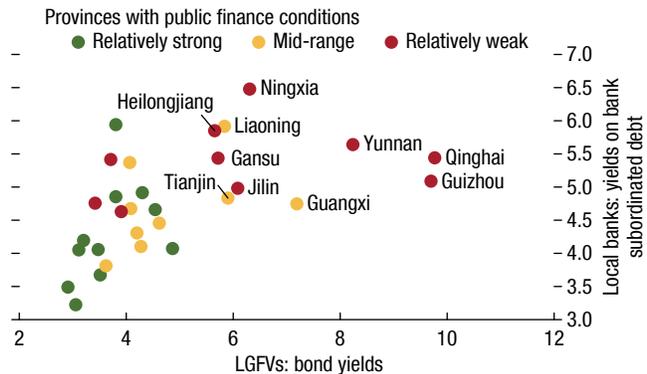
If banks are forced to bear losses arising from LGFV debt restructuring, impairment charges could be substantial, raising concern about their solvency.

**3. Hypothetical Remaining Bank Capital in Excess of Minimum Capital Requirement If LGFV Is Debt Written Off to Restore Repayment Capacity (Percent of banks’ risk-weighted assets)**



Macrofinancial spillovers could be amplified through the property–banking–local government nexus, exacerbating regional divergence of macrofinancial conditions.

**4. China’s Provinces: Funding Costs of LGFVs and Local Banks, Mid-August 2023 (Percent)**



Sources: Bloomberg Finance L.P.; CEIC; S&P Capital IQ; WIND; and IMF staff estimates.

Note: In panel 1, the ranking of public finance conditions is based on local governments’ general budget deficit and official debt. In panel 2, serviceable interest rate is the implied interest rate at which an LGFV can service debt based on its existing EBITDA and debt load. In panel 3, the hypothetical debt restructuring exercise considers debt write-off such that a reduction of debt would enable existing EBITDA to cover interest expense based on the remaining debt at an average funding cost of 3 percent. The exercise considers G-SIBs, D-SIBs, and city commercial banks and rural commercial banks with publicly available information. Due to the lack of data on individual banks’ exposure to LGFVs, the exercise assumes that lending to LGFVs accounts for 17.5 percent of total loans for G-SIBs and D-SIBs (Moody’s Investors Service 2023). Individual banks’ lending to LGFVs is assumed to be proportional to their lending to construction, leasing and business services, and transportation and utilities sectors. D-SIBs = domestic systemically important banks; EBITDA = earnings before interest, taxes, depreciation, and amortization; G-SIBs = global systemically important banks; ICR = interest coverage ratio (that is, earnings before interest and taxes over net interest expense); LGFV = local government financing vehicle.

70 percent, including a record 33 percent accounted for by issuers rated A or above. Issuance by frontier markets has remained tepid. Corporate issuance has also remained weak, with Chinese issuers notably absent from the market over the last two years (Figure 1.21, panel 4).

**High-Yield, Frontier, and Low-Income Sovereigns Face Financing Challenges**

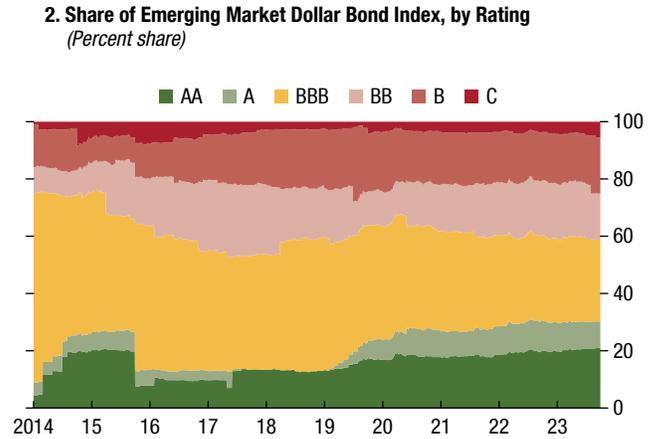
A significant number of frontier and high-yield sovereign issuers will likely continue to face financing challenges amid higher global interest rates, weak fundamentals, and an uncertain credit cycle. Domestic

**Figure 1.21. Emerging Market Risk Sentiment**

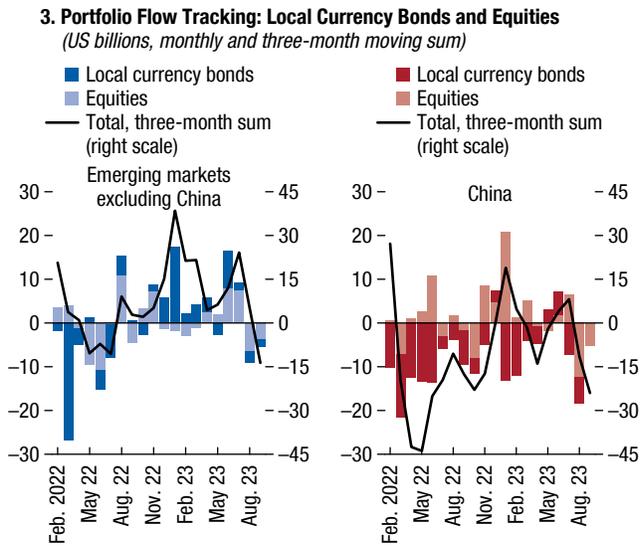
Investment-grade sovereign spreads have tightened to levels not seen since before the global financial crisis, and the ratio to high-yield spreads is near historical extremes.



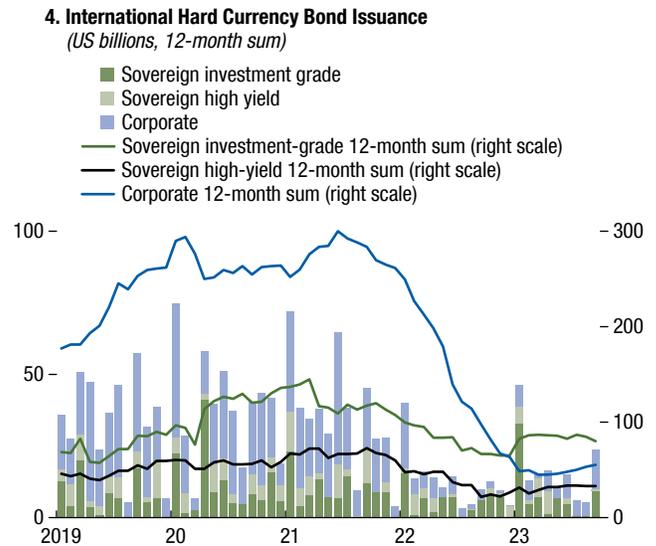
The share of emerging market sovereigns with very high ratings (A and AA) has increased as index rules have changed.



Portfolio flows have been relatively strong in 2023, while outflow pressures from China have been persistent.



External bond issuance has rebounded somewhat from a very weak 2022, although frontier and corporate issuance remains tepid.



Sources: Bloomberg Finance L.P.; Bond Radar; Federal Reserve; Fitch Ratings; Haver Analytics; JPMorgan; Moody's; S&P Global; national sources; and IMF staff calculations.

Note: In panel 1, the gray area tracks the ratio of emerging market high-yield sovereign spreads to emerging market investment-grade sovereign spreads, expressed in historical percentiles. Panel 3 includes an unbalanced sample of up to 24 emerging market economies. August and September data may be incomplete or not available at the time of publication, including Chinese bond flows for September. Panel 4 includes bonds issued internationally (predominately US dollars, euro, and Japanese yen).

fundamentals and macroeconomic buffers remain strained for a weak tail of countries. Moreover, repeated credit downgrades since the pandemic have pushed the average frontier sovereign rating lower, driving implied spreads and financing costs higher for many sovereigns<sup>19</sup>

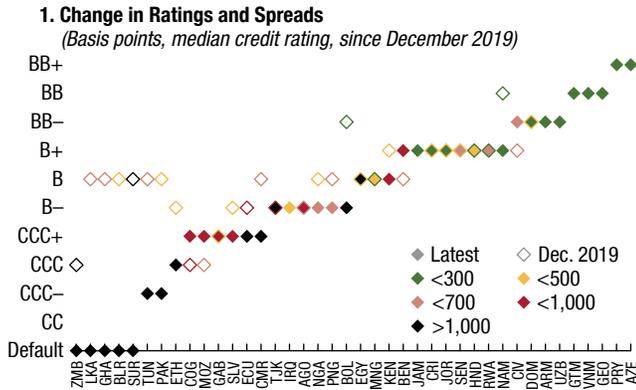
<sup>19</sup>Among the BB and B ratings segments, every notch lower is historically associated with between 60 and 140 basis points of additional spread level; downgrades to and within the CCC segment have tended to correspond to multiples of that.

even during periods of improved market sentiment (Figure 1.22, panel 1). As noted in the October 2019 *Global Financial Stability Report*, issuers with lower ratings tend to be more vulnerable to a deterioration of external risk sentiment absent sustained improvement on the domestic front.

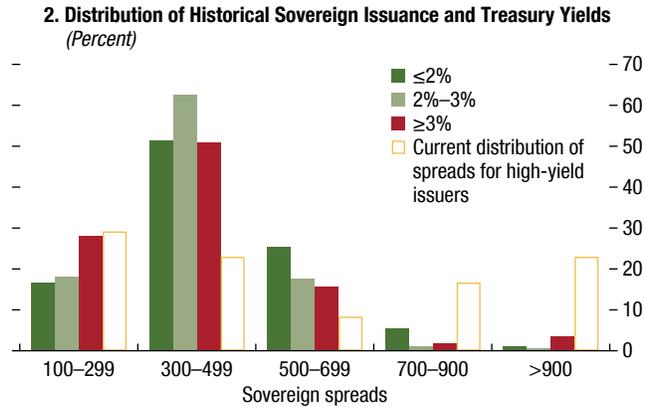
Market access for weaker sovereign issuers may remain restrictive under current market conditions if rising longer-term Treasury yields remain higher for

**Figure 1.22. High-Yield and Frontier Sovereign Financing Vulnerabilities**

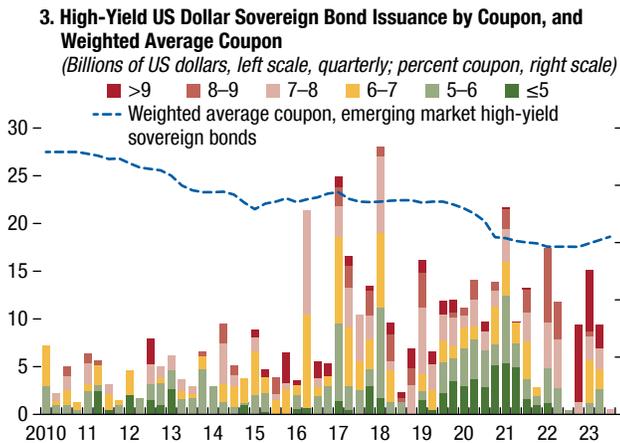
A long downgrade cycle has eroded the credit quality of many emerging and frontier sovereigns.



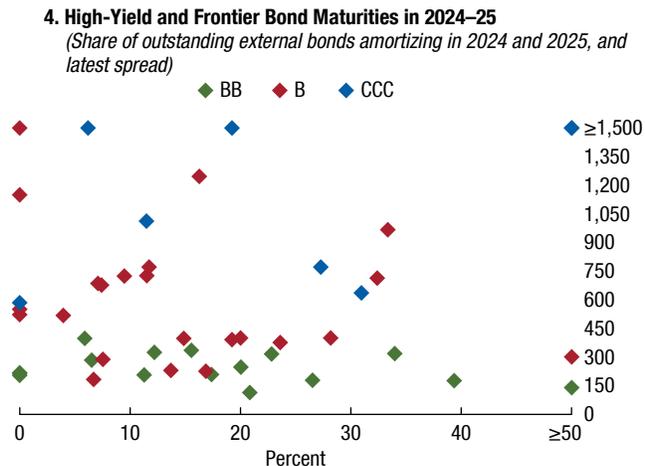
Financing could be challenging for many issuers if global interest rates remain higher for longer.



Investor demand for higher coupons is gradually resetting the stock of sovereign bonds at higher rates.



Some sovereigns will need to refinance a substantial share of their outstanding Eurobond stock in the next two years.



Sources: Bloomberg Finance L.P.; Bond Radar; Fitch Ratings; JPMorgan; Moody’s; S&P Global; and IMF staff calculations.  
 Note: High yield refers to sub-investment-grade sovereign issuers. Frontier markets include 45 countries, derived from JPMorgan Next Generation Index and additional low-income countries with outstanding Eurobonds. Rating is the median of the big three rating agencies, or lower of two when one is not available. In panel 1, solid diamonds reflect the current rating, color coded by the latest sovereign spread. Empty diamonds reflect the rating and spread in December 2019. Overlapping diamonds indicate the rating has not changed. Data labels in panel 1 use International Organization for Standardization (ISO) country codes. Panel 3 includes bonds issued internationally in US dollars and the weighted coupon on the JPMorgan Emerging Markets Bond Global Diversified Index.

longer. The high volumes of sovereign issuance since 2010 occurred during periods of low risk-free rates, making the current environment less predictable for frontier markets. Close to 90 percent of high-yield sovereign issuance has taken place with 10-year Treasury yields below 3 percent, and 30 percent with yields below 2 percent. Moreover, when the 10-year Treasury yield has been below 2 percent, investor demand has tended to be strong across the sovereign credit spectrum, including a few risky issuances with spreads near

or above 700 basis points.<sup>20</sup> By contrast, in periods with Treasuries above 3 percent, for example, close to 90 percent of sovereigns that issued international debt were trading with spreads below 525 basis points at the time. The current backdrop remains difficult, as more than 40 percent of high-yield sovereigns not in default are trading with secondary market spreads above

<sup>20</sup>Spreads are measured as secondary market spreads on the bond issuance date where available.

that level, and 35 percent are above 700 basis points (Figure 1.22, panel 2).

The stock of external hard currency bonds among high-yield sovereigns has slowly begun resetting at higher rates. When interest rates were low, the weighted average coupon on high-yield emerging market sovereign bonds fell,<sup>21</sup> from just under 8 percent in 2010 to just under 6 percent by early 2021. However, upcoming sovereign refinancings and any additional net issuance would likely occur at much higher interest rates, which may contribute to debt-servicing strains in the future. While some sovereigns have lengthened their maturity profiles in recent years, refinancing needs are set to increase, and 14 countries will see at least 30 percent of their outstanding bond stock amortize through the end of 2025, including several rated B, CCC, or lower (Figure 1.22, panels 3 and 4).

Notable progress has been made on sovereign debt restructuring in four of eight countries that were in default as of April 2023. Even as markets have welcomed the restructuring, improving debt transparency and expediting the process will continue to be crucial. In Ghana, the official creditor committee provided financing assurances in May 2023 and committed to restructure the country's bilateral debt, while government authorities made further progress on restructuring its domestic debt. Sri Lanka, which defaulted in April 2022, has continued to restructure its debt with domestic and foreign creditors and launched its domestic debt restructuring operation in July 2023. Outside the Common Framework, Suriname, which defaulted on its Eurobonds in March 2021, finalized its debt restructuring agreement with its bondholders after restructuring its debt with its Paris Club creditors last year. Under the Group of Twenty (G20) Common Framework, Zambia reached an agreement on debt restructuring with its official creditors in June 2023, and discussions are ongoing to reach an agreement on comparable terms with private sector creditors.

### Local Investors Are Stabilizing Emerging Market Bonds

The footprint of domestic institutional investors has increased in local currency government bonds over the past decade, whereas nonresident investors

have reduced their share of holdings. Earlier this year, the confluence of the expectations for a soft landing for the global economy and high real rates relative to the past has led major emerging markets to rally in both foreign exchange and local currency government bond markets (Figure 1.23, panel 1), which could draw nonresident investors back into local currency government bonds at a time when emerging markets' government-debt-to-GDP ratios are rising (Figure 1.23, panel 2). Nonetheless, the recent rise in advanced economy yields and threats to the disinflation narrative pose headwinds to nonresident flows.

The decline in nonresident participation over the past decade can be attributed to multiple negative shocks—the taper tantrum of 2013, the shock to commodity prices in 2015 and 2016, China's large devaluations during those two years, heightened geopolitical and trade tensions, and more recent concerns over fiscal sustainability—that have weighed on investors' risk appetite for local currency emerging market economy assets. In its place, a more stable domestic investor base has emerged over time. Domestic institutional investors, specifically pension funds and contractual savings and insurance firms, have bought a large portion of emerging market local currency government bonds (Figure 1.23, panel 3). The rise of domestic institutional investors has allowed governments to continue fiscal expansion by relying more on funding in domestic currencies.

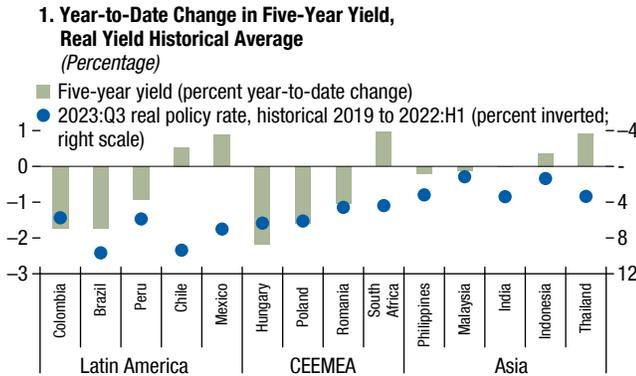
Increasing reliance on domestic markets has also somewhat insulated domestic financing conditions from external developments. The increase in 10-year US Treasury yields during the present tightening cycle is brisk compared with previous cycles. Large and sudden rises in Treasury yields typically coincide with turbulence in emerging foreign exchange and local currency government bond markets, as rising US interest rates reduce the relative attractiveness of local currency government bonds. Even so, benchmark medium-term yields of major local currency government bonds have been less reactive to movements of US Treasury yields than in previous tightening episodes (Figure 1.23, panel 4). The decline in nonresident participation is also likely to have mitigated spillovers from advanced economies to emerging markets (Figure 1.23, panel 5).

The reduced sensitivity of foreign exchange and local currency government bond markets to the rise in Treasury yields could also be partly attributed to benign financial conditions in advanced economies, tempering the reactions of benchmark-driven investors to flee emerging

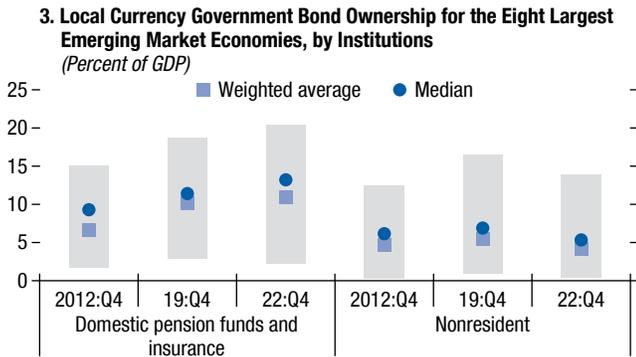
<sup>21</sup>The weighted average coupon on high-yield emerging market sovereign bonds is calculated on the JPMorgan Emerging Markets Bond Global Diversified Index.

**Figure 1.23. Stability in Emerging Markets' Local Currency Government Bond Markets**

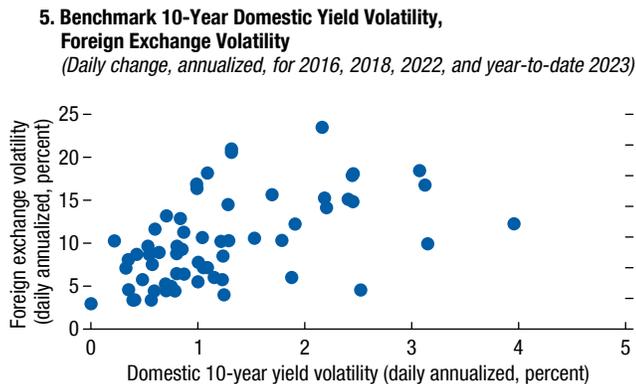
Emerging markets' local currency bond markets have been resilient despite sell-offs in advanced economy bonds ...



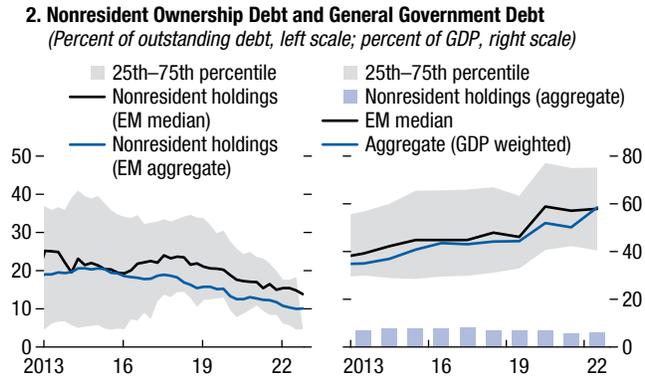
For large emerging markets, long-term domestic investment institutions have stepped in.



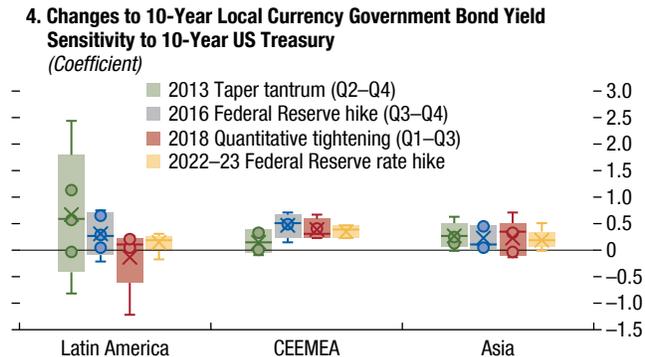
... which could have limited spillover to emerging market foreign exchange, whose volatility typically rises when domestic bond volatility heightens during periods of tightening advanced economy monetary policies.



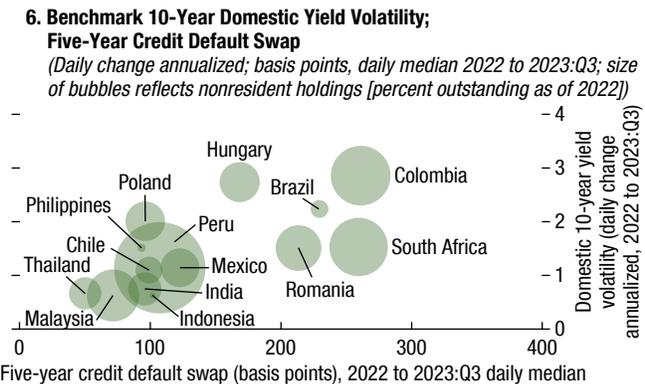
... halting the declining trend in nonresident participation seen over the past decade.



Long-term local yield sensitivity to US Treasury yield compressed to low levels for major emerging markets during this tightening cycle compared with previous tightening episodes ...



Nonetheless, emerging market structural idiosyncrasies continue to be pivotal for domestic long-term rate stability.

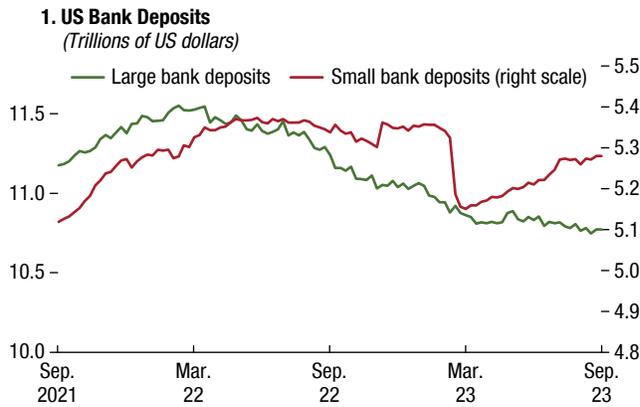


Sources: Bloomberg Finance L.P.; and IMF staff calculations. Nonresident investor base estimates by Arslanalp and Tsuda (2014), updated to the fourth quarter of 2022. Resident holders' breakdown was from respective national authorities as of the end of 2022.

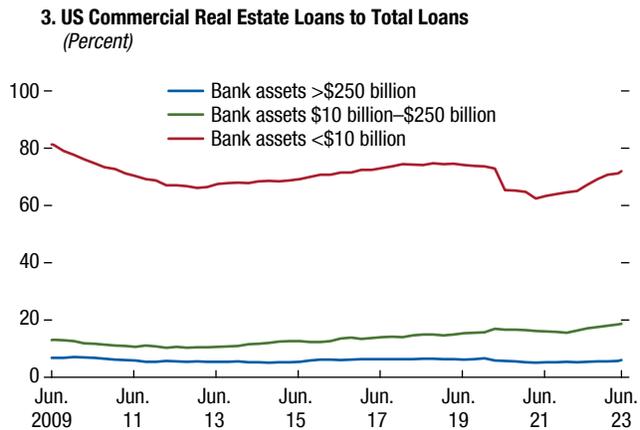
Note: Panel 1 reflects year-to-date five-year yield movements as of September 29, 2023, current real rate as reflected by latest policy rate – latest inflation, while historical real rates are from the second half of 2019 to the first half of 2022, with realized inflation one year ahead. Emerging markets in panel 2 are the 20 major countries excluding China and Russia. Panel 3 includes the top eight emerging markets by market capitalization (Brazil, India, Mexico, Indonesia, Malaysia, South Africa, Thailand, and Poland), representing 81 percent of outstanding major local currency government bonds at the end of 2022. Panel 4 reflects sensitivity of weekly changes in domestic 10-year yields during periods of 10-year US Treasury repricing. CEEMEA = Central and Eastern Europe, the Middle East, and Africa; EM = emerging market; Q = quarter.

**Figure 1.24. Banking Sector Challenges**

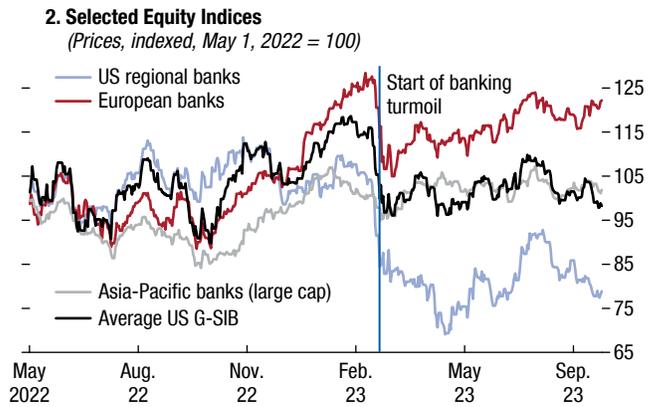
US bank depositors are returning to small banks.



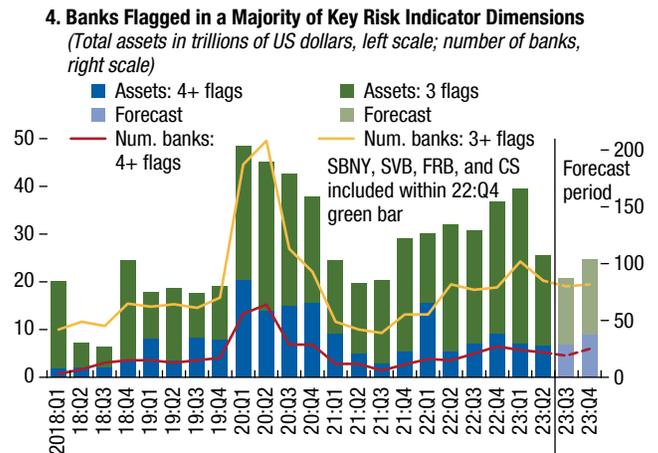
... and there is high concentration of CRE lending in small US banks.



However, US regional banks' equity prices have recovered but remain well below levels before the March 2023 turmoil ...



Globally, the tail of vulnerable banks remains elevated.



Sources: Bloomberg Finance L.P.; Federal Reserve; Visible Alpha; and IMF staff calculations.  
 Note: cap = capitalization; CRE = commercial real estate; CS = Credit Suisse; FRB = First Republic Bank; G-SIB = global systemically important bank; Num. = number of; Q = quarter; SBNY = Signature Bank of New York; SVB = Silicon Valley Bank.

market assets. Emerging market sovereigns with weaker positions generally see more bond yield volatility, suggesting that efforts to improve market depth should be complemented by efforts to improve domestic strength and mitigate external vulnerabilities (Figure 1.23, panel 6).

**Financial Institutions**

**Rising Funding Costs and a Negative Credit Outlook Test Bank Resilience**

After the March turmoil, funding liquidity pressures have receded in the global banking sector and calm has been restored. Recent increases in long-term interest rates may benefit banks. However, the cost of funding is expected to continue to rise, and loan losses

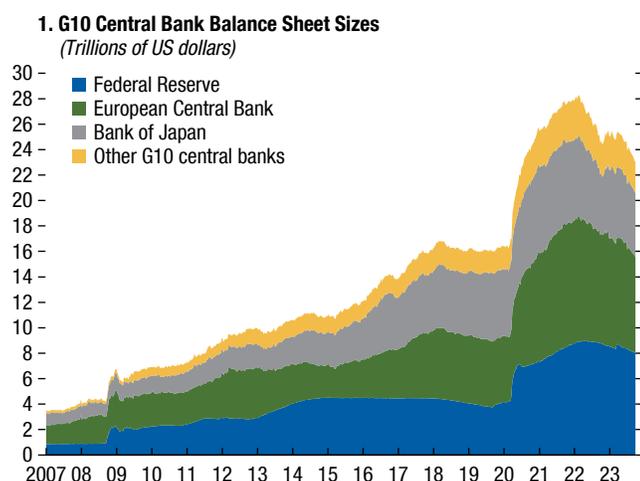
are likely to accelerate, especially if the hoped-for soft landing fails to materialize, challenging banks' profitability amid economic uncertainty.

The banking sector has been resilient since the pandemic, confronting challenging conditions of economic uncertainty, elevated inflation, rising interest rates, and, most recently, a crisis of confidence. In the first quarter of 2023, the failure of three regional banks in the United States and a global systemically important bank in Switzerland in March appear to have had a limited effect on most banks' balance sheets. Actions to provide liquidity support helped limit broader contagion in the banking systems.

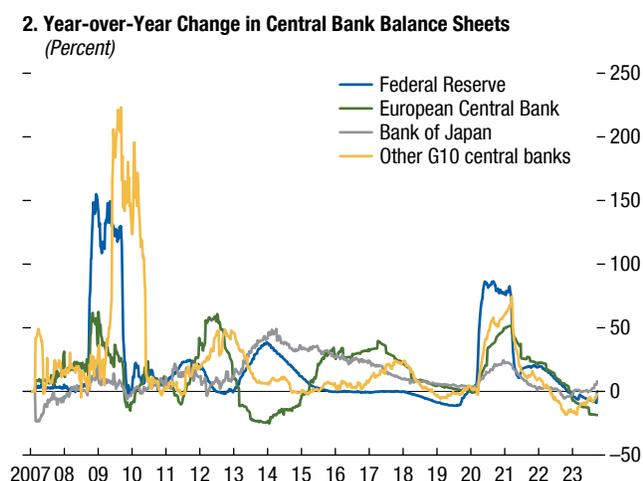
In the United States, after sizable outflows, deposits at smaller banks have started to rebound (Figure 1.24,

**Figure 1.25. As Advanced Economies' Central Banks Tighten Their Balance Sheets, Bank Reserves Are Shrinking**

The balance sheets of G10 central banks are declining slowly ...



... while the pace and approach for reducing balance sheets differs across central banks.



Sources: Bloomberg Finance L.P.; and Haver Analytics.  
Note: G10 = Group of 10.

panel 1). Stock prices of banks—including regional banks—have recovered but remain well below levels before the sell-off in the second quarter, a time when bank earnings were solid (Figure 1.24, panel 2). Overall, banks are well capitalized and have ample liquidity (see Chapter 2). However, take-up at the Federal Reserve’s Bank Term Funding Program is still high, and reliance on brokered deposits, a more expensive source of funding, is increasing, signaling that some institutions still need liquidity. Fragilities remain higher than usual for regional banks that experienced large outflows and have a large share of uninsured deposits, increased borrowing at Federal Home Loan Banks, sizable unrealized losses to capital, and high concentrations of CRE lending (Figure 1.24, panel 3). These banks have embarked on strategies to repair balances by reducing risk and appear to have curtailed lending.

Globally, banks continue to be profitable, earning higher net interest income from rising medium- and long-term interest rates and slower-than-expected repricing of deposit betas. However, funding costs are rising across regions, especially in North America, putting pressure on net interest margins. In addition, nonperforming loans and provision expenses are increasing as credit quality begins to deteriorate. So far, these indicators are still faring better than prepandemic levels, but they will likely challenge bank profitability. Regional differences are meaningful. In the United States, competition for deposits with other banks and money market

funds is contributing to net interest margin compression, with more compression for banks not of global systemic importance. In most countries in Asia, net interest margin compression has been smaller, reflecting in part that policy rate changes have been smaller.

Although banks have been able to manage the turmoil in March relatively well, conditions have nonetheless tightened. The effect on bank balance sheets could be negative if a soft landing fails to materialize amid high inflation that requires central banks to hike policy rates. Building on international standards, banks need to comprehensively monitor risks, as recent events show that a group of weak banks, even if not individually systemic, can pose financial stability risks. To identify and assess risks to the global banking sector, the IMF staff developed a key risk indicator framework to identify vulnerable banks (Chapter 2). The results pointed to a weak tail of banks that will be adversely affected by rising funding costs, market expectations of falling demand for loans, and asset quality deterioration amid economic uncertainty (Figure 1.24, panel 4; Chapter 2).

### Banks and Markets May Be Affected by Central Bank Balance Sheets

While continuing to raise interest rates, central banks in advanced economies have made further progress in normalizing balance sheets (Figure 1.25, panel 1). The Bank of Canada, the European Central Bank, the Reserve Bank

of Australia, and the Federal Reserve have opted for a passive quantitative tightening, by not reinvesting either a portion or the full amount of maturing assets, whereas the Bank of England, the Reserve Bank of New Zealand, and the Riksbank have chosen to sell their security holdings, either back to the market or in the case of New Zealand to the Debt Management Office (Figure 1.25, panel 2).<sup>22</sup> Notably, in the cases of the Reserve Bank of New Zealand and Riksbank, quantitative tightening has persisted for extended periods—over 18 months in New Zealand—without detectable market illiquidity or disruptions to funding. For other central banks, whether quantitative tightening will proceed smoothly depends on its effect on liquidity in the financial system.

Looking at changes in the Federal Reserve's balance sheet size and composition can help shed light on how quantitative tightening affects markets and banks. On the asset side, the Federal Reserve's footprint in the US Treasury market and in the mortgage-backed securities and agency securities markets has shrunk. Instead, since March 2023, the asset side of the balance has risen because of the provision of liquidity during the banking turmoil, including the discount window lending, the Bank Term Funding Program, and other credit extensions to depository institutions subsequently placed into receivership with the Federal Deposit Insurance Corporation (Figure 1.26, panel 1). On the liability side, since the start of quantitative tightening, reserves from the banking system have dropped to about 3.2 trillion dollars. Net issuance of approximately \$477 billion in bill supply, following the resolution of the debt ceiling impasse, was absorbed without a significant effect on bank reserves or money market rates. The recent significant decline in use of the reverse repo facility suggests that money market funds have purchased a substantial share of the new bill supply (Figure 1.26, panel 2).

Meanwhile, the US Treasury Department has outlined plans to increase debt issuance to fund its obligations, just as the Federal Reserve scaled down its footprint in the Treasury market (Figure 1.26, panel 3). During quantitative easing, purchases of Treasury securities by the central bank have reduced the share of securities in private hands, leading to a compression in term premiums, thus putting downward pressure on Treasury yields. By contrast, quantitative tightening increases the net supply—or “free floating”—of Treasury securities, potentially leading to a decompression of term premiums

and yields (Figure 1.26, panel 4). In August 2023, Treasury term premiums started to decompress, resulting in the 10-year Treasury yields having reached their highest levels since 2007. Until then, the upward pressure on term premiums as a result of both quantitative tightening and increased supply of Treasury securities has been muted. In September, term premiums moved back into positive territory, but, so far, the increase remains modest compared with similar episodes in the past. For example, if progress on inflation is slower than expected or the US fiscal outlook deteriorates further, foreign investors may continue to repatriate funds to their domestic bond markets once the hiking cycle ends in the United States.

In the euro area, banks appear to have navigated smoothly the repayments of targeted longer-term refinancing operations (TLTROs) in June—a combination of scheduled TLTRO loan redemptions and voluntary repayments.<sup>23</sup> The sharp decline of the excess liquidity resulting from the repayment (€506 billion) had a limited effect on money markets. With liquidity still ample in the financial system, money market rates remain anchored to the deposit facility rate at 4 percent, limiting the increase of funding cost for some institutions. The repayment of the TLTROs has narrowed asset swap spreads (top part of Figure 1.27, panel 1) by freeing some securities, which somewhat alleviated collateral scarcity concerns (bottom part of Figure 1.27, panel 1).<sup>24</sup>

As part of its balance sheet normalization, the European Central Bank in July ended reinvestments under its Asset Purchase Programme. This decision, combined with the TLTRO repayments, shrank the central bank's balance sheet by €91 billion to €7.2 trillion (about 57 percent of euro area GDP). The central bank confirmed its intention to continue flexibly reinvesting the maturing principal payments in the

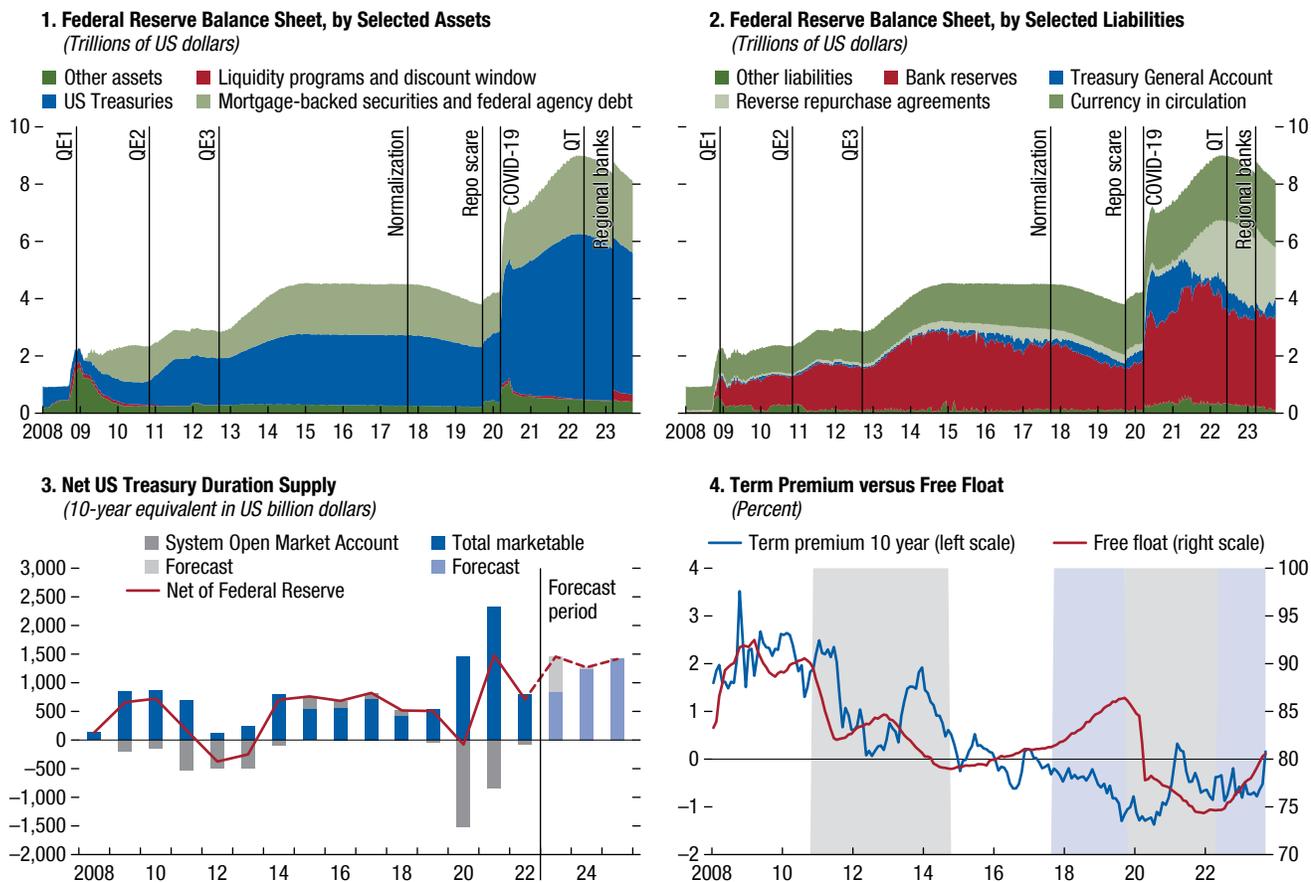
<sup>23</sup>At the end of June, European banks repaid €477 billion of TLTRO loans. In addition, banks on June 28 also voluntarily repaid another €29 billion of outstanding TLTRO loans. See, respectively, “June 2023 Press Conference,” European Central Bank, transcript, June 15, 2023, and “Summary of Ad Hoc Communication,” press release, June 16, 2023.

<sup>24</sup>However, collateral scarcity, notably in Germany, remains a key concern for the European bond market. According to market participants, the Bundesbank's announcement on August 4 to reduce the remuneration of government deposits to 0 percent from October 1 may lead to a higher demand for short-term debt, and in turn, exacerbate the shortage of high-quality securities in the euro zone. The European Central Bank late in 2022 lifted the remuneration ceiling for government deposits to address the collateral scarcity, pricing them to market rates in a bid to provide an attractive alternative to other investments that would require high-quality collateral, such as repos. See “Bundesbank Adjusts Remuneration of Domestic Government Deposits,” Bundesbank, press release, August 4, 2023.

<sup>22</sup>Moreover, the approach to quantitative tightening is also influenced by the maturity profile of central bank assets.

**Figure 1.26. The Federal Reserve’s Quantitative Tightening amid Expanding Fiscal Supply to Put Pressure on Term Premiums**

Although the asset holdings of the Federal Reserve have risen because of liquidity support since the March 2023 banking turmoil, ongoing quantitative tightening has resulted in a reassessment of term premiums, also reflecting increased supply of US Treasury securities.



Sources: Bloomberg Finance L.P.; Federal Reserve Bank of New York; Federal Reserve Bank of St. Louis; Haver Analytics; US Department of the Treasury; and IMF staff calculations.

Note: Panel 4 shows term premiums based on the Adrian, Crump, and Moench (2013) model. Free float is defined as the percentage share of outstanding coupon paying Treasury debt securities and Treasury bills held by price-sensitive investors (that is, adjusted by corresponding security holdings acquired and held by the Federal Reserve). Regions shaded in gray correspond to a quantitative easing episode; regions shaded in light blue correspond to quantitative tightening episodes. QE = quantitative easing; QT = quantitative tightening.

Pandemic Emergency Purchase Programme (PEPP) until at least the end of 2024 (Figure 1.27, panel 2). Thus, the European Central Bank implicitly upheld that the flexibility of the PEPP remains the first line of defense to ensure a proper functioning of monetary policy transmission (European Central Bank 2022, Box 1). This decision—along with the existence of the Transmission Protection Instrument, considered a last-resort intervention tool<sup>25</sup>—appears to have

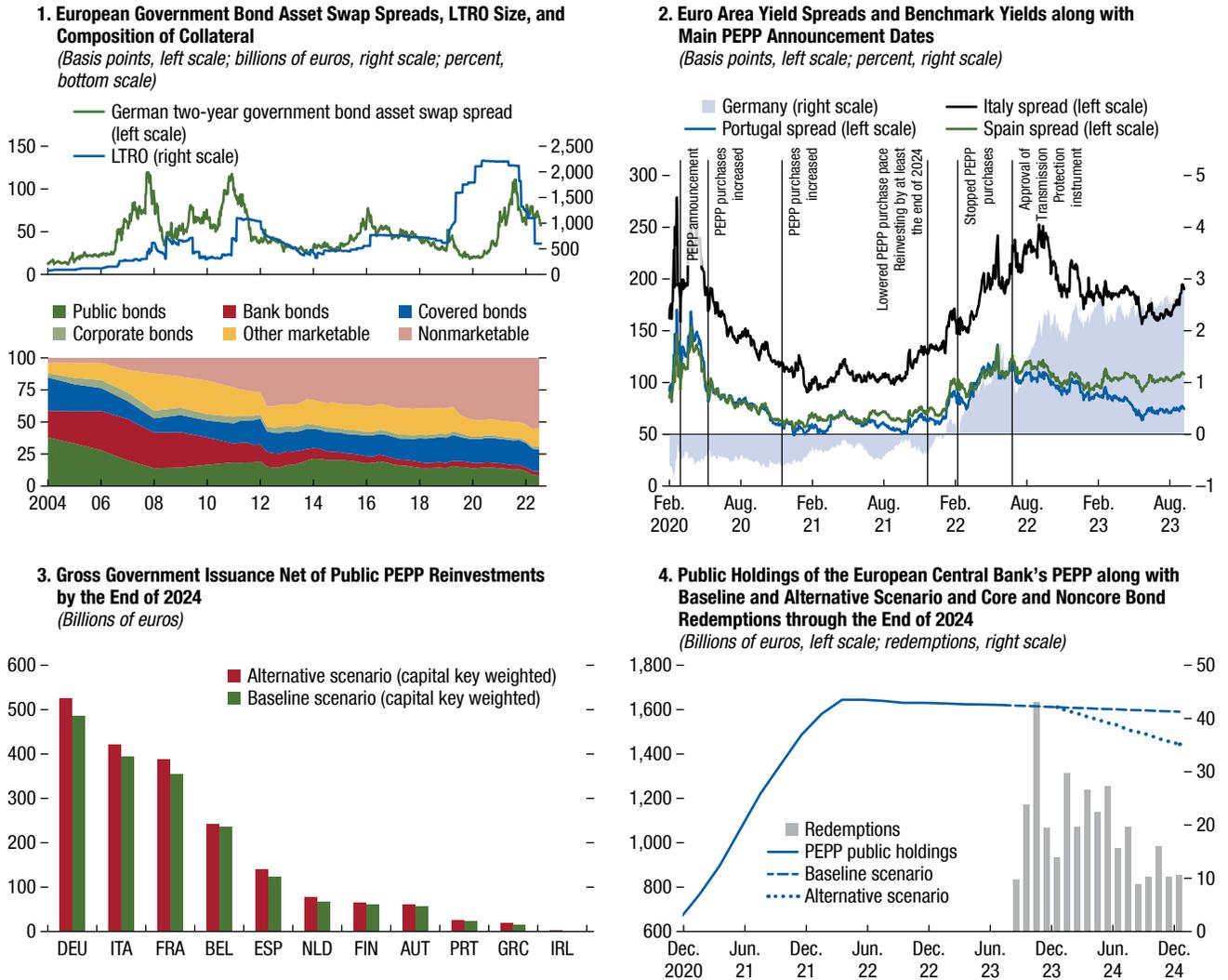
alleviated the fragmentation concerns once related to the central bank’s ongoing monetary tightening, with southern European bond spreads remaining shallow (Figure 1.27, panel 2). Many market participants expected the European Central Bank to discontinue PEPP reinvestments earlier,<sup>26</sup> given the stickiness of inflation and the tightening of other policy tools. Analysts still anticipate the central bank will review its forward guidance and announce adjustments by early

<sup>25</sup>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. See “The Transmission Protection Instrument,” European Central Bank, press release, July 21, 2023.

<sup>26</sup>Before the European Central Bank June meeting, a Bloomberg Finance L.P. survey showed that 83 percent of participants expected the bank to bring forward the end of PEPP reinvestments before the end of 2024. See “Economists See Goldilocks Scenario for ECB Rates,” Bloomberg Finance L.P., survey, June 9, 2023.

**Figure 1.27. Dynamics in Euro Area Government Bond Markets**

TLTRO repayments have freed up pledged securities, and the continuation of the PEPP reinvestments has kept fragmentation concerns contained so far.



Sources: Bloomberg Finance L.P.; European Central Bank; Haver Analytics; Refinitiv Datastream; and IMF staff calculations.  
 Note: In panel 1, the collateral composition is based on the European Central Bank's quarterly report on Eurosystem Collateral Data with latest available data until the second quarter of 2023. In panels 3 and 4, the baseline scenario captures consensus expectations on Eurosystem stock of bonds under the PEPP from the September 2023 Survey of Monetary Analysts (that is, continuation of current pace), whereas the alternative scenario assumes PEPP redemptions to be fully reinvested in 2023 and reduced by 50 percent in the first half of 2024 and by 100 percent in the second half of 2024. Data labels in panel 3 use International Organization for Standardization (ISO) country codes. LTR0 = long-term refinancing operation; PEPP = Pandemic Emergency Purchase Programme; TLTR0 = targeted longer-term refinancing operation.

next year. Under a baseline scenario, which maintains the current pace of PEPP reinvestments, the net issuance of government bonds would not have to be as large in all euro area countries (Figure 1.27, panel 3). Under the alternative scenario, the PEPP holdings could decline by €175.5 billion, which—together with the quantitative tightening from the Asset Purchase Programme—could bring the European Central Bank balance sheet to €6.5 trillion by the end of

2024, putting some jurisdictions under pressure at a time when fiscal deficits are expected to remain large (Figure 1.27, panel 4).

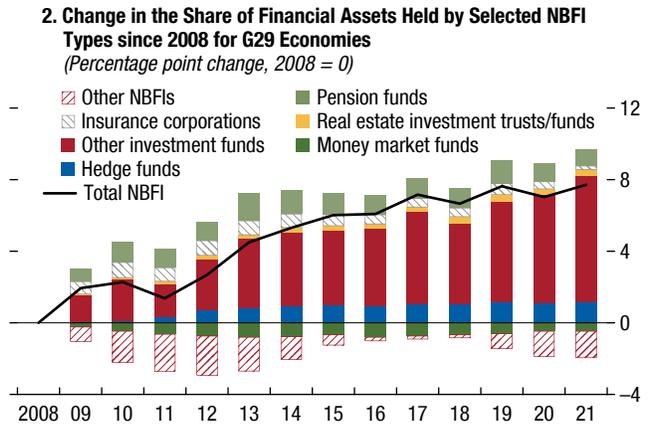
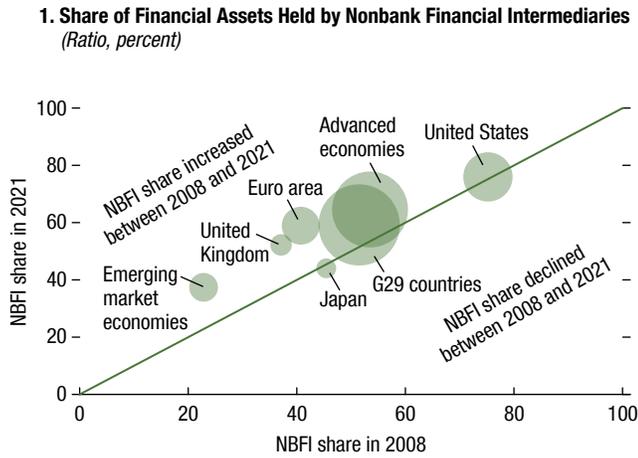
**Higher Rates Benefit Some NBFIs but Could Exacerbate Structural Vulnerabilities**

Higher interest rates and a deterioration of credit quality could exacerbate existing vulnerabilities in the

**Figure 1.28. Nonbank Financial Intermediaries**

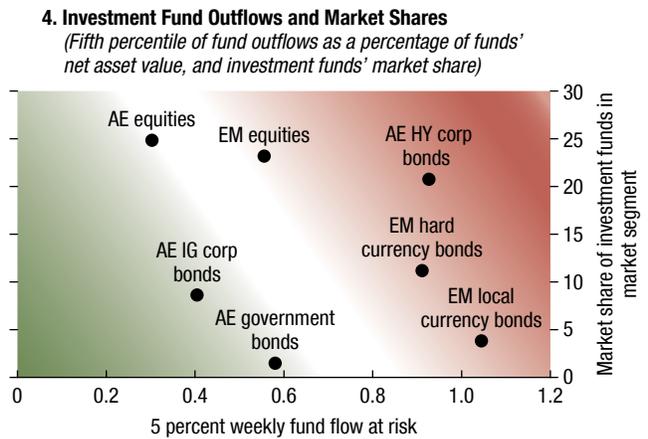
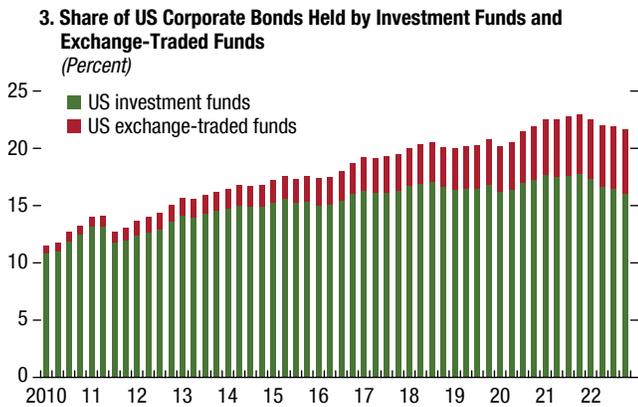
The share of financial assets held by nonbank financial intermediaries has grown between 2008 and 2021, especially for emerging markets, the euro area, and the United Kingdom ...

... with investment funds accounting for most of the growth.



Investment funds hold an increasingly large share of the US credit market, heightening vulnerabilities to redemptions ...

... and high-yield corporate bond markets are especially vulnerable to procyclical behavior of investment funds.



Sources: EPFR Fund Flows; Federal Reserve; Financial Stability Board; Haver Analytics; and IMF staff calculations.

Note: In panel 1, the bubble size reflects the nominal size of the nonbank financial intermediary sector in US dollars for the reference year 2021. In panel 2, the share of total financial assets held is a percentage of total financial assets net of central-bank-held assets. The category “other investment funds” includes all funds that do not fall under the categories of hedge funds, money market funds, and real estate funds. The data in panel 3 represent the share of US-domiciled investment funds and exchange-traded funds of the corporate and foreign bond sector as defined by the US Flow of Funds (L.213) and, as such, it also includes some dollar-denominated foreign bonds. Panel 4 reflects fund flows and market shares of investment funds (mutual funds and exchange-traded funds) categorized as bond or equity funds in EPFR data. The 5 percent weekly fund flow at risk reflects the fifth percentile of historically observed weekly fund flows, in absolute value. For example, a value of 1 percent implies that historically, in 5 percent of weekly flow data, the fund outflows were equal to or larger than 1 percent of the net asset value in the fund category. G29 refers to Argentina, Australia, Belgium, Brazil, Canada, the Cayman Islands, Chile, China, France, Germany, Hong Kong SAR, India, Indonesia, Ireland, Italy, Japan, Korea, Luxembourg, Mexico, The Netherlands, Russian Federation, Saudi Arabia, Singapore, South Africa, Spain, Switzerland, Türkiye, the United Kingdom, and the United States. AE = advanced economy; corp = corporate; EM = emerging market; HY = high-yield; IG = investment grade; NBFI = nonbank financial intermediary.

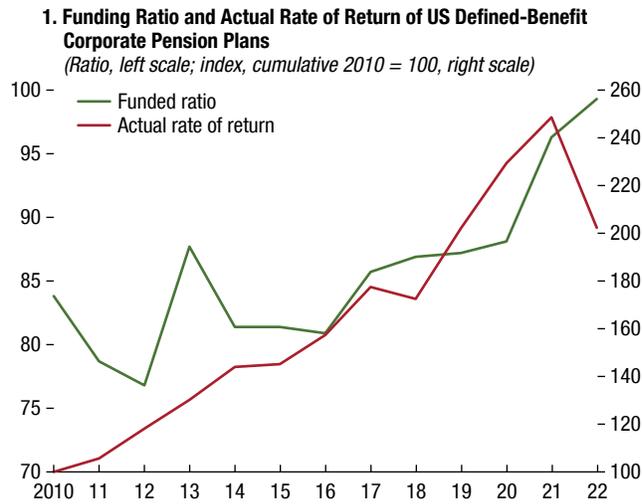
NBFI sector. Investment funds have increased their exposure to credit markets, raising concerns about market disruptions wherein large outflows would require fire sales of assets. In addition, elevated holdings of riskier lower-rated bonds and illiquid private credit assets could result in losses at pension funds and

insurers, potentially leading to market stress in the event of sizable policy surrenders or margin calls.

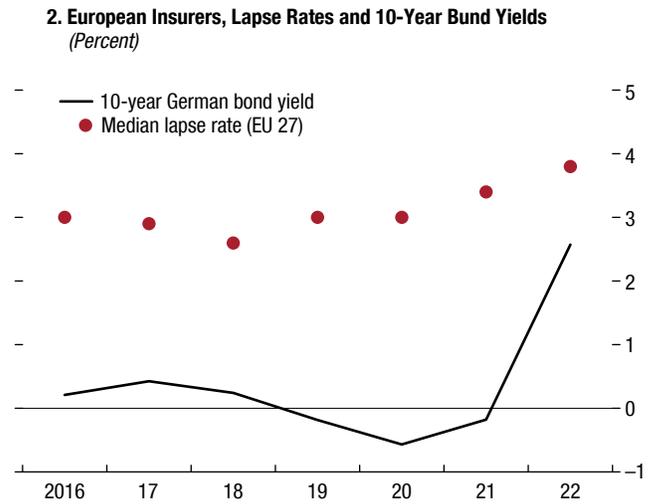
NBFIs have become increasingly important in the global financial system over the past decade (Figure 1.28, panel 1). Although NBFIs are less prominent in emerging market economies, their share of

**Figure 1.29. Institutional Investors and Higher Bond Yields**

The funding ratios of pension funds have improved with higher interest rates ...



... while the lapse rates of insurers have increased modestly so far; high interest rates might accelerate the trend.



Sources: Bloomberg Finance L.P.; European Insurance and Occupational Pensions Authority; Federal Reserve; Millman; S&P Capital IQ Pro; and IMF staff calculations. Note: Panel 1 is based on the financial disclosures of the 100 US corporations sponsoring the largest defined-benefit pension plans. The funded ratio measures the ratio of the estimated value of aggregated assets and liabilities. The data in the red dots of panel 2 are for the median lapse rate of insurers in the 27 members of the European Union (EU), with the latest data available as of the fourth quarter of 2022, as reported in the July 2023 Risk Dashboard of the European Insurance and Occupational Pensions Authority.

financial assets has nearly doubled since 2008. Investment funds have been the main driver of the expansion, although considerable variations exist between countries and regions (Figure 1.28, panel 2).

This remarkable growth has heightened vulnerability to redemptions from investment funds that offer investors daily liquidity. Investment funds, together with ETFs, represent a growing share of the US credit markets, with ETFs having expanded most (Figure 1.28, panel 3).<sup>27</sup> Investment funds can destabilize financial markets if rapid outflows force fund managers to liquidate assets in already distressed markets (see Chapter 2 of the April 2023 *Global Financial Stability Report*). High-yield corporate bond markets seem particularly vulnerable: high-yield bond funds and ETFs hold a large share of the market, the bonds are illiquid, and high-yield funds have historically more frequently shown relatively large outflows (Figure 1.28, panel 4).

Defined-benefit pension funds and life insurance corporations have benefited from the higher interest

rate environment. Higher interest rates have, for example, reduced the present value of defined-benefit pension liabilities in the United States, and so have significantly improved funding ratios even as their bond portfolios have suffered substantial mark-to-market losses (Figure 1.29, panel 1). Given that more than half of life insurers' investments are held in bonds, these funds are also mitigating the prolonged erosion of their investment returns by directing new premiums and reinvesting proceeds from matured portfolios into higher-yielding securities.

However, pension funds and insurance firms are vulnerable to a deterioration of the credit outlook and an increase in credit downgrades and corporate bond defaults. Since the global financial crisis, insurers have increased their exposure to lower-rated securities, rendering them more vulnerable to rating downgrades (see Chapter 1 of the April 2019 *Global Financial Stability Report*). Furthermore, over the past decade, insurers have also doubled their exposure to illiquid investments, including structured-credit securities (see Chapter 1 of the April 2023 *Global Financial Stability Report*). Life insurers owned by private equity firms, a fast-growing subsector, have particularly large exposure to illiquid credit investments. Their growing reliance on

<sup>27</sup>The rapid expansion of credit market ETFs warrants close monitoring because of their heightened potential for contagion risks. See Chapter 1 of the April 2018 *Global Financial Stability Report*.

reinsurers based in offshore jurisdictions raises additional concerns about transparency, regulatory arbitrage, and spillover effects (see Box 1.3).

Institutional investors using financial leverage could be subject to margin and collateral calls during periods of high market volatility, which, given a large footprint, may exacerbate stress in financial markets.<sup>28</sup> In addition, increased holdings in structured and private credit could pose challenges in liquidating portfolios, considering higher policy surrenders for insurers or forced sales triggered by higher interest rates and a deterioration of credit quality. Higher-for-longer rates may create an incentive for policyholders to lapse or surrender for financial products offering higher yields. While lapse rates rose only modestly in 2022, policyholders could surrender or lapse policies faster than expected as rates continue to rise (Figure 1.29, panel 2).<sup>29</sup> In response to higher yields and to mitigate lapse risk, some insurers are raising the discretionary crediting rates in their policies.<sup>30</sup> This may be less of a concern in jurisdictions with high surrender penalties.

### Privately Traded Assets May Not Have Fully Adjusted to Higher Interest Rates

NBFIs have significant exposure to opaque private markets, where the effect of higher interest rates may be neither fully priced nor apparent. The effect of higher rates on privately traded assets may become visible only after the effect on publicly traded assets has become visible: the price-discovery mechanism may take more time to adjust because of the heterogeneity of the assets, the limited number of transactions and participants, and a reliance on relatively irregular appraisals. As a result,

<sup>28</sup>Chapter 2 of the April 2023 *Global Financial Stability Report* showed that among a global sample of large pension plans that disclose data on derivative exposures, which account for more than \$5 trillion in assets, the average ratio of gross notional exposure of derivatives to assets has increased over the past decade. Some pension funds also actively use repurchase agreements, which can further increase financial leverage.

<sup>29</sup>Moody's Investors Service (2021) estimated that \$500 billion (almost one-third of US life insurance policies) could be surrendered with low penalty. Fitch Ratings (2023) estimated that, in Italy, policy lapses and surrenders increased materially in November and December 2022. This persisted in January 2023, when total payouts were €5.6 billion, about 50 percent more than in January 2022.

<sup>30</sup>For example, as interest rates rose in 2022, French life insurers raised their discretionary crediting rates to an average of 2 percent, well above the minimum guaranteed rate and significantly higher than the low level seen in 2021. See Standard & Poor's Global Ratings (2023).

valuations can deviate from market values in public markets for a prolonged period, and corrections can occur long after policy rates have peaked. At the same time, a delayed correction may imply that price adjustments may be sharper and faster, once they occur, as the crystallized evidence of losses may force other investors to mark down their investments.

CRE and private credit are prominent examples of private markets susceptible to substantial corrections because of the lagged effects of higher interest rates. Vulnerabilities in these markets pose risks to banks as well as to NBFIs, which may be exposed to private markets directly or indirectly, for example, through investment vehicles (see Box 1.3). The pricing of publicly traded shares in investment vehicles that operate in these markets has deviated significantly from valuations in the underlying market. For example, share prices of exchange-traded REITs corrected sharply downward during 2022 as central banks embarked on their tightening cycle, whereas prices in privately traded real estate markets have started to adjust (Figure 1.30). Price deviations between privately and publicly traded real estate may also be explained by differences in the credit quality of underlying assets and by the use of varying degrees of leverage by REITs. Nonetheless, the potential for private credit prices to catch up abruptly is a risk for institutional investors, especially with open-ended investment funds—if investors decide to redeem their fund shares, fund managers may have to sell private market assets in short order at prices lower than marked values to meet redemptions, thereby crystallizing losses and potentially opening a feedback loop to private credit prices.

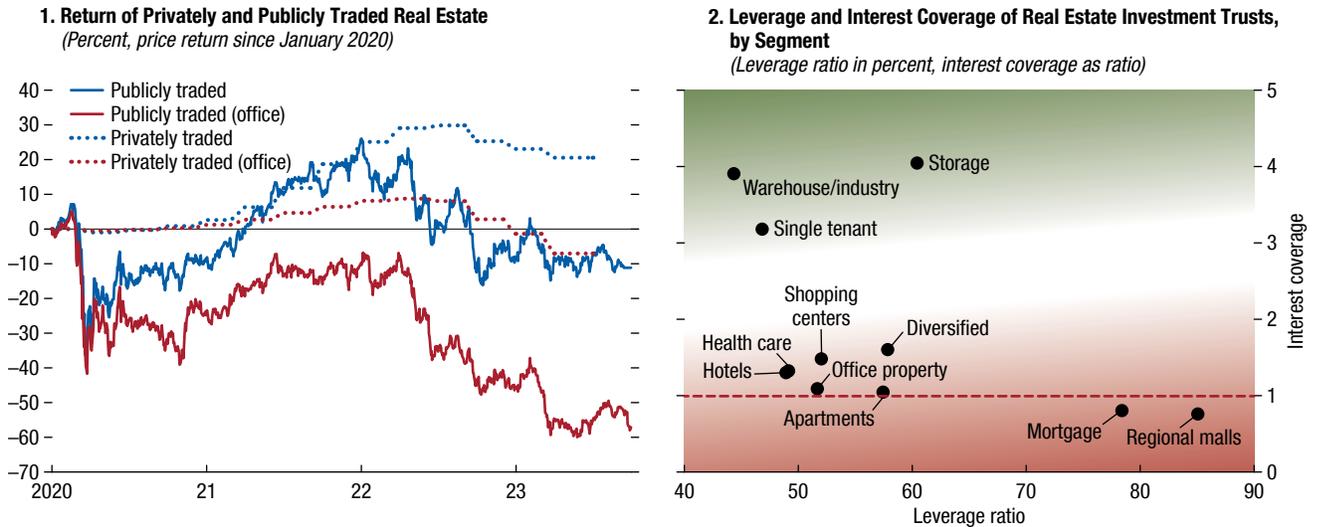
Higher interest rates have already affected business models that rely heavily on leverage, leading to a sharp decline in private equity activity. Global private equity deal flows peaked during the pandemic recovery, driven by favorable business opportunities amid low interest rates and ample liquidity. Private equity business models, particularly leveraged buyouts, typically rely on leverage to enhance the return for equity investors. With the rapid rise in interest rates, such leverage has become considerably more expensive, significantly reducing private equity volumes (Figure 1.31, panel 1).

The postpandemic wave of private equity deals has added significant floating rate debt to the corporate sector (see “The Credit Cycle Is Turning as Corporate Cash Buffers Deplete” section). Firms acquired through private equity deals often issue floating rate debt in the syndicated loan market, with private equity

**Figure 1.30. Pricing of Private Assets Is Lagged Compared with Publicly Traded Assets**

Privately traded real estate has lagged price adjustment compared with listed real estate investment trusts ...

... while nonbank financial intermediaries such as real estate investment trusts are important players in this market, where segments have varying degrees of vulnerability.



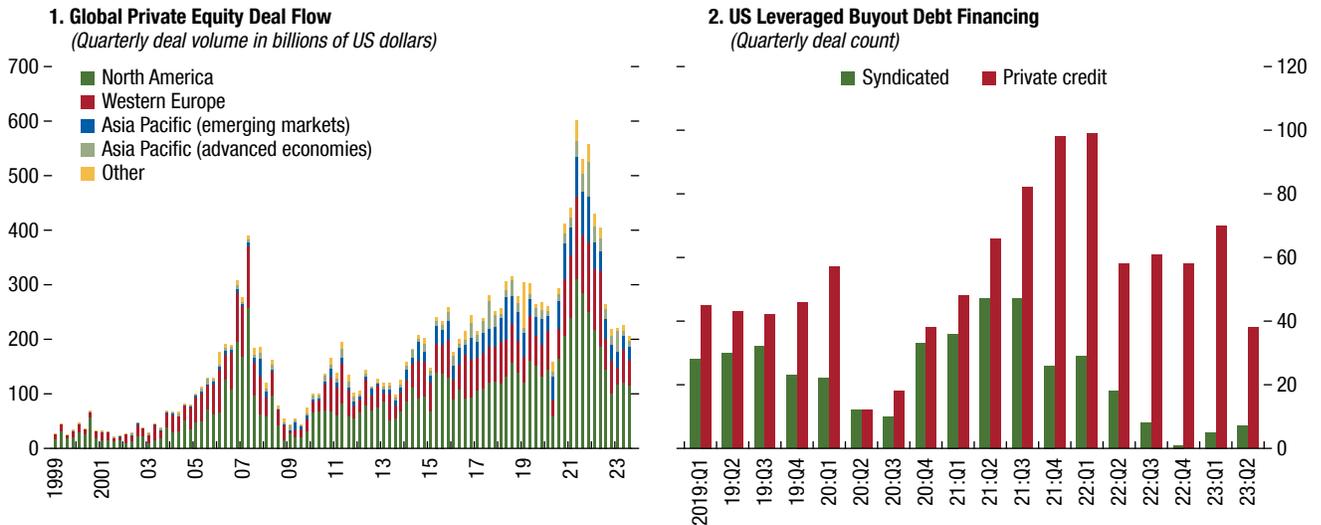
Sources: Bloomberg Finance L.P.; and IMF staff calculations.

Note: In panel 2, interest coverage is calculated by dividing a trust's earnings before interest and taxes by its interest expenses, and the leverage ratio is calculated as the total debt divided by total assets. The analysis is based on a sample of 219 US exchange-traded real estate investment trusts. Although some real estate investment trusts do not focus on specific real estate segments (for example, diversified real estate investment trusts), others do. Most real estate investment trusts own and operate properties to generate distributable income, but mortgage real estate investment trusts invest in real estate by providing debt financing. Real estate investment trusts rely on various sources of debt, including corporate bond debt and mortgages on the properties owned.

**Figure 1.31. Private Equity Deal Flow and Debt Financing**

Private equity deal flow dropped significantly from its peak in the postpandemic recovery when interest rates were significantly lower.

Leveraged buyouts turned to private credit as leverage became more expensive.



Sources: Bloomberg Finance L.P.; S&P Global Market Intelligence; and IMF staff calculations.  
Note: Q = quarter.

firms acting as sponsor. This debt is usually floating rate, meaning that interest expenses increase in tandem with benchmark interest rates. Higher-for-longer rates will weigh on interest coverage ratios and may challenge a firm's viability.

As interest rates rose over the past year and leverage (in the form of floating rate leveraged loans and high-yield bonds) became more expensive, private credit may have stepped up. After near-record issuance in 2020 and 2021, high-yield bond and leveraged loan issuance declined substantially in 2022 and, so far, in 2023. There is some evidence that private credit has become an alternative source of financing, competing with market-based instruments. For example, US leveraged buyout transactions appear to be increasingly financed with private credit (Figure 1.31, panel 2). Private credit funds hold substantial uncommitted capital, often referred to as “dry powder.” Market participants have highlighted how private credit funds are now helping finance deals, with private equity firms growing the private credit side of their business.

Private credit markets could come under significant pressure if inflation were elevated for longer than currently priced in markets, forcing central banks to keep a tight policy stance for longer than expected, and the hoped-for soft landing does not materialize. A deterioration in funding conditions and a worsening outlook could have a disproportionate effect on firms that are highly leveraged and have borrowed using debt instruments with floating rates. The opacity of private credit and delays in price adjustments makes it challenging to assess in a timely manner the potential financial stability implications of a surge in losses. However, some mitigating factors exist: most investment vehicles that operate in private credit markets are closed-end or cap withdrawals over specified time periods, minimizing immediate liquidity risk. Market participants have also indicated that private credit markets use limited financial leverage. However, some leverage may be provided by banks, raising the specter of possible spillover effects to the banking sector. In addition, the investor base predominantly consists of institutional investors with relatively long investment horizons and stable capital. Furthermore, private credit investors tend to benefit from better protection mechanisms compared with syndicated loan markets and the like, in which covenant-lite structures prevail. The close relationship between lender and borrower may also allow for tailor-made restructuring with fewer points of friction.

However, the effectiveness of these risk mitigants has not been thoroughly tested in a downturn, especially in light of the recent rapid growth of the private credit market. Vulnerabilities may stem from interconnections with other segments of the financial sector—for example, banks (through the provision of leverage) and entities that have particular exposure to private credit markets, such as insurers influenced by private equity firms (Box 1.3).

## Policy Recommendations

Financial market pricing and investor positioning suggest investors may still be too sanguine about the speed of disinflation and the likelihood of a soft landing. Reflecting the perception of a relatively benign macroeconomic outlook and boosted by market expectations of policy rate cuts in coming quarters, financial conditions in advanced economies have eased on net since April 2023. This may complicate the task of central banks to reassert price stability.

Global core inflation remains elevated and declining only slowly, suggesting that inflation (and the risk of a resurgence) has not yet been fully tamed. With policy paths increasingly differentiated across regions and countries, monetary policy stances need to reflect the country-specific speeds of economic recovery and disinflation. In economies with still elevated and persistent inflation, a restrictive stance is needed until there are clear signs that underlying inflation is cooling. History cautions against declaring victory too soon and prematurely easing monetary policy. Progress on inflation has been pronounced in some countries, justifying a gradual move to a more neutral policy stance while signaling continued commitment to price stability. Central banks must remain determined until there is tangible evidence that inflation is sustainably moving toward targets. Communication remains crucial to convey policymakers' resolve and avoid a deanchoring of inflation expectations (see Chapter 2 of the October 2023 *World Economic Outlook*).

If financial stability is threatened, maintaining confidence is paramount—policymakers should act swiftly and provide liquidity support to prevent systemic events that may undercut the resilience of the global financial system. Should policymakers need to adjust the stance of monetary policy to prevent financial stress that may morph into a systemic crisis, they should clearly communicate their continued determination to

bring inflation back to target as soon as possible once financial stresses diminish.

The reduction of central banks' balance sheets has so far been orderly. But central banks should carefully monitor any possible market functioning issues and adjust how they implement quantitative tightening if and when needed. In the euro area, authorities should be attuned to possible fragmentation risks. Policymakers should clearly communicate the objectives and steps for removing liquidity, especially if adjustments are needed in response to the macroeconomic outlook or financial market developments.

Monetary policy can get support from continued fiscal restraint in achieving the mandated inflation objective. Given debt and deficits remain higher than before the pandemic, credible fiscal adjustment can help rebuild buffers and contain the rise in debt. The pace and composition of adjustment should depend on the strength of private demand, the inflation outlook of individual countries, and the available fiscal space. Within budget constraints, governments should reprioritize spending to protect the most vulnerable and accelerate the green transition (see the October 2023 *Fiscal Monitor*).

Progress on inflation in a number of emerging markets has been notable, but central banks should be cautious not to ease policy rates too aggressively. Countries should integrate their policies, including, where applicable, within the Integrated Policy Framework, the IMF's macrofinancial framework for countries to manage risks stemming from volatile capital flows amid uncertainty in global monetary policy and the foreign exchange environment. Optimal policy combinations depend on the nature of the shock and country-specific characteristics. Any response measures should be part of a plan that resolves underlying macroeconomic imbalances and allows for needed adjustments. 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 as part of a broader policy package to lessen outflow pressures, but they should not be substitute for warranted macroeconomics adjustments.

Countries with highly vulnerable financial sectors, limited or no fiscal space, and significant external

financing needs are already under pressure and could face further severe challenges in the event of a disorderly tightening of global financial conditions. Countries with credible medium-term fiscal plans, clearer policy frameworks, and stronger financing arrangements will be better positioned to manage such tightening. The need to rebuild fiscal space and buffers remains.

In China, robust policies to restore confidence in the real estate sector will be critical to limit the risk of negative spillovers to the financial sector, corporations, and local governments. Priority should be given to facilitating the completion of housing projects, which could stem the slump in homebuyer sentiment, and the timely resolution and restructuring of troubled property developers. Given weakening growth momentum and disinflation pressures, further monetary policy easing and fiscal support reoriented toward households are needed to support economic growth. Regarding financial sector risks, a comprehensive strategy to address the LGFV debt issue is needed to restore LGFVs' debt-servicing capacity and achieve sustainable local government debt, which could in turn prevent adverse spillovers to the broader economy. While authorities have mitigated systemic risks emanating from the asset management sector, further progress is needed to address risky exposures to real estate and LGFVs, as well as liquidity mismatches between their assets and liabilities. For the banking sector, maintaining adequate loss-absorbing buffers, phasing out forbearance policies that could delay loan-loss recognition, and expediting efforts to restructure weak banks are critical for mitigating financial stability risks. Contingency planning should be developed to manage potential contagion, which may require systemwide liquidity provision to contain systemic risk.

Sovereign borrowers in emerging market economies, frontier markets, and low-income countries should strengthen efforts to contain risks associated with their high debt vulnerabilities, including through dialogue with creditors, multilateral cooperation, and support from the international community. Where feasible, refinancing or liability management operations should be executed to rebuild buffers. Countries near debt distress should enhance early contact with creditors. Bilateral and private sector creditors should find ways to coordinate preemptive and orderly restructuring to avoid costly hard defaults and prolonged loss of

market access. Where applicable, a reformed and more effective version of the G20 Common Framework should be used, including in preemptive restructurings. 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.

Policymakers should promote the depth of local currency markets in emerging markets and foster a stable and diversified investor base. Emerging market economies with market developmental gaps should strive to (1) establish a sound legal and regulatory framework for securities, (2) develop efficient money markets, (3) improve 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. Sustained efforts to deepen domestic markets become more critical as interest differentials between advanced economies and emerging markets narrow further and as nonresidents leverage use of more sophisticated instruments.

Developments and risks in residential real estate markets should be carefully monitored during the ongoing cycle of monetary tightening. National authorities should deploy stringent stress tests to estimate the potential effects of (1) rising interest rates on borrowers' repayment capacity and (2) a sharp fall in residential real estate prices on household balance sheets—and ultimately on financial institutions. Policymakers in some economies had tightened macroprudential tools to address overheating conditions, such as tightening sectoral capital buffers on real estate segment exposures or limiting loan-to-value or debt-to-income ratios. They could consider whether to revisit that decision to prevent severe macroeconomic implications from a sharp tightening of financial conditions amid a drop in house prices, while preserving and encouraging sound credit origination practices.

Continued vigilance is warranted to monitor vulnerabilities in the CRE sector to minimize potential financial stability risks. To ensure resilience in banking and inform decisions regarding the adequacy of capital buffers for CRE exposures, stress-testing exercises that embed large CRE price declines should be considered. Supervisors should also review banks' CRE valuation assumptions and ensure that provisions are adequate. There is an urgent need to lessen CRE-related systemic risks stemming from nonbank financial institutions by broadening the reach of macroprudential tools and by enhancing data collection. Such tools include

minimum investment periods and liquidity buffers to open-ended real estate funds.

To ensure comprehensive and timely assessment of risks in credit markets, authorities should ensure they have sufficient and reliable data to analyze vulnerabilities stemming from origination practices and chains of bank and nonbank intermediation in the corporate debt market. With private debt playing an increasingly important role in capital markets, their transparency should be improved, including through the collection of data on cross-border exposures. More comprehensive assessments should be conducted in the broader market effect of any forced selling of privately held instruments that are generally illiquid and difficult to value.

The sizable tail of weak banks in the global financial system and the risk of contagion to healthy institutions highlights the urgent need to enhance financial sector regulation and supervision (see Chapter 2). Supervisors should ensure that banks have corporate governance and risk-management processes commensurate with their risk profile, including for risk monitoring by bank boards and capital and liquidity stress tests. Adequate minimum capital and liquidity requirements, including for smaller institutions, are essential to contain financial stability risks. Authorities should be more prepared to deal with financial instability, including by ensuring banks are prepared to access and use central bank facilities, intervening early to address weaknesses of banks, and, where needed, strengthening bank resolution regimes and preparedness to deploy them. In current conditions of elevated inflation, high interest rates, and deterioration of the credit outlook, authorities should pay specific attention to bank asset classification and provisions as well as to exposures to interest rate and liquidity risks.

Countries should continue to build buffers to help guard against future losses and to support the provision of credit through periods of stress. For example, authorities may raise countercyclical capital buffers or sectoral systemic risk buffers, should circumstances allow. Such buffers could be released if stresses, such as increased defaults, were to materialize in the future. To avoid procyclical effects, the raising of buffers should be conditioned on the absence of signs that credit is already being constrained by the adequacy of banks' capital.

Further progress on strengthening implementation of the international standard for resolution is critical for dealing with the problems of weak or failing banks

without undermining financial stability. This would increase the likelihood that problems at systemic banks can be resolved without risking public funds. It is a positive development that shareholders and holders of other capital instruments incurred losses in the March 2023 banking failures, yet it remains difficult to allocate losses across the creditor hierarchy before public funds are put at risk. The international community will need to take stock of recent experiences and draw policy conclusions on the effectiveness of reforms enacted after the global financial crisis. Policymakers may consider extending the perimeter of the international resolution standards to a wider set of banks, as even smaller banks have proven to be systemic at times of wider stress. In addition, as noted by the Financial Stability Board (2022), resolution regimes for systemic NBFIs, including central counterparties and insurers, should be strengthened or introduced where currently absent. It is also necessary to dismantle obstacles (legal, regulatory, and operational) to cross-border funding in resolution, including the ability to mobilize collateral across borders.

Comprehensive systemic risk assessments of NBFIs, including stress testing NBFIs sectors that pose high

systemic risks or could lead to severe market dysfunction, should remain a priority for regulators. Increased supervisory efforts are needed to rein in excessive liquidity mismatches and reliance on leverage. Authorities should also focus on greater, more effective, and consistent use of liquidity management tools and consider leverage caps where appropriate to prevent outsized margin and collateral calls. These efforts should be the first line of defense. Should central bank intervention be needed to stem systemic crises involving NBFIs, clear communication about the pertinent financial stability objectives and the parameters of the program would be necessary, including the time frame for exit (see Chapter 2 of the April 2023 *Global Financial Stability Report*).

Regulatory coordination across sectors and jurisdictions is essential for both identifying risks and managing crisis situations. Internationally coordinated reforms can reduce the risks of cross-border spillovers, regulatory arbitrage, and market fragmentation. Jurisdictions should ensure that their data-sharing arrangements allow for timely coordination to swiftly identify cross-sectoral risks and determine further action as needed.

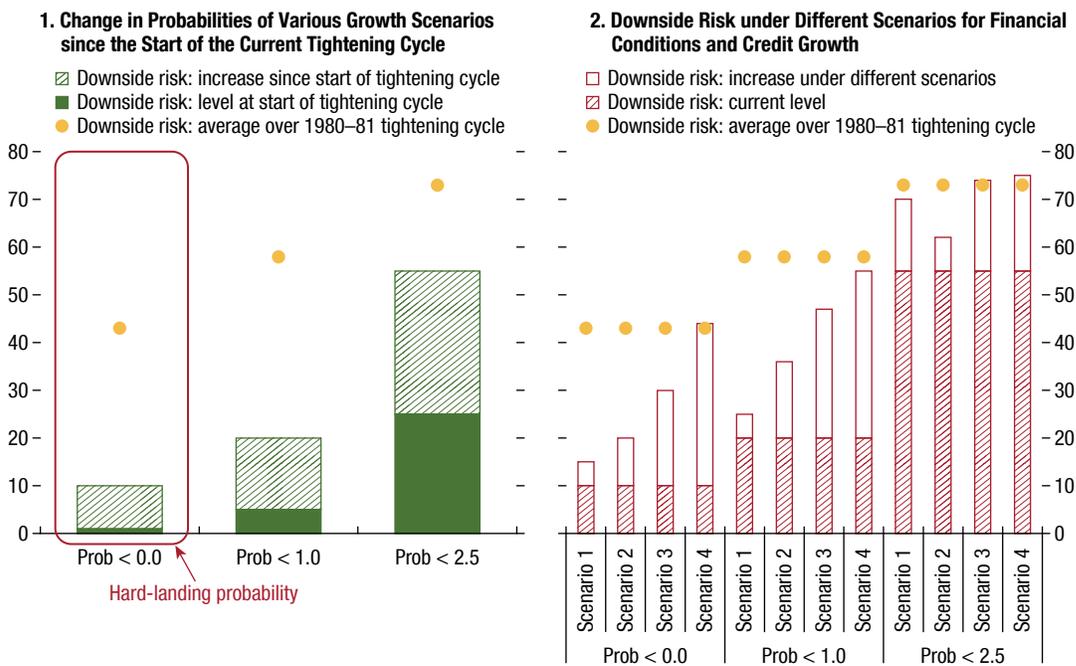
### Box 1.1. The Effect of Financial Conditions and Credit Growth on the Prospects of a Hard Landing in the United States

Since the start of the tightening cycle, financial conditions in the United States have remained fairly easy, on net, and actually eased further in 2023 despite continued policy hikes (see the “Financial Conditions Are Easing, but Lending Conditions Could Get Tighter” section). By contrast, credit conditions appear to have deteriorated amid emerging signs of tighter bank lending standards and terms (see the “Higher Rates Benefit Some NBFIs but Could Exacerbate Structural Vulnerabilities” section and Chapter 2). Using a conditional density forecasting framework (Adrian, Boyarchenko, and Giannone 2019), this box gauges the effect of varying levels of financial conditions and credit growth on downside risks to US growth over the coming year. Downside risks are examined by estimating tails of growth

densities—specifically the probability of growth falling below 0 percent, 1 percent, and 2.5 percent (a long-term average growth rate). Based on this framework incorporating both capital markets (as measured by the National Financial Conditions Index) and banking conditions, downside risk has increased since the Federal Reserve tightening cycle started in March 2022: The slowdown in quarterly credit growth of about 100 basis points by the end of 2022 has increased downside risk, more than offsetting the net easing in financial conditions (Figure 1.1.1, panel 1).

To understand whether current downside risks are consistent with those of past hard- and soft-landing episodes, the tail of the growth forecast distribution is compared with average levels that prevailed over the 1980–81 tightening cycle, which is viewed as a hard

**Figure 1.1.1. Growth-at-Risk Simulations**



Sources: Bank for International Settlements; Bloomberg Finance L.P.; Federal Reserve Economic Data; US Bureau of Economic Analysis; and IMF staff calculations.  
 Note: The conditional density forecasting model for real GDP growth used here is a function of the current level of financial conditions, current quarter growth, and current quarter credit growth. The latter corresponds to total credit to the private nonfinancial sector, as a percent of GDP (adjusted for breaks), sourced from the Bank of International Settlements. Financial conditions are measured by the Federal Reserve Bank of Chicago’s National Financial Conditions Index. The current level of downside risks is estimated holding credit growth as of the fourth quarter of 2022. The forecast horizon for growth is one year ahead. Prob = probability.

This box was prepared by Harrison Kraus and Sheheryar Malik.

**Box 1.1 (continued)**

landing (Blinder 2023). More specifically, from July 1980 to January 1981, the federal funds rate rose by 1,000 basis points, resulting in a real GDP growth decline of  $-2.1$  percent, peak to trough, by August 1981. Had the forecasting framework been applied to that episode, the probability of growth falling below 0 percent, 1 percent, and 2.5 percent would be about 45 percent, 60 percent, and 75 percent, respectively (the yellow dots in Figure 1.1.1, panel 1). At present, the probability of growth falling below 2.5 percent is slightly less than during the 1980 cycle (the sum of the green solid and shaded bars in Figure 1.1.1, panel 1). But the probability of growth falling below 0 percent—a harbinger for a hard landing—is significantly lower at present than during the 1980 cycle.

Next, several downside risk scenarios—permutations of severe but plausible tightening of financial conditions and slowdowns in credit growth—are examined (Figure 1.1.1, panel 2):

- Scenario 1: Credit growth contracts by one-third of the magnitude of trough decline seen during the global financial crisis; financial conditions are unchanged from current levels.
- Scenario 2: Credit growth is held at the end of 2022 level; financial conditions tighten by one-third

of the magnitude of peak tightening during the global financial crisis.

- Scenario 3: Credit growth contracts as in Scenario 1; financial conditions tighten as in Scenario 2.
- Scenario 4: Credit growth contracts to half of the magnitude of trough decline during the global financial crisis; financial conditions tighten by half of the magnitude of peak tightening during the global financial crisis.

In Scenarios 1 and 2, levels of credit growth and financial conditions are “shocked” separately. The probability of growth falling below 2.5 percent is more sensitive to a credit contraction than a tightening in financial conditions. Further into the left tail of growth—where growth falls below 0 or 1 percent—a tightening in financial conditions appears to bite more. Scenario 3 (which combines Scenarios 1 and 2) reveals that a tightening in financial conditions in conjunction with credit contraction increases downside risks to levels comparable with but not as big as those during the 1980 cycle. Scenario 4 best matches the 1980s cycle, showing that at present, and holding all other factors steady, both credit growth and financial conditions would need to worsen to levels half as bad as those during the height of the global financial crisis to generate almost-equivalent downside risk estimates.

## Box 1.2. Refinancing Risks in Commercial Real Estate

The commercial real estate (CRE) sector has come under intense pressure as interest rates rise and transaction volumes and property valuations decline significantly across regions. Given the large size of the sector and its interconnectedness with the broader financial system—including both banks and nonbank financial intermediaries—and the real economy, further stress in the sector could have significant macrofinancial stability implications (see Chapter 2 of the April 2023 *Global Financial Stability Report*). This box takes stock of financing conditions in the CRE sector and the risks looming in a high-interest-rate environment.

As a share of GDP, CRE-related debt equals nearly 12 percent in Europe and 18 percent in the United States (Figure 1.2.1, panel 1). Banks are the primary lenders to the CRE sector, but nonbank financial intermediaries have become increasingly important in some jurisdictions (for example, Luxembourg and the United States). Whereas banks are exposed to the sector mainly through credit risk on CRE loans and changes in the value of CRE collateral, many nonbanks are exposed directly to CRE price changes through their investments. Institutional investors, particularly closed- and open-ended investment funds, hold more than 40 percent of CRE equity investments in the United States, amounting to about 30 percent of GDP.

Amid a rise in interest rates, borrowing costs on CRE mortgages and commercial mortgage-backed securities markets have increased sharply since early 2022 and are expected to remain elevated in the future (Figure 1.2.1, panel 2). Lending standards have also tightened, particularly since the March banking turmoil, as smaller and regional banks with significant exposures to CRE have come under increased scrutiny and have been wary of lending too much to the sector. Whereas banks have pulled back from lending, private equity fundraising has slowed sharply and funding conditions in commercial mortgage-backed securities markets (a type of fixed-income investment product backed by mortgages on CRE) have deteriorated (Figure 1.2.1, panel 3). Alternative investors—such as real estate debt funds and insurers—that have grown in importance over the years could fill the gap and remain a source of capital,<sup>1</sup>

This box was prepared by Andrea Deghi.

<sup>1</sup>Investors could fill the gap left by banks in different ways. They may buy loan portfolios directly from banks or lend to companies previously financed by banks. Small-bank CRE lending may be more difficult to replace as terms of these deals may not meet the credit standards of a larger lender.

but they may also become expensive and more selective in new loan acquisitions in a high-interest-rate environment.<sup>2</sup>

The tighter financial conditions in the CRE market pose challenges at a time when high volumes of refinancing are coming due (Figure 1.2.1, panel 4).<sup>3</sup> In the United States, for example, hotels have the largest share of their loans maturing in 2023 (34 percent), followed by offices (25 percent). Among sources of maturing debt, about 25 percent of loans held by investor-driven lenders, banks, and commercial mortgage-backed securities will mature in 2023. Market participants have expressed concerns about the risk of a widening funding gap—that is, a lack of new debt available to meet existing loan requirements (Figure 1.2.1, panel 4).<sup>4</sup>

Banks thus face heightened asset quality risks. European banks are already seeing an increase in bad loans from borrowers with aging and unfavorably located office buildings. In the first quarter of 2023, CRE accounted for as much as 30 percent of nonperforming loans in Europe.<sup>5</sup> Smaller and regional US banks (that is, those not among the top 25 by domestic assets) are more vulnerable to deteriorating CRE fundamentals than large banks, holding 4.8 times

<sup>2</sup>Real estate debt funds face at least two specific headwinds. First, because they employ some form of leverage, they may face liquidity pressures as the value of CRE collateral declines. Second, poor liquidity in the sector may hamper price discovery and complicate the pricing of these structures. Leverage of real estate funds increases their interconnectedness with the rest of the financial system, providing an indirect contagion channel.

<sup>3</sup>In general, the CRE sector is highly sensitive to financial conditions, particularly the retail, residential, and industrial segments (Deghi, Natalucci, and Qureshi 2022).

<sup>4</sup>To measure the debt funding gap for each origination year and sector, the fraction of loans due within five years (“maturing debt”) is identified, which is then divided by the average loan-to-value ratio in the origination year to calculate the total value of CRE properties with upcoming debt expirations. The value is then adjusted to reflect an expected price correction. Based on this new value and agencies’ forecasted loan-to-value ratio, the debt funding gap is then calculated against the original loan amount.

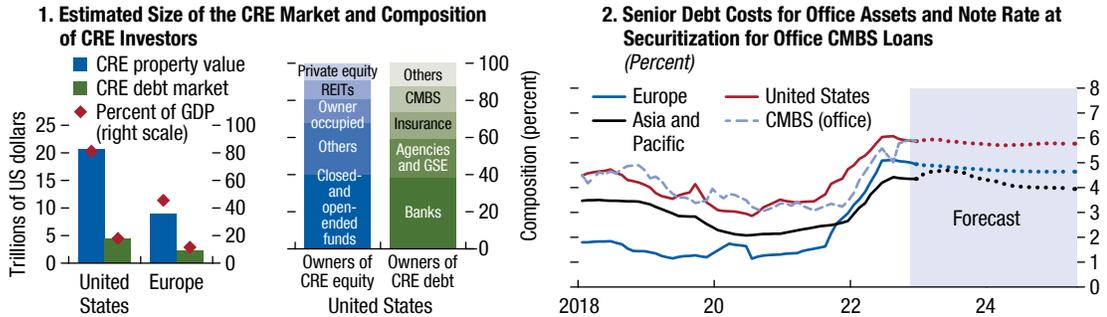
<sup>5</sup>Small and medium enterprises are particularly vulnerable due to their lower profitability in a high-inflation environment and greater dependence on smaller banks for credit. That said, the European banking sector (in aggregate) remains resilient due to increased profitability and sizable capital and liquidity buffers.

Box 1.2 (continued)

Figure 1.2.1. CRE Developments and Vulnerabilities

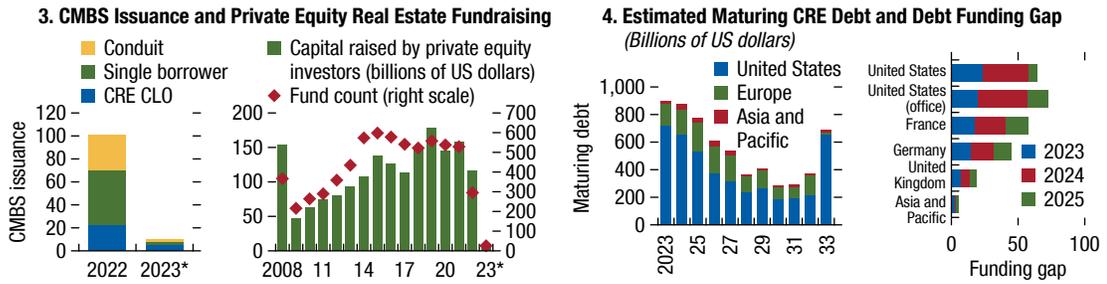
CRE exposures constitute a significant share of GDP and of banks' and other financial institutions' balance sheets.

Borrowing costs have increased and are expected to remain elevated, especially in the office sector.



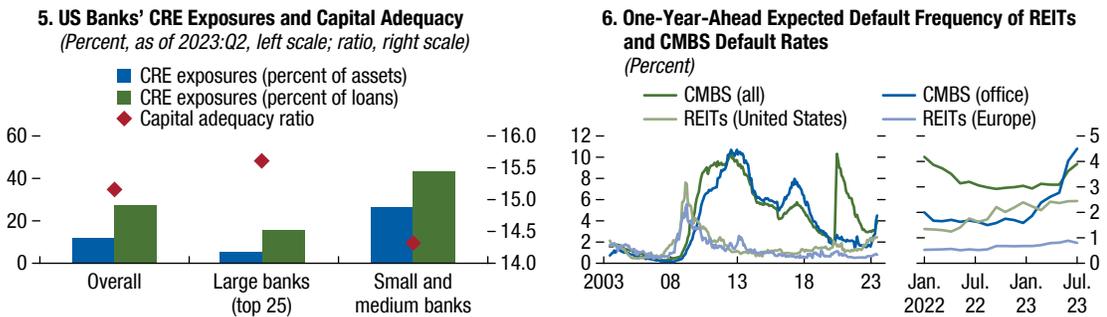
The turmoil facing banks and CMBS has prompted some lenders to step back, leaving space for investors, but hurdles to CRE funding remain.

A large volume of refinancing is coming due, which could drive further repricing in vulnerable markets and sectors affected by structural trends.



In aggregate, the banking sector should be able to absorb CRE losses, but larger shocks could impact smaller and regional banks ...

... and put pressure on REITs and CMBS, as declining demand dampens rental growth and occupancy rates while borrowing costs escalate.



Sources: AEW Capital Management; Australian Prudential Regulation Authority; Bloomberg Finance L.P.; CBRE Group; European Public Real Estate Association; Federal Reserve; Institut de l'Epargne Immobilière et Foncière; Mortgage Bankers Association; Moody's; MSCI Real Estate; Nareit; Prequin; S&P Global; and IMF staff calculations.

Note: In panel 1, CRE debt estimates are based on the historical debt stock and the investable universe of real estate stock. Total CRE values are based on Australian Prudential Regulation Authority top-down approach for Europe and Nareit estimates for the United States. In panel 2, note rate at securitization for CMBS loans is weighted average coupon of new-issue office-backed conduit CMBS. In panel 3, the bars for 2023 with asterisks refer to the first quarter of 2023. In panel 4, the volume of estimated maturing CRE debt covers Australia, France, Germany, the United Kingdom, and the United States. The bar for 2033 refers to loan maturities from 2033 onward. In panel 5, the sample comprises US domestically chartered commercial banks. "Large banks" refers to the top 25 banks, ranked by domestic assets. "Small and medium banks" are defined as all domestically chartered commercial banks not included in the top 25. Total loans refer to "loans and leases in bank credit" as defined in the Federal Reserve H.8 data release. In panel 6, the expected default frequency measures the probability that a company will default on payments within one year by failing to honor the interest and principal payments. CLO = collateralized loan obligation; CMBS = commercial mortgage-backed security; CRE = commercial real estate; GSE = government-sponsored enterprise; REIT = real estate investment trust.

**Box 1.2 (continued)**

more exposure to US CRE loans than their peers (Figure 1.2.1, panel 5).<sup>6</sup>

A further retrenchment of banks from CRE lending could hamper the ability of real estate investment trust funds, which generally rely on bank lending such as revolving credit facilities and unsecured-term loans for liquidity and other funding needs, to support the sector at a time when credit quality is deteriorating. One year ahead, expected default frequency of real estate investment trust funds has increased significantly, reaching 2.5 percent in the second quarter of 2023 compared with 70 basis points in 2021 (Figure 1.2.1, panel 6). Delinquencies in commercial mortgage-backed securities for the office market have also doubled since 2021 to 4.5 percent in July 2023.

<sup>6</sup>A simple sensitivity analysis for the United States shows that a CRE loss rate of 10 percent could result in a loss of 12 percent of bank industry capital. This should be manageable for the largest banks, thanks to more conservative lending standards (since 2008) and stronger capital positions, but could be challenging for smaller banks with large CRE exposures.

In sum, the CRE sector faces a challenging outlook, with the higher-for-longer interest rate environment and notable refinancing risks adding to structurally lower demand as consumer and worker behavior have shifted since the pandemic. The effect of tighter financial conditions is likely to vary across CRE segments, with office and retail being the most vulnerable.<sup>7</sup> Strains in the CRE sector could pose challenges for smaller and regional banks and non-bank financial intermediaries that have high exposure to the sector. Continued vigilance is warranted on the part of supervisors to monitor vulnerabilities in the CRE sector to minimize potential financial stability risks. Macroprudential policy must also be expanded to cover nonbank financial institutions, which are increasingly important players in CRE funding markets.

<sup>7</sup>The effect may vary within the office sector, depending on property factors (such as age and property condition), geographic location, and loan terms.

### Box 1.3. Private Equity and Life Insurers

Private equity firms have increased their footprint in the life insurance sector, a sector seen as increasingly important to their strategic growth (Figure 1.3.1, panel 1). Insurance companies can provide private equity firms with a stable supply of premiums that can be invested in private credit, structured credit, real estate, and infrastructure funds arranged and controlled by the private equity firms themselves.

Private equity–influenced life insurers appear to have significantly more exposure to less liquid investments than other insurers (Figure 1.3.1, panel 2). These exposures include structured-credit assets such as collateralized loan obligations, mortgage loans, and private commercial and residential mortgage-backed securities. These investments increase valuation uncertainty, credit risk, and liquidity risk through mismatches between assets and liabilities for life insurers (see the “Higher Rates Benefit Some NBFIs but Could Exacerbate Structural Vulnerabilities” section in this chapter).

Risks are further aggravated by the embedded leverage in structured-credit investments.

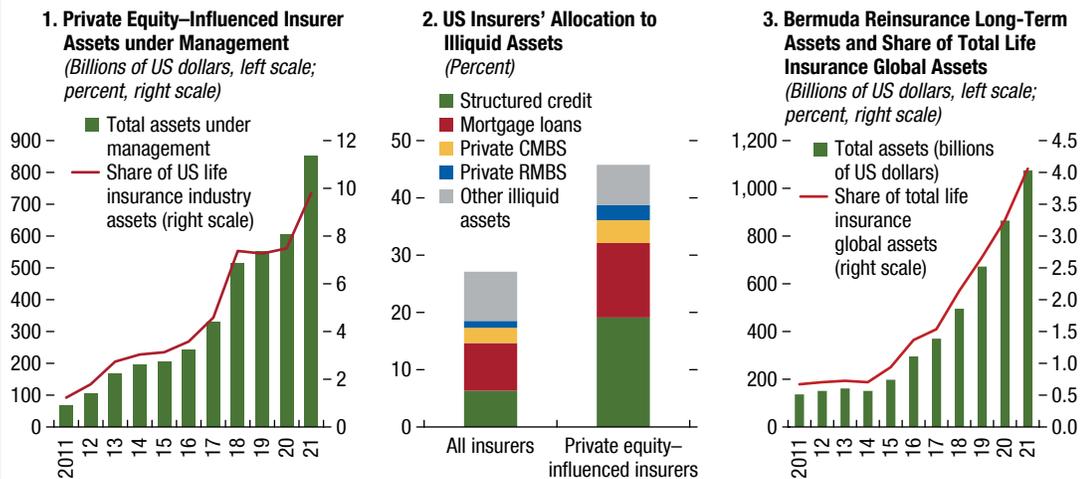
Some private equity firms have recently established offshore reinsurers, taking advantage of regulatory arbitrage at the cost of reduced transparency compared with onshore life insurers. Private equity firms have used their offshore reinsurers to reinsure life insurance and annuity businesses from their own life insurers and from third-party life insurers, as well as to take over life and annuity companies using their offshore reinsurers as holding companies. This arrangement allows private equity firms to issue insurance products, reinsure them, and manage the premiums while limiting the ability of regulators to monitor them. Private equity–influenced reinsurers have contributed to the strong growth in offshore Bermuda-domiciled life reinsurance assets, which exceed over \$1 trillion, about 4 percent of total life insurance assets globally (Figure 1.3.1, panel 3).

**Figure 1.3.1. Vulnerabilities of Private Equity–Influenced Life Insurers**

The assets of private equity–influenced insurers have grown significantly.

Private equity–influenced insurers own a significantly larger share of illiquid assets compared with other insurers.

Bermuda-domiciled life reinsurance assets have grown significantly in recent years.



Sources: A.M. Best Company Inc; Bermuda Monetary Authority; Financial Stability Board; National Association of Insurance Commissioners; and IMF staff calculations.  
 Note: Panel 1 is only for US insurers, for which data are available. Panel 2 is as of December 2021. CMBS = commercial mortgage-backed securities; RMBS = residential mortgage-backed securities.

This box summarizes some of the analysis and policy recommendations in Cortes, Diaby, and Windsor (forthcoming).

**Box 1.3 (continued)**

Insurance supervisors are identifying issues of concern and working on a supervisory response. The National Association of Insurance Commissioners in the United States has expressed concerns about lack of transparency and additional risks inherent in the relationships between insurance firms and private equity firms. Their concerns include related party investments, structured securities, and other complex assets that have been gaining a share of insurers' portfolios. US supervisors' concerns began with the activities of insurers influenced by private equity firms, but they have changed focus to activities undertaken by private equity–influenced life insurers and replicated by other life insurers through herding behavior.

Dealing with these risks requires a comprehensive approach. Data quality and availability is a key constraint and requires immediate attention. Opportunities for capital arbitrage should be addressed through the broad adoption of a globally consistent consolidated capital standard for the insurance sector. Valuation of uncertainty and liquidity risk requires improving supervisory monitoring, intrusive supervisory review of insurers' valuation processes, and liquidity stress testing. Supervisors should work closely with other authorities in charge of systemic risk to analyze the possible contagion to other parts of the financial system and the real economy.

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