

# RATES NORMALIZATION AMID ELEVATED GLOBAL FINANCIAL VULNERABILITIES

Fabio M. Natalucci

Monetary and Capital Markets Department, IMF

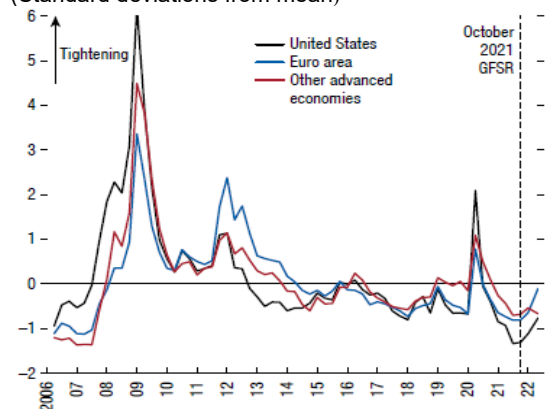
## 1. INTRODUCTION

In the wake of the global financial crisis (GFC henceforth), central banks maintained a very accommodative stance of monetary policy (including by keeping policy rates low for long) and very easy financial conditions in order to support economic growth (Figure 1, panels 1 and 2).<sup>1</sup> While a gradual shift towards a less stimulative policy stance was pursued in the years preceding the COVID-19 crisis (for example, by the Federal Reserve), central banks responded to the economic downturn caused by the pandemic by aggressively easing monetary policy—slashing policy rates and resorting (again) to unconventional policies like asset purchases both in advanced and emerging market economies. As a result, financial conditions have eased to historically levels in a number of countries during the first half of 2020.

**Figure 1. Global Financial Conditions**

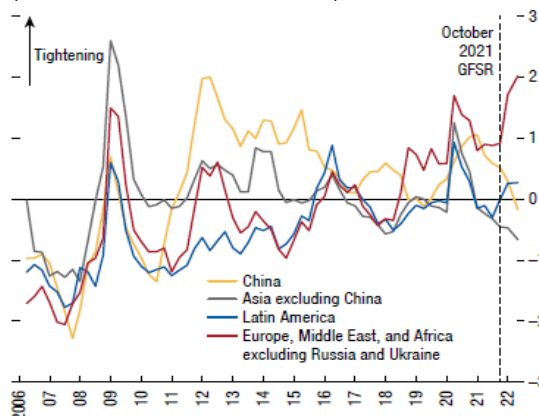
### 1. Advanced Economies

(Standard deviations from mean)



### 2. Emerging Markets

(Standard deviations from mean)



Sources: Global Financial Stability Report, April 2022; Bloomberg Finance LP.; Haver Analytics; national data sources.

Note: GFSR = *Global Financial Stability Report*.

One of the side-effects of very easy financial conditions is a buildup of financial vulnerabilities, as investors are incentivized to reach out the duration/credit curve and employ financial leverage to meet their return targets. These vulnerabilities arise from leverage, as well as liquidity, maturity, and currency mismatches across a range of sectors—sovereigns, households, nonfinancial firms (corporates), banks, insurance companies, asset managers, and other nonbank financial entities. Since financial vulnerabilities

<sup>1</sup> Financial conditions reflect the pricing of risk in financial markets. They encompass forward-looking market pricing information across a range of asset classes, and are typically summarized through financial conditions indices, or FCIs.

tend to propagate and amplify the effect of adverse shocks through their interactions with tighter financial conditions, they pose a threat to financial stability ([A Monitoring Framework for Global Financial Stability \(imf.org\)](#)).

Against the backdrop of stubbornly high inflation—reflecting both post-pandemic supply-chain disruptions and stress in commodity markets related to the war in Ukraine, as well as robust aggregate demand in a number of countries—central banks have started to normalize monetary policy. Emerging markets have led this process, beginning to hike policy rates and unwind pandemic-era balance sheet policies in 2020. Since the Fall of last year, central banks in advanced economies have also pivoted toward a more stringent stance of policy. As a result, financial conditions have tightened across the globe.

While a tightening of financial conditions is an intended objective of policy, needed to slow demand and bring inflation down back to target, it could threaten financial stability if abrupt and disorderly. A disorderly tightening, in fact, could interact with, and be amplified by, elevated financial vulnerabilities, weighing on economic growth and derailing the post-pandemic recovery.

The aim of this paper is to (i) review and assess financial vulnerabilities that have emerged post-GFC during years of extremely low interest rates across sectors and regions; (ii) discuss factors that may lead to a disorderly tightening of financial conditions along the path to rates normalization. The rest of the paper is organized as follows. Section 2 briefly describes the conceptual framework and amplification channels through which financial stability risks could materialize. An overview of the evolution of financial vulnerabilities (across sector and regions) is provided in Section 3. Sections 4 through 9 focus on the underlying drivers of sector-specific vulnerabilities highlighted in the previous section. Section 10 assesses some of the risks surrounding monetary policy normalization against the backdrop of high inflation and elevated vulnerabilities. Section 11 briefly discusses policy recommendations and conclusions.

## **2. FINANCIAL VULNERABILITIES AND FINANCIAL STABILITY RISKS: CONCEPTUAL FRAMEWORK**

Financial conditions, leverage and macro-financial stability are tightly intertwined. Easy financial conditions (i.e., a low price of risk) are a key driver of leverage buildups (Adrian and others, 2019). High asset prices boost capital adequacy and loosen risk management constraints of financial intermediaries and market participants, which in turn are incentivized to take on more risk (including through a greater capacity to lend) and increase use of leverage. At the same time, nonfinancial borrowers—firms and households—have a greater incentive to take on debt and, through higher net-worth associated with higher asset values, a greater capacity to borrow. Overall, the increase in credit provision to the wider economy stimulates economic activity.

Increased use of leverage (both balance sheet and financial leverage) during periods of easy financial conditions, however, represents a financial vulnerability—making financial intermediaries, households, and firms more susceptible to adverse shocks. When such a shock materializes and financial conditions tighten, the repricing of risk may be amplified by abrupt deleveraging involving asset fire-sales, potentially leading to another round of repricing, as well as deteriorating market liquidity conditions, pushing up risk premia even further (Brunnermeier and Pedersen 2009; Greenwood, Landier, and Thesmar 2015). As the net-worth of borrowers falls at an accelerated rate, and risk-management constraints of lenders become increasingly binding, the resulting contraction in credit provision leads to a fall in output. Essentially, price

declines triggered by an adverse shock set in motion a negative feedback loop between pricing of risk, fire-sales and output, resulting in sharp, nonlinear declines in economic activity.<sup>2</sup>

While the channel highlighted above revolve around the traditional case of excessive leverage build-ups, the impact of adverse shocks can be amplified and propagated also through sectors or financial institutions operating with minimal leverage, but possibly with significant liquidity or other mismatches (like maturity or FX). For instance, in response to a sharp tightening in financial conditions and heightened volatility, investors in open-ended mutual funds, who have a first-mover advantage in redeeming before others, may accelerate redemptions, potentially triggering a run.<sup>3</sup> To meet redemptions, fund managers may need to liquidate (potentially illiquid) assets in a fire sale, setting in motion an adverse feedback loop—prompting further redemptions, reinforcing the downward spiral in asset prices and net-asset values available to investors.

Importantly, even absent a system-wide shock, a run triggered at the fund level, potentially invested in a single asset class, could in principle create systemic disruptions via direct or indirect channels. For example, financial market participants holding assets liquidated in the fund's fire-sales may suffer market-to-market losses on their balance sheets and declines in collateral values. These affected third parties may be forced to rebalance their portfolios, triggering another round of liquidations—which may not necessarily be confined to a single asset class (see Malik and Lindner, 2017). This dynamic may lead to further price dislocations across a range of asset classes, with sharp amplifications through higher market volatility and risk spreads. Adverse spillovers to the wider market may also occur due to price correlations across different asset classes. An impairment of market-based financing mechanisms may ensue, leading to a reduction in credit provision to wider economy and ultimately to a contraction in economic activity.

### 3. EVOLUTION OF FINANCIAL VULNERABILITIES

Against the backdrop of very low interest rates and easy financial conditions, financial vulnerabilities have been rising after the GFC across a number of sectors and countries (Figure 2)—as highlighted in various editions of the Global Financial Stability Report (GFSR henceforth).<sup>4</sup> Since the pandemic, vulnerabilities have risen further—reflecting both the global economic recession as well as unprecedented monetary and fiscal support, which has resulted in a sharp easing of global financial conditions (Figure 3).

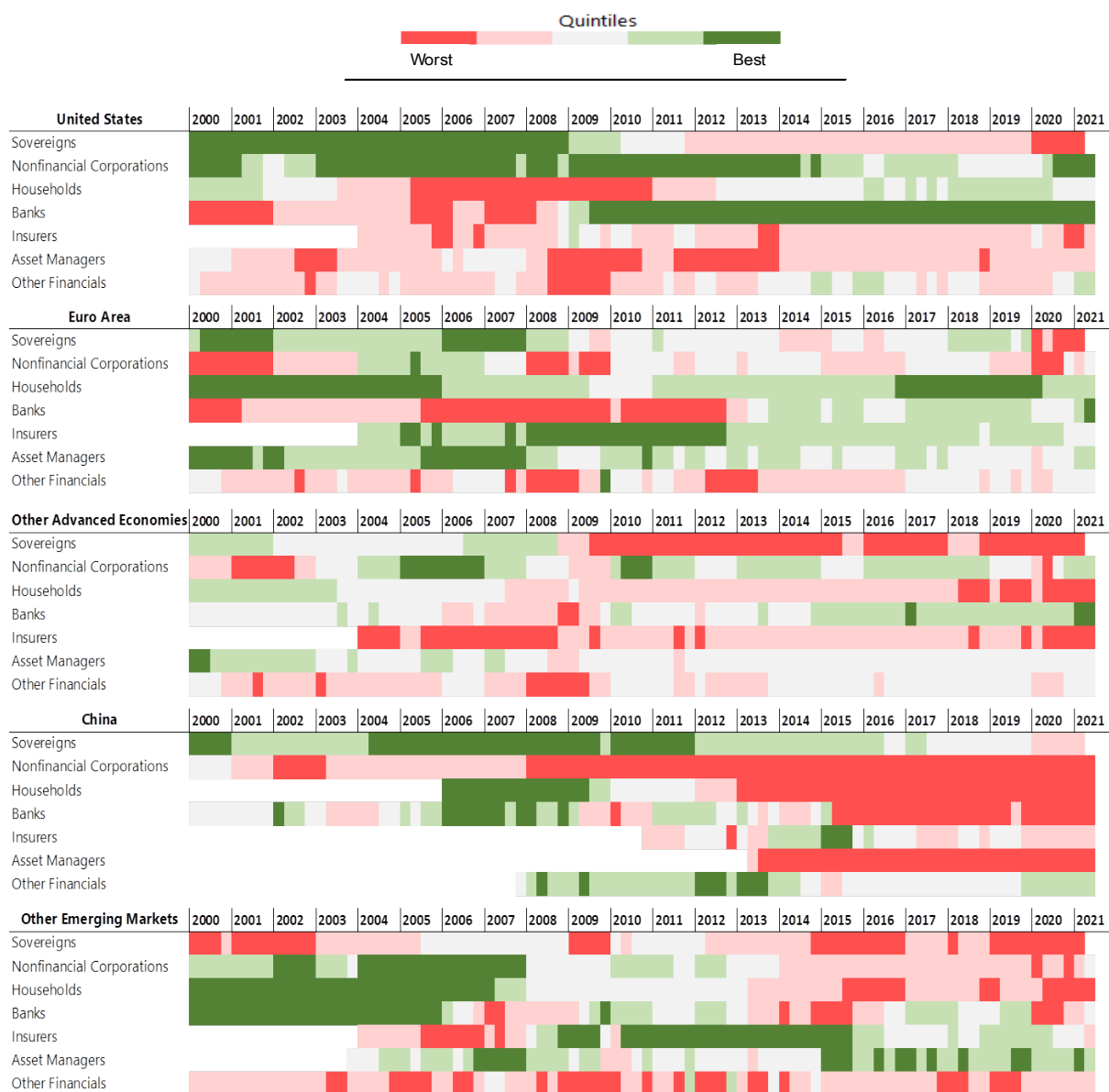
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<sup>2</sup> Leverage acting as an amplifier of adverse shocks has been shown by Kiyotaki and Moore (1997); Bernanke, Gertler, and Gilchrist (1999); and Brunnermeier and Sannikov (2014). In addition to the level of leverage, the growth of leverage may matter as well—possibly magnifying the effect of a shock if, for example, new lending is extended to riskier borrowers. Lower yields may prompt institutional investors—for example, those with nominal return targets—to invest in riskier and more illiquid assets, providing a growing source of funding for nonfinancial firms and facilitating borrowing by weaker firms. Although greater credit extension supports economic activity at first, it also increases risks for lenders and borrowers.

<sup>3</sup> First-mover advantage stems from the mismatch between investment in illiquid assets coupled with the possibility of fund investors being able to redeem their shares on a daily basis (or short notice).

<sup>4</sup> This assessment is based on the methodology introduced in the April 2019 *Global Financial Stability Report*, which covers 29 jurisdictions with systemically important financial sectors. Other nonbank financials have been split into asset managers and other financial institutions to help better track the evolution of vulnerabilities in different parts of this large and diverse sector. Asset managers include all collective investment schemes for which sectoral data are publicly available. For Brazil, fund-level data have been aggregated for this purpose. For China, the category includes investment funds, trusts and the off-balance-sheet wealth management products of banks, securities companies, and insurers. The other financial institutions category can include broker dealers, merchant banks, securitization vehicles, finance companies, holding companies, funding companies, credit guarantors, multipurpose nonbank financial corporations, custodians, and different forms of nonbank lending institutions and/or residual aggregates for nonbank financial companies excluding investment funds, pension funds, and insurers. The focus of the framework is restricted to on-balance-sheet vulnerabilities, given the absence of available data for off-balance sheet vulnerabilities for a cross section of countries. Due to the nature of the data and their reporting frequency, most of the current data points are through the second quarter of 2021.

**Figure 2. Evolution of Financial Vulnerabilities by Sector and Region: Historical Context**

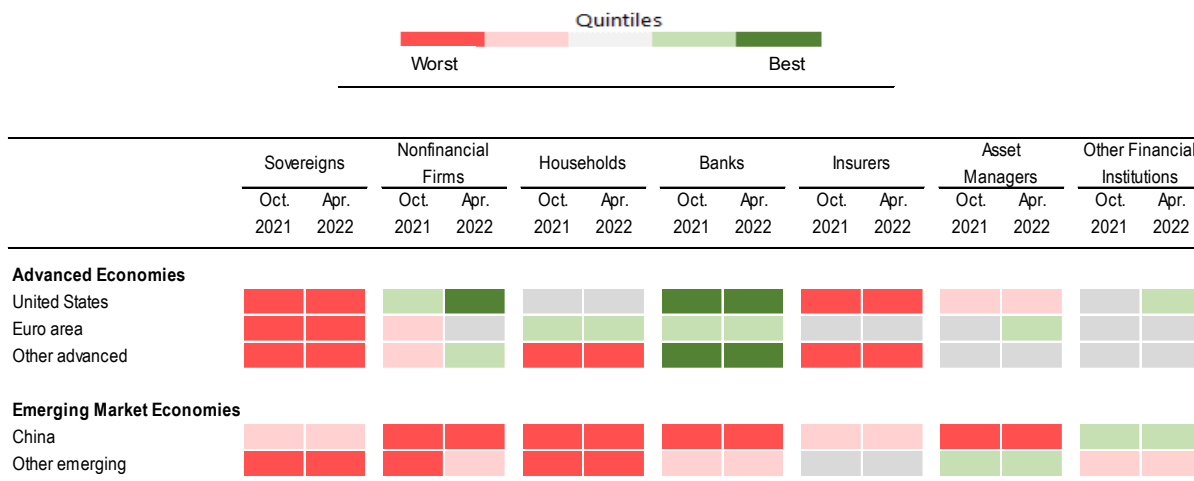


Sources: Banco de Mexico; Bank for International Settlements; Bank of Japan; Bloomberg Finance L.P.; China Insurance Regulatory Commission; European Central Bank; Haver Analytics; IMF, Financial Soundness Indicators database; IMF, World Economic Outlook database; Reserve Bank of India; S&P Global Market Intelligence; S&P Leveraged Commentary and Data; Securities and Exchange Commission of Brazil; Securities and Exchange Board of India; WIND Information Co.; and IMF staff calculations.

Note: See the online technical annex for the April 2019 GFSR for details on the Indicator-Based Framework methodology. Dark red shading indicates a value in the top 20 percent of pooled samples (advanced and emerging market economies pooled separately) for each sector during 2000–21 (or longest sample available), and dark green shading indicates values in the bottom 20 percent. For households, the debt service ratio for emerging market economies is based on all private nonfinancial corporations and households. Other financials include: broker dealers, finance companies, securitization vehicles, and some other smaller entity groups. GFSR = *Global Financial Stability Report*.

**Figure 3. Financial Vulnerabilities by Sector and Region: Latest Vintage**

**1. Vulnerability Heatmap: as of April 2022**



Sources: Banco de Mexico; Bank for International Settlements; Bank of Japan; Bloomberg Finance L.P.; China Insurance Regulatory Commission; European Central Bank; Haver Analytics; IMF, Financial Soundness Indicators database; IMF, World Economic Outlook database; Reserve Bank of India; S&P Global Market Intelligence; S&P Leveraged Commentary and Data; Securities and Exchange Commission of Brazil; Securities and Exchange Board of India; WIND Information Co.; and IMF staff calculations.

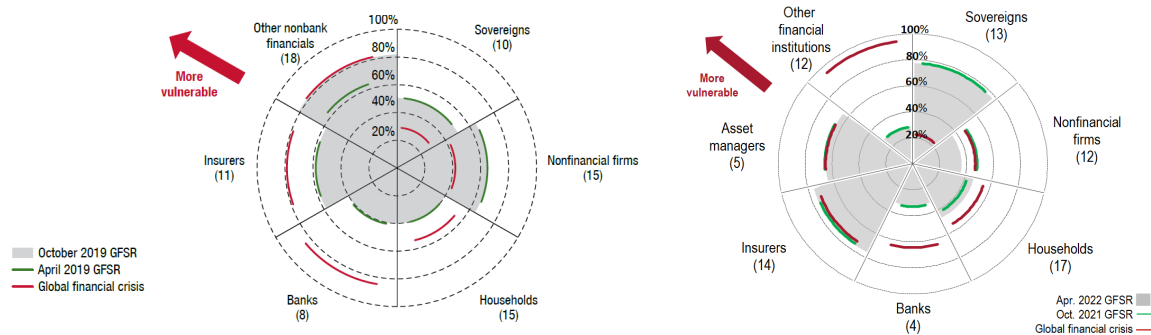
Notes: Same as in Figure 2 above.

**Figure 4. Share of Economies with Elevated Vulnerabilities, by Sector**

(Percent of countries with high and medium-high vulnerabilities, by GDP [assets for banks]; number of countries in paratheses)

**1. As of end of 2019**

**2. Latest vintage**



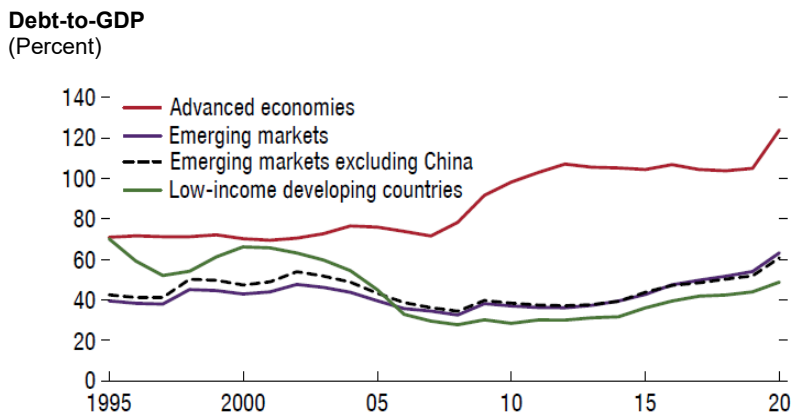
Sources: Bank for International Settlements; Bank of Japan; Bloomberg Finance L.P.; China Insurance Regulatory Commission; European Central Bank; Haver Analytics; IMF, Financial Soundness Indicators database; S&P Global Market Intelligence; S&P Leveraged Commentary and Data; WIND Information Co.

Note: Panels 1 and 2 were presented in the October 2019 and April 2022 GFSRs, respectively. The global financial crisis reflects the maximum vulnerability value from 2007 to 2008. GFSR = *Global Financial Stability Report*.

In the *sovereign* sector, vulnerabilities had already risen in the decade prior to the pandemic, with systemically important countries (SICs) displaying high or medium-high vulnerabilities accounting for around 50 percent of total GDP by the end of 2019 (Figure 4, panel 1). As governments extended massive fiscal support to contain the economic fall-out from the pandemic, sovereign debt reached

historical highs across regions. Vulnerabilities in this sector are currently at high levels in SICs accounting for around 80 percent of total GDP, a notable increase relative to pre-pandemic levels (Figure 4, panel 2). The rise in sovereign debt is shown in Figure 5.

**Figure 5. Evolution of Sovereign Debt**

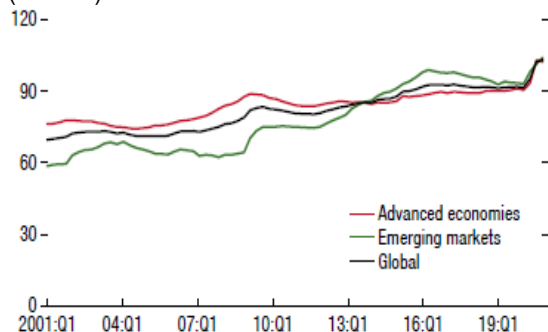


Sources: IMF Global Debt database; IMF Fiscal Monitor, and IMF World Economic Outlook database

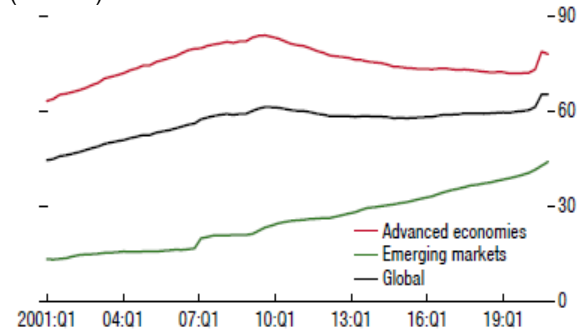
In the *non-financial corporate* sector, vulnerabilities were at elevated levels in SICs accounting for around 60 percent of total GDP at the of 2019, with corporate leverage increasing meaningfully in a number of countries (Figure 6, panel 1). Post-pandemic, however, this share has decreased to around 30 percent, reflecting in large part improvements in US corporate balance sheets over the last year—as corporates, benefiting from robust earnings, strengthened balance sheet liquidity and termed out debt (see GFSR, October 2021: Chapter 1). In some countries, however, corporate vulnerabilities have continued to be elevated because of lingering weaknesses among small and medium-sized enterprises (SMEs). Vulnerabilities remain significant, particularly, in China and other emerging markets. Corporate vulnerabilities in China appear to reflect in part deteriorating conditions in credit markets stemming from strains at property developers.

**Figure 6. Evolution of Nonfinancial Sector Leverage**

**1. Corporate Leverage: Debt-to-GDP (Percent)**



**2. Household Leverage: Debt-to-GDP (Percent)**



Sources: Global Financial Stability Report, April 2021; and Institute of International Finance.

Note: The figure includes 27 advanced economies (AE) and 25 emerging markets (EM). Leverage is measured as the ratio of debt to GDP. Global, AE, and EM leverage is measured as the ratio of aggregate debt to aggregate GDP across different country groups. Nonfinancial corporate debt figures are nonconsolidated.

Vulnerabilities in the *household* sector were elevated at the end of 2019 in advanced economies other than US and Euro area, as well as China and other emerging markets. Household leverage has risen, with household-debt-to-GDP ratio at levels higher than pre GFC in a number of countries (for example, Australia, Canada, and China), and house prices have increased significantly (Figure 6, panel 2).

In the *insurance* sector, vulnerabilities were already evident in the United States and other advanced economies in the decade after the GFC, reflecting search for yield in an environment of very low interest rates. Vulnerabilities have intensified in many jurisdictions after the pandemic, owing to a deterioration in credit and leverage indicators. For example, life insurance companies face elevated asset-liability duration mismatches in many jurisdictions. Seeking to enhance their return on investment, US and European life insurers have increased their share of lower-quality bonds. The proportion of SICs with elevated vulnerabilities in this sector has increased to around GFC levels.

Among *asset managers and other nonbank financial* sectors, SICs with high or medium-high vulnerabilities accounted for around 80 percent of total GDP in 2019—a share comparable to that during the GFC. The vulnerability buildup reflected an increase in leverage and credit exposures, with institutional investors taking on riskier positions to meet targeted returns. In emerging markets, and especially in China, vulnerabilities in this sector have been consistently elevated for years, mostly owing to leveraged positions by investment vehicles and widening liquidity and maturity mismatches.

By contrast, the banking sector has become more resilient in most advanced economies in the past decade, owing to post-GFC regulatory reform.<sup>5</sup> However, financial vulnerabilities remain a concern for banks in emerging markets, and in China especially, with small and medium-sized banks particularly in need of balance sheet strengthening.

In the next few sections, vulnerabilities pertaining to the sectors highlighted above, including specific risk transmission mechanisms, are investigated in greater detail.

#### 4. A DEEPENING SOVEREIGN-BANK NEXUS

In line with the rise in sovereign leverage, holdings of sovereign debt by the banking sector have been on an upward trend for much of the past decade in both advanced and emerging market economies. In the past couple of years, governments around the world have increased fiscal spending to buffer the economic impact of the pandemic for corporates and households, increasing government bond issuance to cover budget deficits (Figure 7, panel 1). The banking sector has absorbed a significant share of issuance, especially in emerging markets, where government debt as a percentage of assets has risen to a record 17 percent in 2021 (Figure 7, panel 2). In some economies, government debt accounts for about 25 percent of bank assets. This interdependence between sovereigns and banks is referred to as the *sovereign-bank nexus* (see GFSR, April 2022: Chapter 2).

Large holdings of sovereign debt expose banks to losses if government finances come under pressure and the market value of government debt declines. In the case of emerging markets, this could be a result of a sharp tightening in financial conditions resulting from policy normalization in advanced economies,

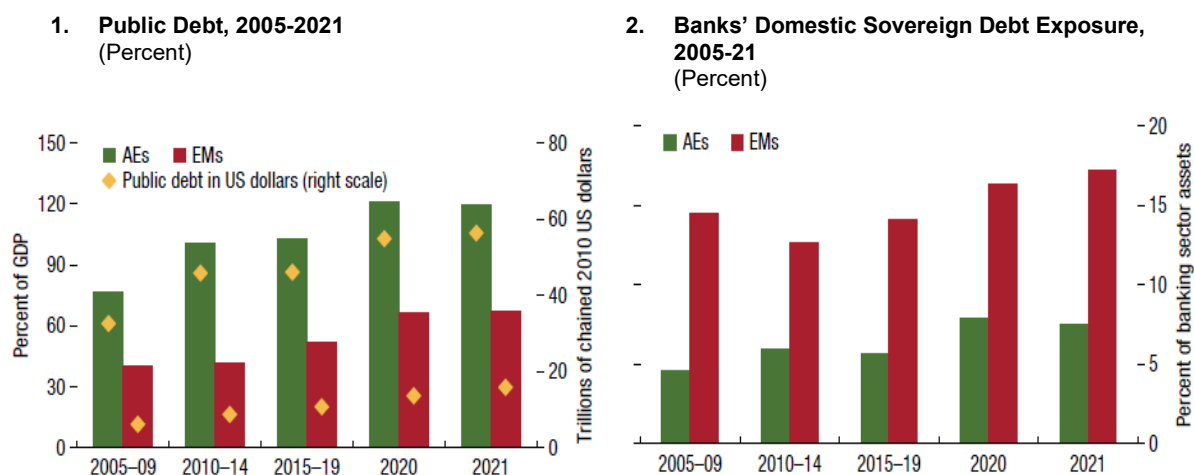
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<sup>5</sup> Banks have come into the pandemic with high capital and liquidity buffers reflecting regulatory reforms implemented after the GFC. Stress test results presented in the October 2020 GFSR suggest that, even under a severely adverse macroeconomic scenario (laid out in the *World Economic Outlook*) more than 90 percent of banks by assets across 29 SICs would remain above statutory minimum capital levels through 2022. These results reflect not only extraordinary monetary and fiscal policy support but also important bank-specific mitigation policies (changes in accounting recognition of loan losses and calculation of risk-weighted assets and suspension of capital distributions, among others). Absent such policies, the estimated proportion of capital-deficient bank assets would have roughly doubled.



leading to weaker currencies and higher borrowing costs, thus undermining investor’s confidence in the governments’ ability to service debt. A domestic shock, for example an unexpected economic slowdown, could have similar effects. In response to such shock, banks—especially less capitalized banks— could be forced to curtail lending to corporates and households as the credit outlook deteriorates, amplifying the economic downturn. Moreover, as the economy slows and tax revenues decline, government finances could come under even more strains, leading to higher sovereign risk premia and increasing external financing costs. This would further hurt banks’ balance sheets, leading to a self-reinforcing adverse feedback loop.

**Figure 7. Banks’ Exposure to Sovereign Debt**



Sources: Global Financial Stability Report, April 2022 (Chapter 2); Fitch Connect; IMF, Monetary and Financial Statistics, World Economic Outlook, and Fiscal Monitor databases.

Note: In panels 1 and 2, indicators are country averages weighted by purchasing-power-parity GDP. Public debt is in real terms; that is, in trillions of chained 2010 US dollars. In panel 2, banks’ sovereign exposure corresponds to claims on central government debt divided by total banking sector assets. Advanced economies comprise economies classified as advanced in the IMF World Economic Outlook database. AEs = advanced economies; EMs = emerging markets.

There are two additional channels through which the sovereign-bank nexus could play out. First, pressures on government finances and tighter sovereign borrowing constraints could weigh on the credibility of implicit and/or explicit governments guarantees (such as deposit insurance) aimed at supporting banks during period of market stress. Reflecting deteriorating investor confidence, banks’ profitability could be affected, while funding costs may increase. At the extreme, a government bailout would put further strains on the government fiscal position.

Second, as financial conditions tighten, a weakening of sovereign balance sheet could hurt corporates via rising borrowing costs or fiscal consolidation (i.e., by raising taxes or reducing expenditure). It could also increase the burden on domestic banks to finance government debt, crowding out bank lending to the corporate sector and thus affecting economic activity. A weaker corporate sector could, in turn, have a negative impact on banks’ balance sheets due to a deterioration of the loan portfolio quality. Stress in the banking sector could further disrupt economic activity, impairing government finances and transmitting stress back to the sovereign.

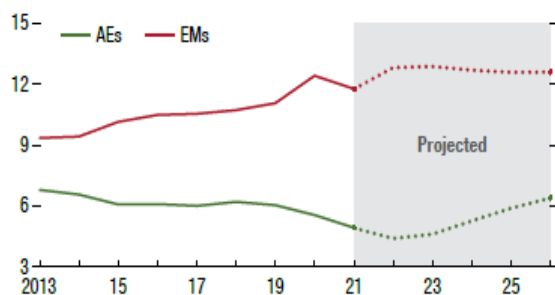
The sovereign-bank nexus poses a greater risk for emerging markets compared to advanced economies for two important reasons. First, their growth prospects are weaker relative to the pre-pandemic trend relative to advanced economies, while governments’ ability to support the economic recovery through fiscal support—that is, fiscal space—is more limited, with a higher debt-servicing burden (Figure 8, panel



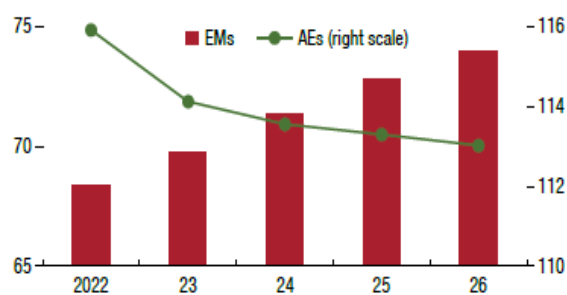
1). The public-debt-to-GDP ratio is projected to continue to grow in several emerging markets over the medium term, while it is expected to decline in advanced economies (Figure 8, panel 2).

**Figure 8. Fiscal Burden Projections**

**1. Interest payments to revenues, 2013-26**  
(Percent)



**2. Projected Public-Debt-GDP, 2022-26**  
(Percent of GDP)



Sources: Global Financial Stability Report, April 2022; Fitch Connect; IMF, Monetary and Financial Statistics, World Economic Outlook, and Fiscal Monitor databases; and IMF staff calculations.

Note: In panels 1 and 2, indicators are country averages weighted by purchasing-power-parity GDP. Public debt is in real terms; that is, in trillions of chained 2010 US dollars. In panel 2, banks' sovereign exposure corresponds to claims on central government debt divided by total banking sector assets. Advanced economies comprise economies classified as advanced in the IMF World Economic Outlook database. AEs = advanced economies; EMs = emerging markets.

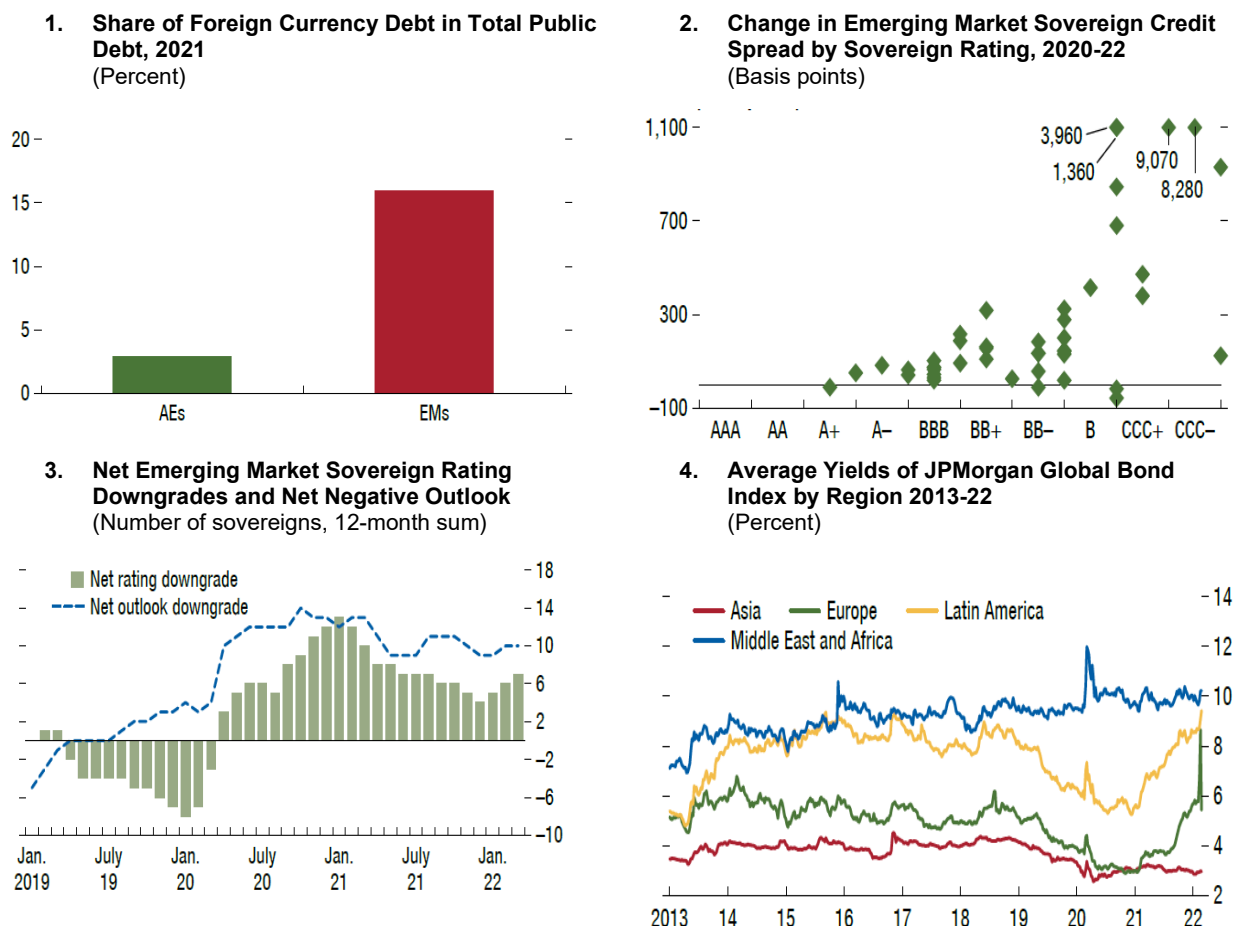
At the same time, refinancing risks are higher in emerging markets given the shorter average maturity profile of public debt compared with advanced economies (see IMF *Fiscal Monitor*: October 2021), a higher share of public debt denominated in foreign currency (Figure 9, panel 1) and rising sovereign spreads amid a worsening sovereign credit outlook (Figures 9, panels 2 and 3). Local currency government bond yields have also increased for most emerging markets, while central banks have tightened monetary policy beginning in 2020 to curb rising inflationary pressures (Figures 9, panel 4).

Banks in emerging markets are generally well capitalized thanks to reforms enacted following the GFC and, more recently, the policy support provided during the pandemic. However, sovereign debt holdings account for a significant share of regulatory capital in some countries (Figure 10, panel 1). Importantly, a sizable share of banks' sovereign debt holdings follows mark-to-market accounting in several emerging markets (Figure 10, panel 2), a development that could potentially undermine banks' capital adequacy if the market value of these assets were to decline. This risk is particularly relevant in the current environment of rising global interest rates.

This risk is amplified by the explicit and/or implicit guarantees (safety net) provided by the sovereign to banks. On average, government support proxied through the support rating floors is greater in emerging markets than in advanced economies, and it has generally increased since the GFC (Figure 10, panel 3).<sup>6</sup>

<sup>6</sup> To assess the transmission of shocks through this channel, the GFSR analysis has relied on bank-level estimates of government support called support rating floors— as developed by the Fitch rating agency—which isolate potential sovereign support for banks from other sources of external support.

**Figure 9. Fiscal Vulnerabilities in Emerging Markets: Selected Indicators**



Sources: Global Financial Stability Report, April 2022; Bloomberg Finance L.P.; Fitch Connect; JPMorgan EMBI Global; Standard & Poor's Capital IQ.

Note: In panels 1–3, indicators are country averages weighted by purchasing-power-parity GDP. In panel 4, changes in sovereign rating and rating outlook are computed using a 12-month rolling sum based on changes reported by Standard & Poor's. Panel 5 shows the difference in credit spreads between December 31, 2020, and March 11, 2022. Spreads are calculated as the difference between a bond's yield and the linearly interpolated yield of the two base curve bonds that bracket the maturity of this bond. In panel 6, the drop in average yields for Europe in the second week of March 2022 reflects the exclusion of Russia from the JPMorgan index. AEs = advanced economies; EMs = emerging markets.

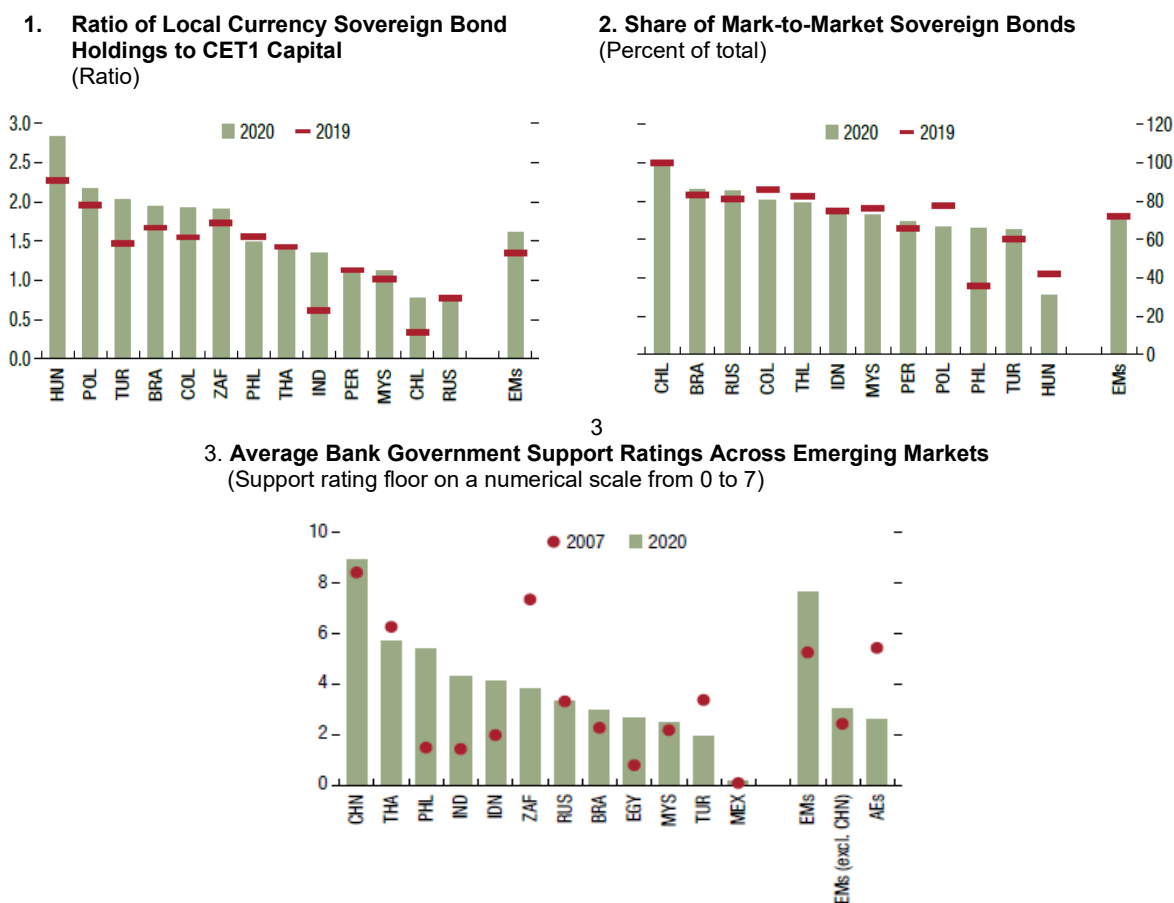
## 5. VULNERABILITIES IN THE HOUSING SECTOR

After falling sharply during the GFC, house prices had started to rise again in a number of countries in the past decade, boosted by low interest rates and accommodative financial conditions. During the pandemic, the housing market has witnessed robust growth, supported by unprecedented accommodative monetary policy and strong demand for living space, likely reflecting shifting household preferences and work habits. While house prices historically tend to drop during recessionary periods, they have surged in the past couple of years among major advanced and emerging market economies. Importantly, rising house prices and house-price-to-rent ratios have been evident also in countries that had witnessed strength before the pandemic (Figure 11, panels 1 and 2).

A potential imbalance between demand and supply can help explain recent housing market trends. The sharp decline of interest rates to record lows during the pandemic and a rise in personal disposable

income have improved housing affordability, thus boosting demand. Meanwhile, supply has been slow to respond. Fiscal support and the economic recovery have supported household incomes, helping to contain a rapid increase in house-price-to-disposable-income ratios (Figure 11, panels 3; see GFSR, October 2021: chapter 1). Pandemic-related bottlenecks, such as shortages and rising costs of materials and labor, have prolonged construction times and delayed an increase in supply.

**Figure 10. Sovereign-Bank Nexus in Emerging Markets during the Pandemic: Selected Indicators**



Sources: Global Financial Stability Report, April 2022; Bureau van Dijk's Orbis; Cruces and Trebesch (2013); data compiled from banks' accounting statements and Basel Pillar III disclosures; Fitch Connect; Haver Analytics; Standard & Poor's Capital IQ; IMF, Monetary and Financial Statistics database.

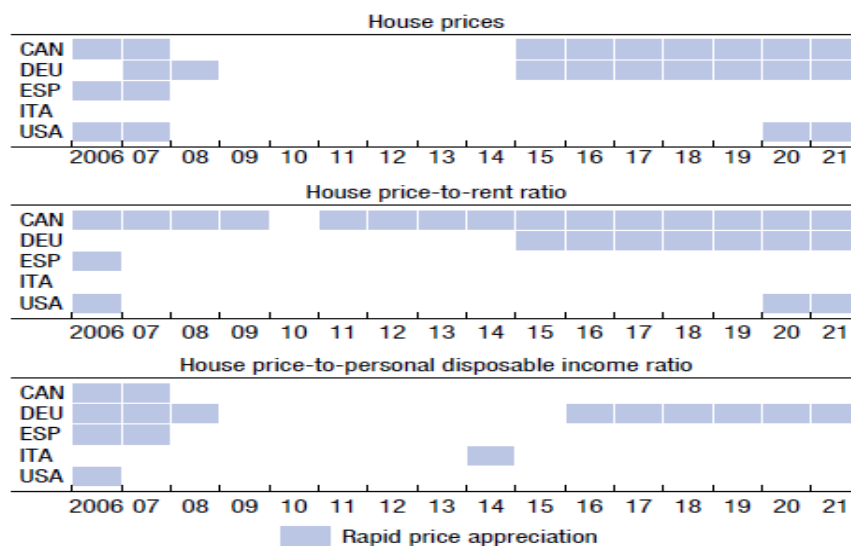
Note: Panel 3 shows the weighted average of Fitch support rating floors in major emerging markets, in which weights correspond to banks' total assets in US dollars. The support rating floor ranges from AAA to NF and is converted to a numerical scale of 1–17 (higher values correspond to a higher rating or higher likelihood of receiving government support during distress). AEs = advanced economies; EMs = emerging markets.

Sustained periods of rapid growth in house prices can create the expectation that such price increases will continue in the future, potentially leading to excessive risk-taking and rising vulnerabilities in housing markets—as witnessed during the global financial crisis (see GFSR, April 2019: Chapter 2). Downside risks to house prices appear to be significant. In a worst-case scenario, the house price decline over the next three years is estimated to be about 14 percent in advanced economies and 22 percent in emerging markets—somewhat higher than their pre-COVID-19 levels (Figure 12, panels 1 and 2).<sup>7</sup> Across

<sup>7</sup> Formally, house prices at risk corresponds to downside risks to house prices, defined as the forecast house price growth

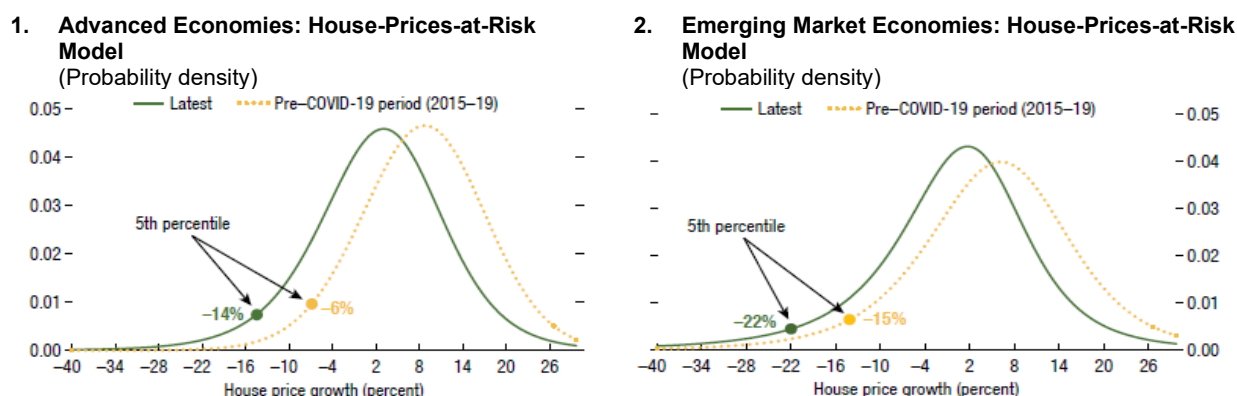
countries, the rise in downside risks to house prices generally reflects an increase in price misalignment (relative to fundamentals).

**Figure 11. Indicators of Rapid Price Appreciation**



Sources: Global Financial Stability Report, April October (Chapter 1); Bank for International Settlements; Bloomberg Finance L.P.; Haver Analytics; and IMF staff calculations.  
 Note: The indicators are based on recursive (right-tailed) unit root tests to detect periods with rapid price appreciations. Shaded areas correspond to periods during which the estimated backward sup augmented Dickey-Fuller statistics exceeded the corresponding 95th percentile critical value from their limit distribution, implying that prices are overshooting their underlying trend.

**Figure 12. Downside Risks to House Prices**



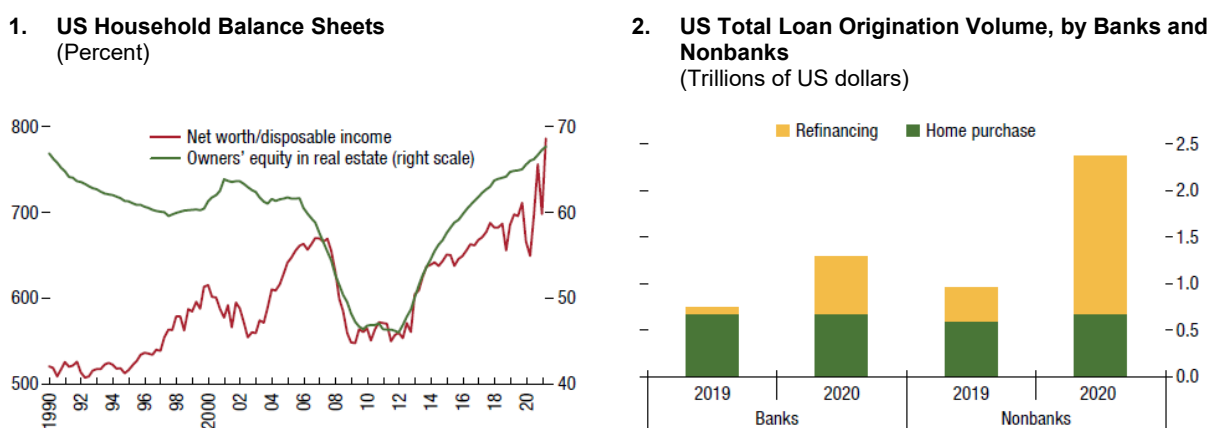
Sources: Global Financial Stability Report, October 2021; Bank for International Settlements; Bloomberg Finance L.P.; Haver Analytics.  
 Note: Panels 1 and 2 show the estimation results from a house-prices-at-risk model. The model allows prediction of house price growth in a worst-case scenario; that is, the range of outcomes in the lower tail of the future house price distribution. Probability densities are estimated for the three-year-ahead (cumulative) house price growth distribution across advanced economies (panel 1) and emerging market economies (panel 2). Filled circles indicate the worst-case price decline with a 5 percent probability (5th percentile).

at the 5th percentile of the house price distribution. The house-prices-at-risk model controls for past growth in house prices, financial conditions, real GDP growth, the presence of credit booms, and an overvaluation indicator capturing the degree of deviation of prices from fundamental valuation levels. For further details on the methodology, see Chapter 2 of the April 2019 GFSR.

Compared with conditions during the global financial crisis, household financial positions now appear to be stronger, based on household net worth and owners' real estate equity. Households have generally benefited from lower interest rates and measures to support income and interest costs, including debt payment moratoria in some jurisdictions, with debt service ratios falling in many countries, reducing the risk of default on mortgage and other consumer debt. However, there remains a risk that the financial position of households may deteriorate if the unprecedented fiscal support be withdrawn prematurely.

Focusing on the US, loose underwriting standards and lending to households with low credit scores in the run-up to the GFC played an important role in the eventual bust of the housing sector (Figure 13, panel 1). During the pandemic episode, by contrast, banks have been more conservative, limiting their credit risk exposure. An emerging vulnerability, however, is related to the growing role played by nonbank mortgage lenders in the US mortgage origination market, notably so during the pandemic in terms of re-financings (Figure 13, panel 2).

**Figure 13. US Housing Sector Balance Sheet Composition**



Sources: Global Financial Stability Report, October 2021; Bank for International Settlements; Bloomberg Finance L.P.; Federal Reserve; Haver Analytics; HousingWire; The Motley Fool.  
 Note: Data labels use International Organization for Standardization (ISO) country codes. GSE = government-sponsored enterprise.

These specialized mortgage lenders generally do not retain mortgages on their balance sheets and usually sell them to government-sponsored enterprises within one quarter, so they have limited credit risk exposure. However, they do not have deposits, obtain liquidity from banks, and fund themselves in the wholesale market, so they are exposed to a tightening in funding market conditions. In addition, there is a high degree of concentration among nonbank lenders, leaving the US mortgage origination market susceptible to exit risk by key lenders, potentially resulting in a contraction in mortgage credit. Nonbank mortgage originators also often act as mortgage servicers, so they are exposing themselves to credit risk from several months of missed payments.

**6. VULNERABILITES IN THE INSURANCE SECTOR**

Insurance companies are a major investor in fixed income securities, holding around 20 percent and 30 percent, respectively, of outstanding global bonds and corporate bonds. Given their long-dated liabilities, life insurers, in particular, are an important source of demand for long maturity bonds (see GFSR, October 2021: Chapter 1). These institutions operate with elevated asset-liability duration mismatches, particularly in some jurisdictions (Figure 14, panel 1). And while life insurers have made inroads in reducing average guaranteed policy returns in recent years, spreads of investment yields to such guaranteed returns

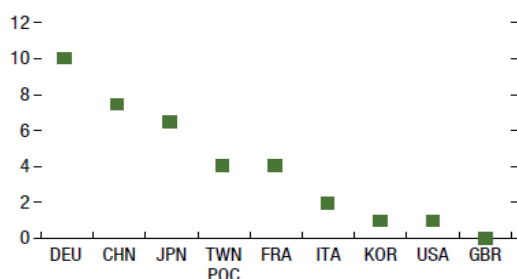
remain negative, at historically wide levels (Figure 14, panel 2). Seeking to improve their return on investments in an environment of very low interest rates, over the past decade US and European life insurers have increased their share of lower-quality bond investments; in Japan, the life insurers' portion of higher-yielding foreign investments has risen (Figure 14, panel 3).

While a gradual yield increase may help mitigate life insurers' long-term challenges—by reducing asset-liability duration mismatches and the negative spread of investment yields to guaranteed policy rates—a stress scenario with a large, sudden increase in bond yields and widening of corporate spreads could hurt them significantly. Importantly, if a large increase in policy surrenders were to occur in such a scenario, life insurers might be forced to liquidate assets—a procyclical response that may amplify the initial shock (see GFSR, October 2021: Box 1.2).

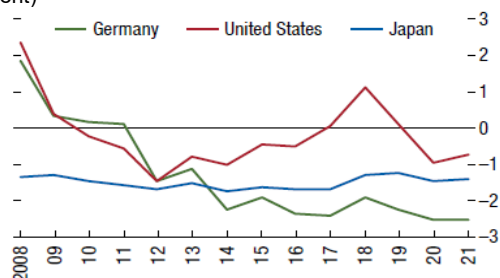
In particular, a scenario of a rapid and disorderly increase in bond yields—triggered, for example, by inflation fears—could pose challenges to life insurers, particularly if coupled with wider corporate bond spreads (Figure 14, panel 4). Estimates suggest that life insurers with longer durations and a greater share of riskier corporate bonds in their portfolios would be most impacted by a sudden increase in yields. US and UK life insurers appear particularly sensitive to a worst-case yield increase and wider corporate spread scenario, with estimated losses exceeding 30 percent of their assets, compared with less than 10 percent in a scenario where yields increased modestly.

**Figure 14. Life Insurers: Selected Stress Indicators**

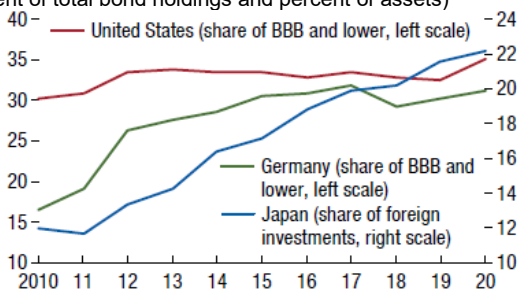
**1. Average Asset-Liability Duration Mismatches (Years)**



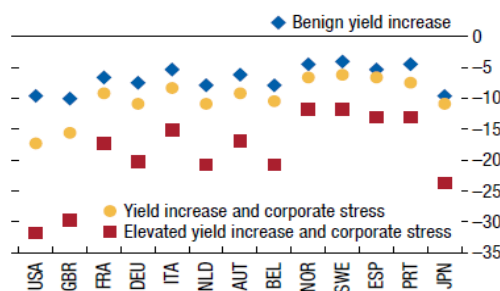
**2. Spread of Investment Yields to Average Guaranteed Returns (Percent)**



**3. Share of BBB-Rated and Lower-Rated Bonds in fixed Income Portfolios, and Share of Foreign Investments (Percent of total bond holdings and percent of assets)**



**4. Simulated Mark-to-Market Shock to Assets (Percent)**



Sources: Global Financial Stability Report, October 2021; Bloomberg Financial L.P.; European Insurance and Occupational Pensions Authority; General Insurance Association of Japan; Moody's; National Association of Insurance Commissioners; SNL Financial. Note: The investment yields in panel 2 are estimated as the average yield on the fixed-income portfolios of life insurers in each jurisdiction, and may underestimate actual investment yields as they exclude any yield from investments in other asset classes, equities and real estate in particular. Bloomberg Barclays domestic bond indices are used as proxies, with the calculations assuming all of the Japanese foreign exposure is invested in an equally weighted mix of US corporate and 10-year Treasury bonds. Moody's is the source for the average guaranteed returns in each jurisdiction. The calculations in panel 3 include investments in both corporate and sovereign bonds and aggregate data for individual life insurance companies in each jurisdiction. Shocks in the sensitivity scenarios in panel 4 are applied to aggregate sector balance sheets of life insurers as of December 2020 (Europe and United States) and February 2021

(Japan). The data include detailed asset class exposure by rating as well as duration. Derivative positions and loss absorption by policyholders and by taxes and regulatory adjustments are not taken into account. This implies that results should be considered an upper-bound impact. Panel 4 runs three yield increase scenarios: benign yield increase (sovereign bond yield increases but no corporate stress), yield increase and corporate stress (greater sovereign bond yield increases at lower ratings and wider corporate spreads), and elevated yield increase and corporate stress (much greater sovereign bond yield increases across all ratings and wider corporate spreads; larger losses in equity and real estate markets). The following shocks are applied in the benign yield increase scenario: equity (–5 percent), real estate (–2 percent), and all sovereign and corporate bond yields up +100 basis points regardless of credit rating. The shocks for the yield increase and corporate stress scenario are equity (–10 percent); real estate (–6 percent); sovereign bond yields AAA-A (+100 basis points), BBB (+150 basis points), and <BBB (+200 basis points); and corporate bond yields AAA-A (+150 basis points), BBB (+250 basis points), and <BBB (+300 basis points). The shocks for the elevated yield increase and corporate stress scenario are equity (–20 percent); real estate (–10 percent); sovereign bond yields AAA-A (+200 basis points), BBB (+250 basis points), and <BBB (+300 basis points); and corporate bond yields AAA-A (+250 basis points), BBB (+350 basis points), and <BBB (+400 basis points). To put the magnitude of these shocks in context, the European Insurance and Occupational Pensions Authority (EIOPA) ran a yield curve up scenario in 2018 where the shocks applied to the balance sheets of life insurers were close to the elevated yield increase and corporate stress scenario. For example, EIOPA's stress test assumed a +175 basis point increase in 10-year US Treasury yields, a +222 basis point increase in 10-year Spanish government bond yields, a 40 percent drop in equities, and a +235 basis point and +256 basis point increase in US AA-rated nonfinancial and financial corporate bonds, respectively. See EIOPA (2018) for further details. Data labels use International Organization for Standardization (ISO) country codes.

## 7. VULNERABILITIES IN THE CORPORATE SECTOR

Against a backdrop of low interest rates and easy financial conditions, vulnerabilities in the corporate sector rose in the decade preceding the pandemic, with corporate leverage increasing significantly in a number of countries. Over the past year, the credit outlook has improved reflecting the ongoing economic recovery and unprecedented policy support during the pandemic.

Progress, however, remains uneven across sectors and countries (see GFSR, October 2021: Chapter 1). Corporate revenues have generally risen, with profitability prospects surpassing pre-pandemic levels in several economies (Figure 15, panel 1). Analysts expect strong earnings growth to persist in 2022–23. Near-term solvency and liquidity risks, however, continue to be elevated in sectors hit most by the pandemic, such as transportation and services in advanced economies (Figure 15, panel 2). By country and firm size, solvency risk has generally fallen since the worst period of the pandemic, but improvement has been more evident for large firms, while solvency risk has risen in some advanced and emerging market economies, especially among small firms (Figure 15, panel 3). Credit quality in the speculative-grade bond market has continued to strengthen, although with sectoral differentiation, while credit rating upgrades have exceeded downgrades this year. After a sharp decline, US speculative-grade default rates are anticipated to remain low (Figure 15, panel 4).

A substantial pickup in bankruptcies has not materialized thus far, as some had feared, reflecting importantly targeted fiscal support and unprecedented monetary policy. In the United States, bankruptcies of large and medium-sized firms have declined, but with some sectoral differences (Figure 16, panel 1). Bankruptcies of small firms have also fallen (Figure 16, panel 2). A similar trend decline in bankruptcies is evident in Japan. In contrast, bankruptcies have been rising in Europe—with notable differentiation across countries—despite the ongoing recovery in the region.<sup>8</sup>

Focusing on *risky credit markets*, vulnerabilities have continued to build given the strong growth in high-yield (HY) bonds, leveraged loans, and private debt segments over the past decade.<sup>9</sup> The rapid

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<sup>8</sup> This likely reflects, in part, the backlog resulting from court closures and a legal pause on insolvencies in some countries.

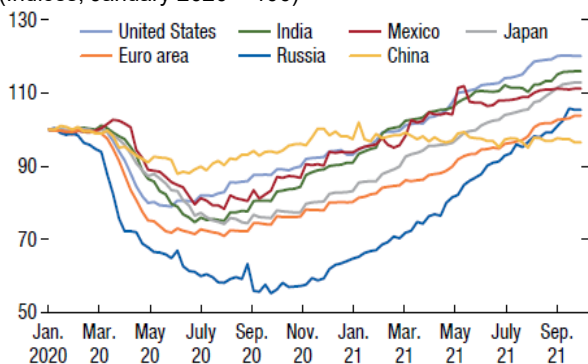
<sup>9</sup> Leveraged loans refer to speculative-grade loans, made to firms that are heavily indebted or have weak credit ratings. They are referred to as called “leveraged” because the ratio of the borrower’s debt to assets or earnings significantly exceeds industry norms. Leveraged loans are predominantly syndicated—that is, several (a syndicate of) lenders participate in the issuance of a loan. A CLO is a structured finance product collateralized predominantly by broadly syndicated leveraged loans. Private debt refers to financing



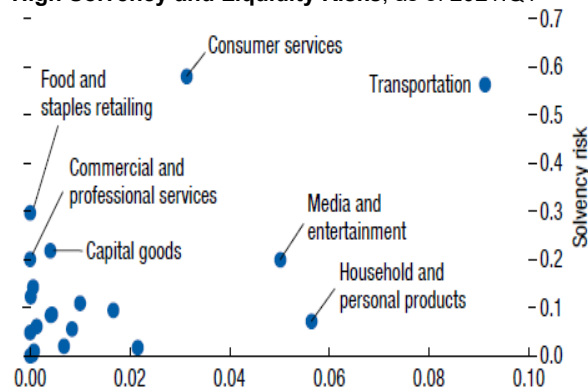
expansion of these markets has been supported by investors' search for yield and very favorable borrowing terms for firms amid very easy financial conditions. Nonbank financial institutions have emerged as major players in these markets. The leveraged loan market increased to \$5 trillion globally by the end of 2019 (\$4 trillion of which in advanced economies), while the HY bond market reached \$2.5 trillion globally (Figure 17, panels 1-3). Driven by demand from institutional investors seeking long-term investments, the private debt market also followed a similar trend, with pension funds the largest investors in private debt vehicles. As documented in Chapter 2 of the April 2020 GFSR, at the end of 2019, HY dedicated and multisector investment funds held almost half of HY bond market. Asset manager and hedge funds were the main investors in riskier tranches of collateralized loan obligations (CLOs).

**Figure 15. Developments in the Corporate Sector**

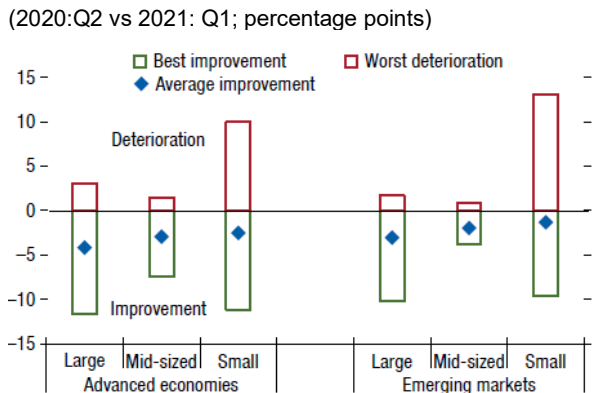
**1. Global 12-Month Forward Earnings per Share Ratios**  
(Indices, January 2020 = 100)



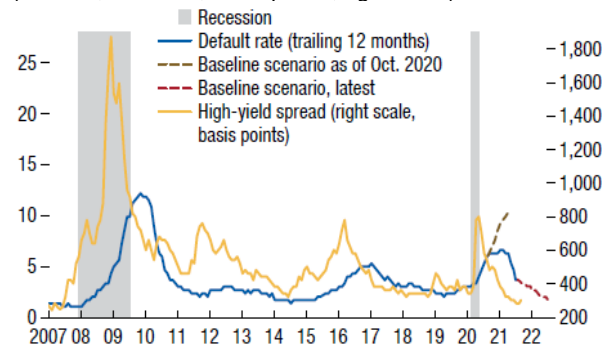
**2. Advanced Economies: Share of Debt at Firms with High Solvency and Liquidity Risks; as of 2021:Q1**



**3. Change in Share of Firms with High Solvency Risk across Countries**  
(2020:Q2 vs 2021: Q1; percentage points)



**4. US High-Yield Corporate Bond Spread, Default Rate, and Ratings Agencies' Forecast**  
(Percent, left scale; basis points, right scale)



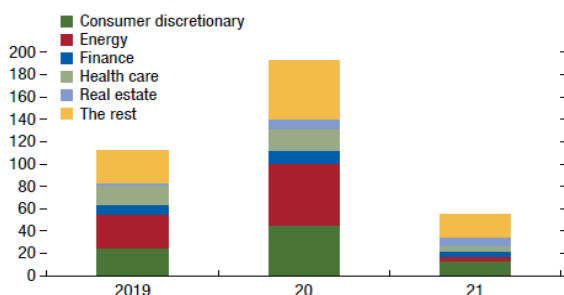
Sources: Global Financial Stability Report, October 2021; Bloomberg Finance L.P.; BofA Securities; Fitch Ratings; Haver Analytics; Moody's Investors Service; Morgan Stanley; S&P Capital IQ; S&P Global Ratings; Thomson Reuters Datastream IBES.

Note: In panels 2 and 3, solvency risk and liquidity risk are defined based on sets of balance-sheet and market-based indicators described in Online Annex 1.1 of the April 2021 Global Financial Stability Report. In panel 4, "Baseline scenario" is the average of default rate forecasts by three rating firms (Fitch, Moody's, and S&P), and each forecast aligns with firms' macroeconomic forecasts.

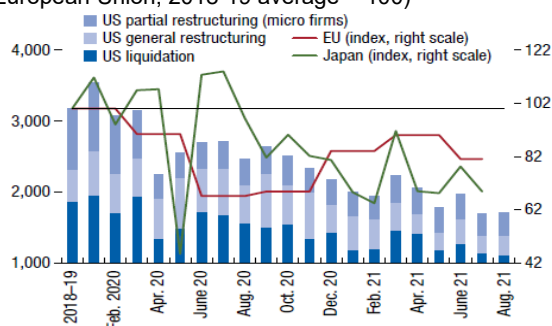
that is directly negotiated, typically between a nonbank lender and a borrower without the involvement of a syndicate bank. High-yield bond are corporate instruments that have been rated below investment grade, indicating a higher level of default risk.

**Figure 16. Corporate Bankruptcies**

**1. US Large and Medium-Sized Firms Bankruptcies, by Sector**  
(With debt > \$50 million)



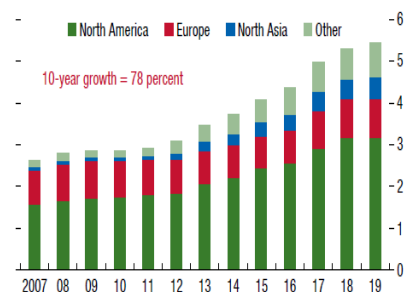
**2. Advanced Economies: Small Firm Bankruptcies**  
(Number for the United States; indices in Japan and the European Union, 2018-19 average = 100)



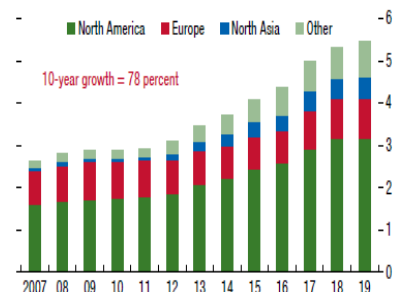
Sources: Global Financial Stability Report, October 2021; Bloomberg Finance L.P.; Dealogic; Epiq AACER; Eurostat; Haver Analytics; Preqin; S&P Leveraged Commentary and Data; Tokyo Shoko Research.  
Note: In panel 1, real estate includes both residential and commercial. In panel 2, liquidation, general restructuring, and partial restructuring (micro firms) refer to bankruptcies under Chapters 7, 11, and 13, respectively.

**Figure 17. Growth in Risky Segments of Corporate Credit**

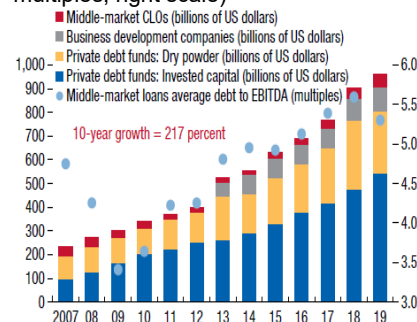
**1. Global Leverages Loans Outstanding**  
(Trillions of US dollars)



**2. Global High-Yield Bonds Outstanding**  
(Trillions of US dollars)



**3. Private Credit Assets under Management and Leverage**  
(Billions of US dollars, left-scale; multiples, right scale)



Sources: Global Financial Stability Report, April 2020; Bank of America Merrill Lynch; Dealogic; S&P Leveraged Commentary and Data; Securities Industry and Financial Markets Association; Preqin; Association for Financial Markets in Europe.  
Note: In panel 1, monthly data are annualized. In panel 1, the estimate for 2020 is annualized Q1 data. In panels 2, Europe refers to the European Union and the United Kingdom; North America refers to Canada and the United States; and North Asia refers to China, Japan, and South Korea. In panel 3, dry powder refers to capital that has been committed but not yet invested. Middle market refers to firms with earnings below \$50 million. CLOs = collateralized loan obligations; EBITDA = earnings before interest, taxes, depreciation, and amortization; EU = European Union.

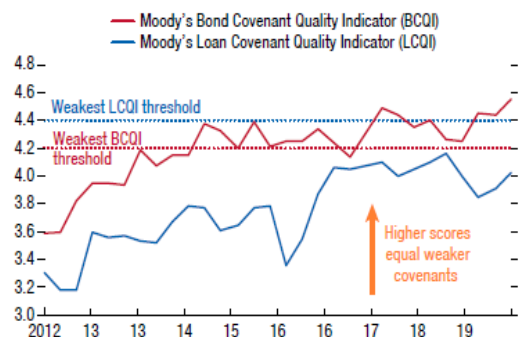
During the pandemic, risky corporate borrowers have continued to take advantage of accommodative financial conditions. New debt issuance in risky credit markets hit record highs in 2021, surpassing \$1 trillion annual issuance for the first time across leveraged loans and HY bonds. The leveraged loan market expanded, as growing demand for floating rate assets in expectation of rising rates during policy normalization supported strong CLO issuance and fairly robust net-inflows to loan mutual funds and ETFs, despite recent bouts of volatility in markets.

With financial conditions very easy, vulnerabilities in these segments have continued to build, including weak credit quality of borrowers, loose underwriting standards, eroding investor protections, and liquidity risks in investment funds. The complexity and opacity in credit markets have also increased, particularly

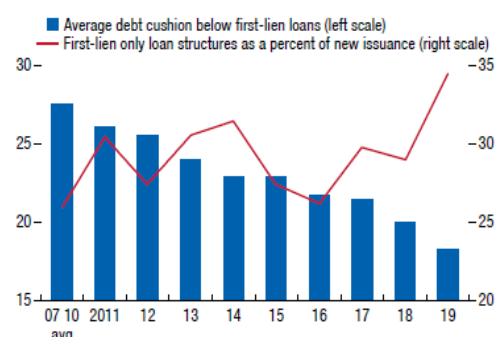
in the private debt market, making monitoring more difficult. Underwriting standards and first-lien investor protections have deteriorated in recent years for new issuance of HY bonds and leveraged loans—as summarized by weaker covenants and thinner loss-absorbing buffers of loans (Figure 18, panels 1 and 2). With the share of newly issued leveraged loans with covenants continuing to shrink, so-called *covenant-lite* structures have become a new normal for broadly syndicated leveraged loans. These structures accounted for close to 90 percent of new loans issued in 2021, marking new highs both in volume and as a share of new issuance.<sup>10</sup> The quality of covenant protections in newly issued HY bonds has also weakened to their lowest levels. In addition, leverage levels have jumped, marking a new record high last seen in 2018. Furthermore, the average debt cushion—or the share of second lien debt—remains thin compared to historical levels. As a result, recovery values for leveraged loans in the event of default may be lower than historical averages in the event of an economic downturn.

**Figure 18. Risky Credit: Growing Balance Sheet Weakness**

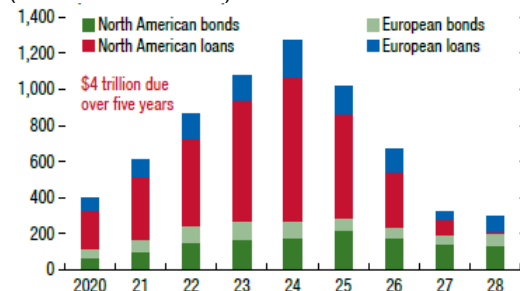
**1. North American Bond and Loan Covenant Indices (Index level)**



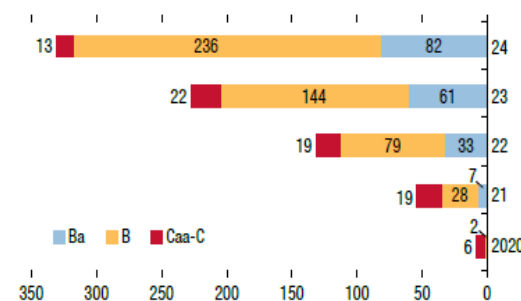
**2. New Issue Leveraged Loan Debt Cushions and First Lien Only Structures (Percent of new issuance)**



**3. Global High-Yield Bond and Leveraged Loan Maturity Profile (Billions of US dollars)**



**4. US Leverage Loan Maturity Profile, by Rating (Billions of US dollars)**



Sources: Global Financial Stability Report, April 2020; Bank of America Merrill Lynch; Moody's; S&P Leveraged Commentary and Data.

Note: The weakest threshold for the BCQI and LCQI refers to the level at which a CQI score would enter the fifth (CQ5) or weakest range of the index score that ranges between 0 and 5. The covenant quality score reflects the overall level of covenant protection based on a five-level scale of covenant quality ranging from CQ1 (strong) to CQ5 (weakest). Avg = average; EBITDA = earnings before interest, taxes, depreciation, and amortization; PE = private equity.

An additional concern is that, while refinancing risks for HY bonds and leveraged loans seem manageable in the short-term, their maturity profile appears more challenging over the medium term, with

<sup>10</sup> The 2021 review of the US Shared National Credit Program indicates ongoing concerns over the risks associated with leveraged loans, particularly the lack of protection for borrowers. Noting that most of the higher-risk loans are held by non-banks, the report says loans frequently comprise "layered risks that include some combination of high leverage, aggressive repayment assumptions, weak covenants, or terms that allow borrowers to increase debt, including draws on incremental facilities."

a record amount of loans maturing in the next two years, when interest rates could be significantly higher as a result of monetary policy normalization and put pressure on debt service capacity (Figure 18, panel 3). Importantly, maturing debt is concentrated in lower-rated loans, raising the specter of possible downgrades and defaults in the event of an economic downturn (Figure 18, panel 4).

Against this backdrop, concerns about elevated borrower leverage, earnings addbacks, sectoral structural weaknesses, weak covenants, reduced investor protections, and large shares of weak credit could magnify investors' perception of credit risk, leading to sharply wider credit spreads and significantly higher forecasts of rating downgrades and defaults in the event of a sharp tightening in financial conditions.

## **8. CHINA: PERSISTENT AND EMERGING VULNERABILITIES**

The financial system in China has seen a buildup in financial vulnerabilities for years, and such vulnerabilities were already significant in some sectors well before the pandemic crisis—as documented in various GFSRs (for example, April 2021, October 2021, and April 2022). Various policy measures during COVID have supported the recovery, but at the expense of an increase in government and corporate debt—the latter driven to a large extent by riskier corporate borrowers.

Targeted credit policies have led to rapid credit growth for small firms and microenterprises, traditionally a segment with elevated credit risk (see GFSR April, 2021: Chapter 1). Among larger firms, new credit has largely flowed to borrowers with weak debt servicing capacity prior to the pandemic, increasing the risk of future defaults (Figure 19, panel 1). Several defaults of state-owned enterprises towards the end of 2020 have also raised investor concerns around implicit guarantees for weaker borrowers, particularly those that rely on backstops from financially strained regional governments. Credit extension to firms and households in financially weaker provinces fell sharply toward the end of 2020, pushing these provinces' share of total credit growth to the lowest levels on record (Figure 19, panel 2). Linkages among local governments, firms, and banks could amplify financial vulnerabilities. In particular, a slowdown in credit extension could weigh on firms' profitability, local economic growth and government revenues, weakening the credibility of implicit guarantees and thus resulting in a further deterioration in borrowing conditions.

More recently, vulnerabilities have been unmasked in the struggling property development sector. Credit availability has deteriorated for home builders, whose offshore US dollar bonds have slumped by more than 50 percent since the second half of 2021. Severe financing strains have spread through much of the sector, generating spillovers to house prices and sales, land sales, and real estate investment. Because real estate has been a major source of China's economic growth and household wealth in the past decade, financial strains in the property development sector could create several mutually reinforcing channels of macro-financial stress (see GFSR, April 2022: chapter 1).

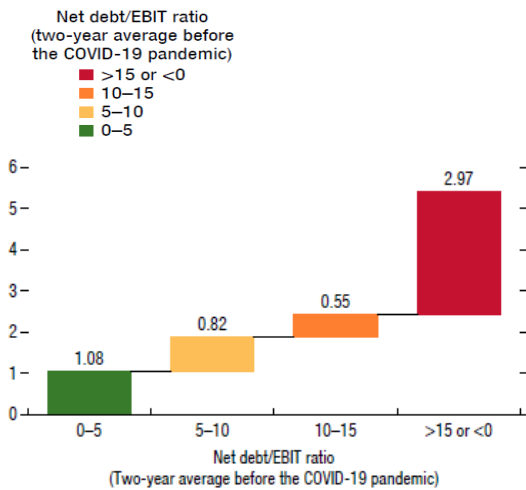
First, prolonged dislocations in new home sales could trigger a correction in property prices due to high valuations and oversupply in some cities. House prices appear stretched across the country. Large declines in house prices could reinforce tightening financial conditions through balance sheet channels, as a large share of loans are collateralized by real estate assets.

Second, property developers' financial strains are likely to add to the fiscal pressures of local governments, constraining financing conditions for some vulnerable firms dependent on local authorities' support. In provinces with weak public finances, deepening investor concerns about the credibility of local

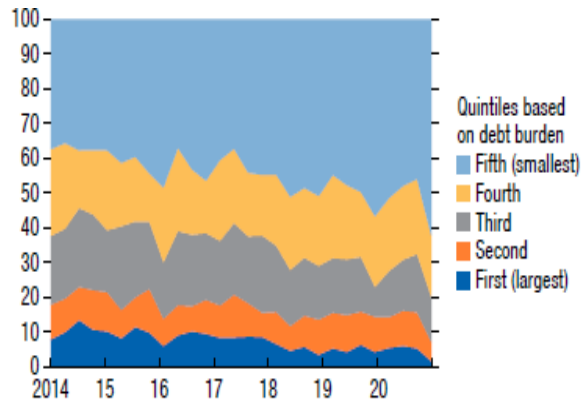
governments' backstops for local firms could exacerbate the pullback in corporate credit availability or precipitate the default of local government financing vehicles (Figure 20, panel 1).

**Figure 19. China: Debt Vulnerabilities in Nonfinancial Sector**

**1. Increase in Debt Reported by Nonfinancial Firms, End-2019 to 2020:Q3**  
(Trillions of renminbi; ratio)



**2. Total New Credit to Households and Firms by Province**  
(Percent of total by province quintile)

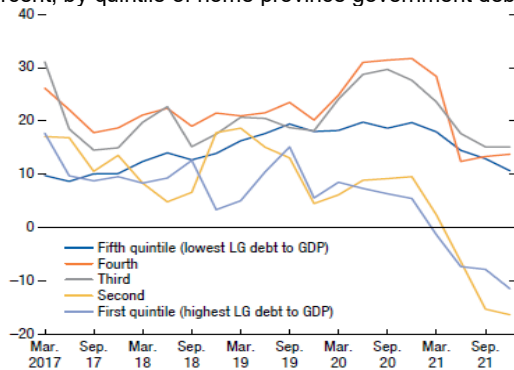


Sources: Global Financial Stability Report, April 2021; Bloomberg Finance L.P.; China Bond; CEIC.

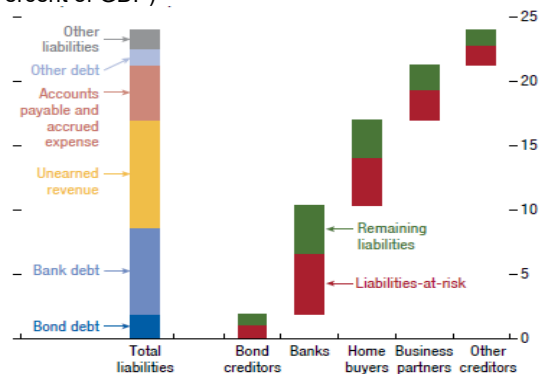
Note: In panel 1 data are based on financial statement and market pricing data for over 4,400 bond-issuing firms. In panel 2, debt burden quintiles are based on the average ranking of provincial government debt-to-GDP and debt-to-revenue ratios. EBIT = earnings before interest and taxes.

**Figure 20. China: Vulnerabilities Stemming from Real Estate Sector**

**1. Growth in Outstanding Corporate Bonds**  
(Percent, by quintile of home province government debt)



**2. Liabilities and Financing of Real Estate Firms**  
(Percent of GDP)



Sources: Global Financial Stability Report, April 2022; Bloomberg Finance L.P.; CEIC; S&P Capital IQ; WIND Information Co.

Note: In panel 2, data are from mid-2021 or latest available. Banks' exposures to real estate firms include their direct lending to real estate firms and their mortgage lending to homebuyers; the latter, which is guaranteed by real estate firms, is for financing unfinished, presold housing. LG = local government.

Finally, rising defaults by property developers could impair balance sheets of financial intermediaries and other private sector entities, weighing on credit intermediation and ultimately economic activity.

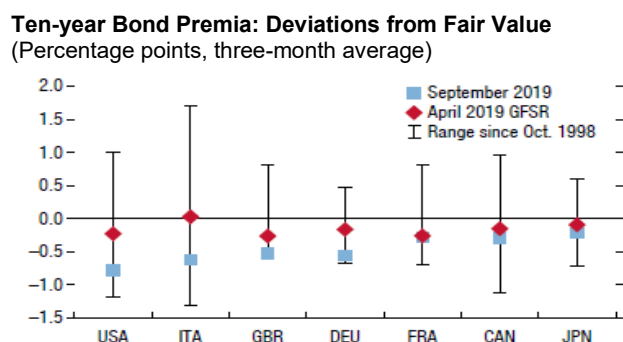
Aggregated total liabilities of property developers with publicly available data are nearly 25 percent of GDP, with roughly half of that attributable to those with liquidity shortfalls (defined as “liabilities-at-risk”). Roughly half of these liabilities-at-risk, or about 6 percent of GDP, are owed to business partners and homebuyers, with the other half owed to financial institutions (Figure 20, panel 2). Rising balance sheet strains across banks and private borrowers could limit banks’ capacity and willingness to extend new credit, weakening growth momentum. As property developers’ liquidity worsens, mortgage credit availability could also suffer as banks rely on property developers’ guarantees to provide mortgages against presold homes.

## 9. ASSET VALUATIONS

The protracted period of low rates and easy financial conditions post GFC has coincided with extremely compressed volatility across asset classes, incentivizing investors to search for yield and take on more risk, including by using financial leverage. These developments may have increased the likelihood of mispricing of risk—that is, stretched asset valuations relative to fundamental values—in markets.<sup>11</sup>

To contain downside risks to the economic outlook stemming from escalating trade tensions, central banks across the globe adopted a more dovish stance in 2019. This appears to have reinforced incentives for investors to reach for yield, increasing duration and credit exposures, thus leading to stretched valuations in some markets (see GFSR, October 2019: Chapter 1). Term premia for longer-maturity bonds were quite low, in many cases below levels justified by fundamentals (Figure 21). Other risk assets also showed signs of stretched valuations. For instance, equity markets in United States and Japan appeared overvalued (Figure 22, panel 1). IMF staff valuation models suggest that spreads of HY bonds were over-compressed relative to fundamentals, along with investment grade (IG) bonds in euro area and the United States (Figure 22, panel 2). Emerging market bonds also appeared overvalued for more than one-third of issuers included in the JPMorgan Emerging Markets Bond Index Global.

**Figure 21. Asset Valuations: Bond Term Premia**



Sources: Global Financial Stability Report, October 2019; Bloomberg Finance L.P.

Note: The figure shows 10-year government bond term premia, based on Adrian, Crump and Moench (2013) model, relative to value implied by fundamentals. GFSR = *Global Financial Stability Report*

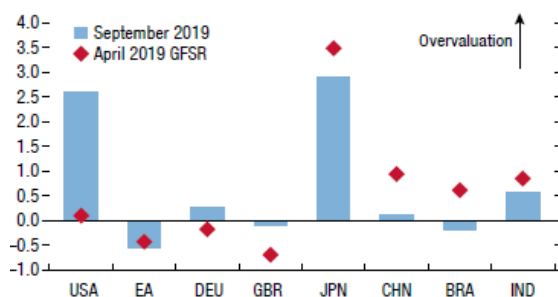
<sup>11</sup> For example, corporate bond yields may fall well below values justified by economic fundamentals, driven by falling risk-free rates and a compression in credit spreads—a market-based measure of expected default risk.



**Figure 22. Asset Valuations: Risk Assets**

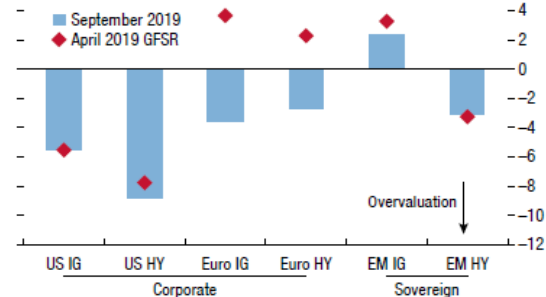
**1. Global Equity Markets: Price relative to Fair Value**

(Percent, scaled by standard deviation of returns, three-month average)



**2. Global Bonds: Spreads Relative to Fair Value**

(Basis points, scaled by standard deviation of spread changes, three-month average)



Sources: Global Financial Stability Report, October 2019; Bank for International Settlements; Bloomberg Finance L.P.; Consensus Economics; Federal Reserve Board; Fitch; Haver Analytics; IMF, World Economic Outlook database; Institute of International Finance; Philadelphia Federal Reserve Survey of Professional Forecasters; Standard & Poor's; S&P Capital IQ; Thomson Reuters I/B/E/S.

Panel 1 shows the percent deviation of equity prices relative to a fair-value model, scaled by the standard deviation of monthly price changes. Panel 2 shows global bond spreads relative to a fair value model, in basis points, scaled by the standard deviation of monthly changes in spreads over three years. Scaling by standard deviation is done in order to aid comparison across economies where the underlying volatility in asset prices may differ. EA = euro area; EM = emerging market; GFSR = *Global Financial Stability Report*; HY = high-yield; IG = investment-grade.

During the March 2020 sell off, risk asset prices dropped sharply, reversing much of their pre-pandemic overvaluations. However, unprecedented policy measures during the pandemic aimed at boosting investor confidence, easing financial conditions, and supporting the recovery resulted in a sharp increase in risk asset prices globally. In equity markets, for example, equity prices rebounded, boosted by historically low real rates and strong earnings (see Figure 15, panel 1). Notwithstanding this year's correction, with central banks on the path to expeditiously tightening policy to bring inflation back down to target, there is a risk of a sharp repricing in equities should the earnings outlook deteriorate significantly. Similarly, corporate credit spreads have remained relatively tight until recently, reflecting investors' benign view of the credit outlook. A sharp slowdown of economic activity could challenge this assessment after years of very compressed spreads.

**10. MONETARY POLICY TIGHTENING AMIDST HISTORICALLY HIGH INFLATION**

As emphasized in previous sections, financial vulnerabilities appear elevated in several sectors across regions. In addition, despite the recent correction, there is some evidence of asset price overvaluations in some segments of financial markets. In such an environment, a disorderly repricing in risk assets would be particularly pernicious because ensuing sharp tightening in financial conditions could unmask and interact with financial vulnerabilities, thus amplifying the adverse impact on economic growth and leading to a significant rise in global financial stability risks.

During the pandemic crisis, central banks around the world responded to the sharply deteriorating economic outlook by taking aggressive policy measures—cutting policy rates to zero in many countries and purchasing a range of assets, including in emerging markets for the first time. Together with fiscal measures aimed at supporting firms and households, this unprecedented policy support allowed financial markets to rebound quickly (maintain the flow of credit to the economy) and economic activity to recover quickly from the pandemic.

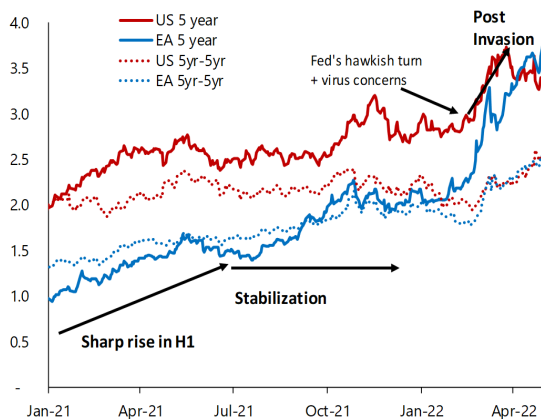


While these steps were necessary to contain the economic fall-out from the pandemic and prevent a 1930s-style Great Depression, robust demand running up against persistent supply chain disruptions and labor shortages has resulted in sustained upward pressures on prices. More recently, the sharp rise in commodity prices stemming from the Russian invasion of Ukraine has added to such pressures.

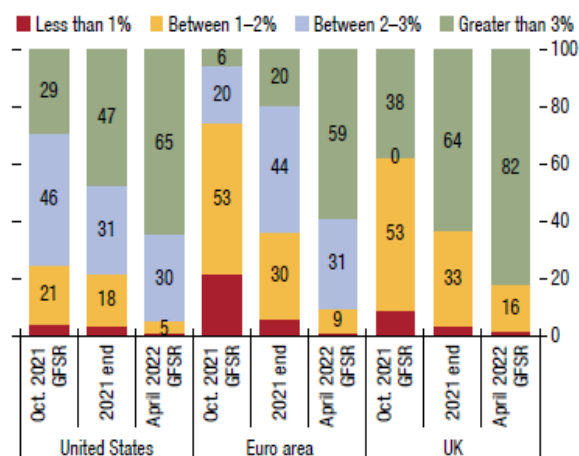
With inflation more persistent than originally anticipated, market-based measures of inflation expectations—as proxied by inflation breakevens—have been rising since early 2021 (see GFSR, April 2022: Chapter 1). Five-year inflation expectations have increased sharply from the lows reached early in the pandemic, reflecting the ongoing economic recovery and the sharp rise in commodity and food prices resulting from the war in Ukraine (Figure 23, panel 1). Longer-term inflation expectations, while still generally anchored, have started to move higher this year, as investors have reassessed their inflation outlook.<sup>12</sup> Risks have shifted significantly to the upside for many countries, as evidenced by the increasing likelihood of high inflation outcomes—for example, inflation rates greater than 3 percent (Figure 23, panel 2).

**Figure 23. Evolution of Market-based Inflation Expectations**

**1. Inflation Breakevens (Percent)**



**2. Market-Implied Probability of Inflation Outcomes (Percent, over five years)**



Sources: Global Financial Stability Report, April 2022; Bloomberg Finance L.P.

Note: In panel 2, probabilities are derived from inflation caps and floors. EA = euro area; US = United States; 5yr-5yr = 5-year, 5-year forward; H1 = first half of the year; GFSR = *Global Financial Stability Report*. Data is as of end-April, 2022.

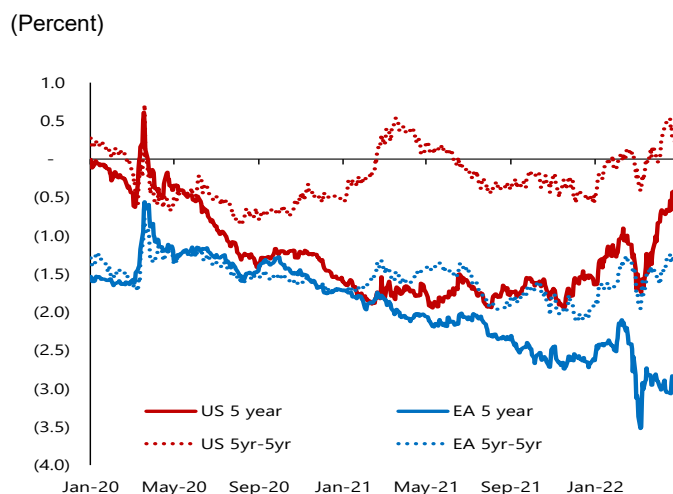
Against this backdrop, central banks have started to normalize the stance of monetary policy. Emerging markets have led this process, beginning to hike policy rates and unwind pandemic-era balance sheet policies in 2020. Since the Fall of last year, central banks in advanced economies have also pivoted toward a more stringent stance of policy. More recently, with inflation prints at multi-decade highs, policymakers have accelerated the pace of normalization—rising interest rates more aggressively, providing firmer forward guidance, and starting to shrink their balance sheets.

As a result, financial conditions have tightened sharply across the globe this year amid heightened volatility in financial markets. Such a tightening is indeed the intended objective of policy. But with significant accommodation still in place (as evidenced by still meaningfully negative real interest rates in

<sup>12</sup> Longer-term expectations correspond to the 5yr-5yr (5-year, 5-year forward) horizon, i.e., the five-year period that begins five years from the current date.

many advanced economies), policymakers may need to consider a faster pace of normalization to achieve the desired tightening of financial conditions (see Figure 24). With inflation stubbornly high and significantly above target in advanced economies and emerging markets, central banks need to act decisively to prevent inflationary pressures from becoming entrenched and avoid an unmooring of inflation expectations. Amid tight labor markets and robust aggregate demand, there is a risk that wage and price increases may become engrained. As the war in Ukraine continues to unfold, the surge in commodity prices and persistent disruptions to global supply chains pose upside risks to the inflation outlook.

**Figure 24. Evolution of Real Rates**



Sources: Bloomberg Finance L.P.; and IMF staff calculations.  
 Note: EA = euro area; US = United States; 5yr-5yr = 5-year, 5-year forward. Data is as of end-April, 2022.

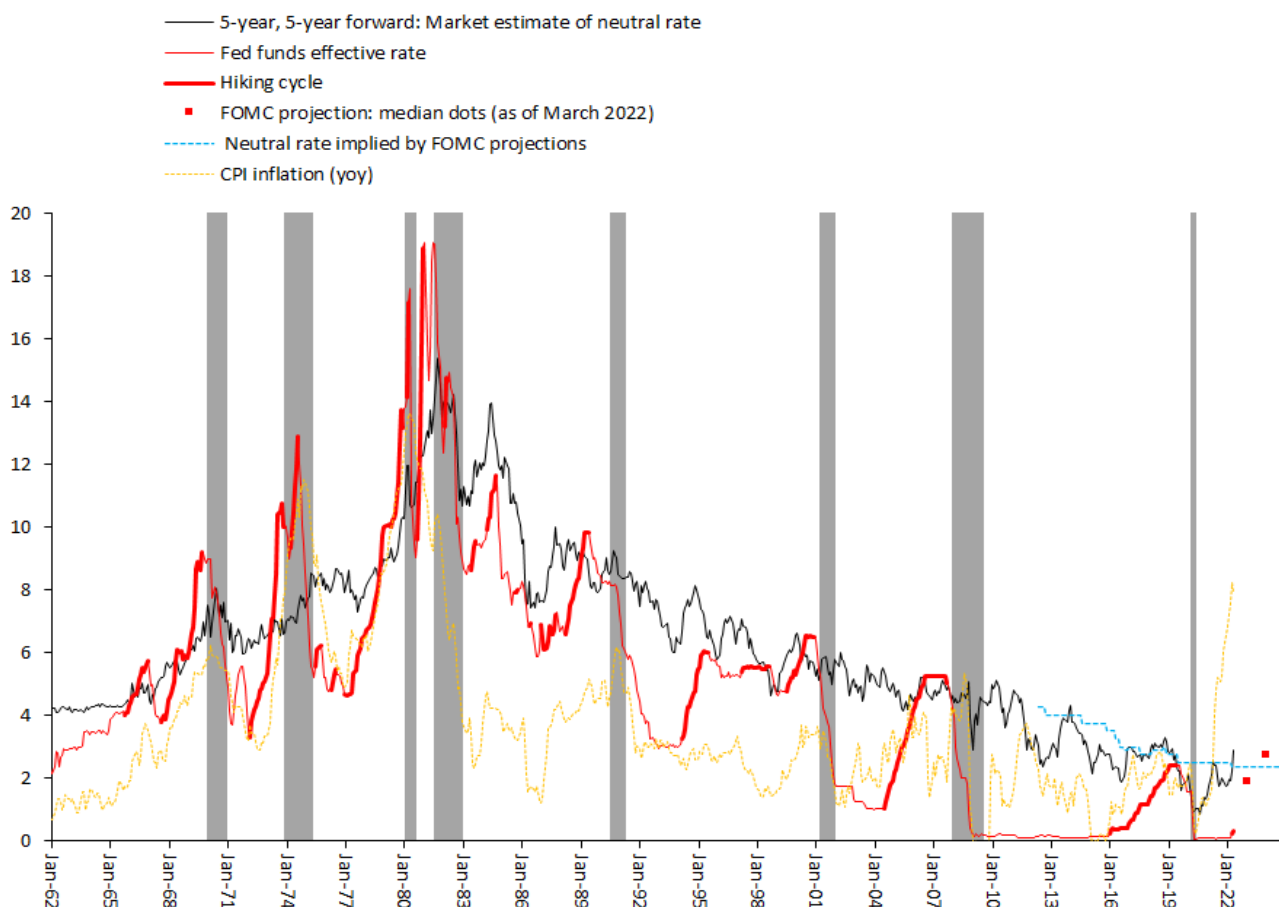
For many countries, bringing inflation credibly back to target may entail raising policy rates above neutral levels.<sup>13</sup> For example, at the time of the March 2022 FOMC meeting, the median FOMC participant anticipated the federal funds rate to exceed the FOMC’s current projection of the nominal neutral rate in 2023 and 2024. This raises the question of whether central banks can achieve the so-called ‘soft-landing’, a scenario where policymakers manage to avoid an economic recession.

Looking at the US as an example, historically, since the early 1960s, each time the Federal Reserve has raised the federal funds rate close to, or above, the neutral nominal rate—using the 5y5y forward nominal rate as a proxy—the US economy has entered a recession soon after (Figure 25). The only exception is the tightening cycle in 1994. In that case, the policy rate tightened very close to neutral, or exceeded it (depending on the estimate of neutral used) without triggering a recession.

<sup>13</sup> Conceptually, the neutral rate refers to the level of the policy rate which neither stimulates nor restrains the economy.

**Figure 25. US Monetary Policy Tightening Cycles**

**1962 onwards**  
(Percent)



Sources: Bloomberg Finance L.P.; US Federal Reserve; Bureau of Labor Statistics; and IMF staff calculations.  
Note: Gray shaded regions indicate recessionary periods. FOMC = Federal Open Market Committee.

This tightening cycle may prove more challenging compared to previous episodes. Policymakers are faced with a difficult tradeoff between fighting decade-high inflation and safeguarding the post-pandemic recovery at a time of heightened uncertainty about economic prospects while avoiding a disorderly tightening of global financial conditions. Amid persistent inflationary pressures, central banks face challenges to meet their mandates and should be resolute in preventing any perceived damage to their credibility. Bringing inflation down to target and preventing a de-anchoring of inflation expectations will require careful communication and clear guidance about the normalization process to avoid unnecessary volatility in financial markets. It is also important that the normalization process remain data dependent and be recalibrated along the way as dictated by the evolution of the economic and inflation outlook.

While a tightening of financial conditions is needed to address inflationary pressures, it could threaten financial stability if sudden and abrupt. The recent surge in commodity prices, by complicating the challenge policymakers are confronted with, has raised concerns among investors about the readiness of central banks to backstop financial markets in the event of a sharp decline in risk assets prices. Against the backdrop of a deterioration of the economic outlook and heightened uncertainties, a disorderly

tightening of financial conditions could interact with, and be amplified by, elevate financial vulnerabilities, weighing on economic growth and derailing the post-pandemic recovery.

## 11. MACRUPRUDENTIAL TOOLS AND POLICY RECOMMENDATIONS

At the onset of the pandemic crisis, many countries released their macroprudential buffers (such as the countercyclical capital buffers or domestic systemic risk buffers) and issued supervisory expectations that capital and liquidity buffers included in the Basel III framework should be used—for example, enabling banks to operate below normal liquidity requirements and to use the capital conservation buffers (Table X).<sup>14</sup> Some countries also adjusted supervisory priorities and eased certain regulatory requirements, albeit on a temporary basis. The objective of macroprudential easing was to allow financial intermediaries to absorb potential losses, thereby maintaining the flow of credit to the economy.

**Table X. Monetary and Financial Policy Responses to the COVID-19 Crisis**

(In 29 jurisdictions with systemically important financial sectors, as of 2020 Q2)

	Advanced Economies																Emerging Market Economies													
	Euro Area						Other Europe				N. America		Asia-Pacific																	
	AUT	BEL	FRA	FIN	DEU	IRL	ITA	LUX	NLD	ESP	DNK	NOR	SWE	CHE	GBR	CAN	USA	AUS	HKG	JPN	KOR	SGP	CHN	BRA	IND	MEX	POL	RUS	TUR	
<b>Monetary Policies</b>																														
1. Policy rate cuts (basis points)											125				65	150	150	50	114		50		30	50	75	50	50			100
2. Central bank liquidity support		Y								Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
3. Central bank swap lines			Y							Y	Y	Y	Y	Y	Y	Y	Y	Y		Y	Y	Y		Y		Y				
4. Central bank asset purchase schemes					Y							Y		Y	Y	Y	Y	Y		Y							Y			
<b>External Policies</b>																														
1. Foreign currency intervention																									Y	Y	Y		Y	Y
2. Capital flow measures																														
<b>Financial Policies for Banks</b>																														
1. Easing of the countercyclical capital buffer		Y	Y		Y	Y				Y	Y	Y	Y	Y					Y											
2. Easing of systemic risk or domestic capital buffer				Y				Y							Y												Y	Y		
3. Use of capital buffers					Y						Y	Y	Y	Y		Y	Y		Y		Y			Y	Y		Y	Y	Y	Y
4. Use of liquidity buffers					Y					Y	Y	Y	Y	Y	Y	Y	Y			Y			Y				Y	Y	Y	Y
5. Adjustments to provisioning requirements					Y					Y	Y	Y		Y		Y	Y						Y	Y		Y	Y	Y	Y	Y
<b>Financial Policies for Borrowers</b>																														
1. State loans or credit guarantees	Y	Y	Y	Y	Y	Y	Y	Y	Y		Y	Y	Y	Y	Y	Y	Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
2. Restructuring of loan terms or moratorium on payments		Y	Y	Y		Y	Y	Y	Y		Y	Y		Y	Y	Y	Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Source: IMF staff. *Global Financial Stability Report*, April 2020.

Note: The table shows policy measures for 29 economies with systemically important financial sectors. The table does not include details on all of the central bank measures that have been introduced, but rather groups them under “central bank liquidity support” or “central bank asset purchase.” “Foreign currency intervention” includes central bank interventions in the foreign exchange spot and derivatives markets, as well as other measures, such as changes in foreign exchange reserve requirements. “Easing of the countercyclical capital buffer” includes an easing from announced or effective levels, or an easing of the sectoral countercyclical capital buffer. “Restructuring of loan terms or moratorium on payments” includes both official actions and measures taken by banks. Data labels in the table use International Organization for Standardization (ISO) country codes. For more details, see [www.IMF.org/COVID19policytracker](http://www.IMF.org/COVID19policytracker).

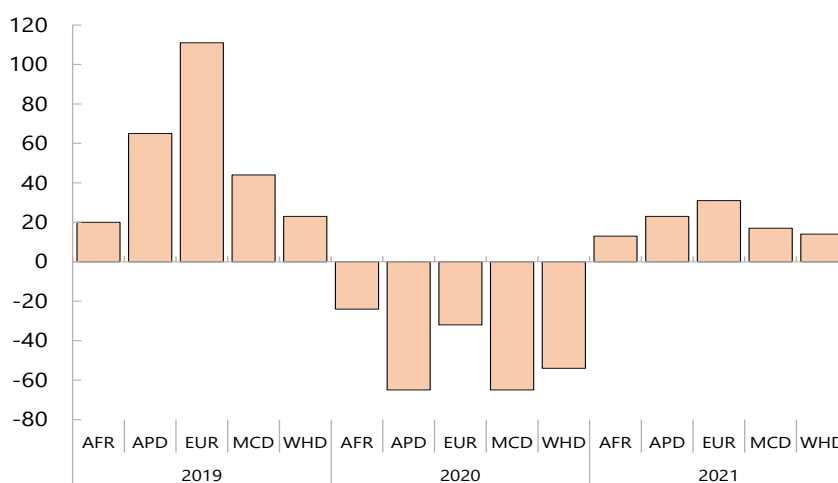
Easing of macroprudential policies at a time of unprecedented monetary and fiscal support, however, may have unintentionally contributed to the buildup of financial vulnerabilities—vulnerabilities that in some cases pre-dated the pre-pandemic period (see Section 3). There is some evidence that policymakers

<sup>14</sup> At the same time, some restrictions were imposed: for example, many countries placed restrictions on dividends and payouts to shareholders to supplement the capital easing measures.

have started to reverse some of the easing implemented in response to the pandemic and to tighten the stance of macroprudential policy (Figure 26).

**Figure 26. Net Tightening of Macroprudential Policies**

Number of changes



Sources: IMF Macroprudential Policy Survey database and staff calculations.

Note: Net tightening = total number of tightening measures minus easing measures. AFR = Africa region, APD = Asia and Pacific region, EUR = Europe, MCD = Middle East and Central Asia, WHD = Western Hemisphere.

To mitigate risks stemming from financial vulnerabilities, and the possibility that fragilities may interact with the tightening of financial conditions needed to tackle inflationary pressures, policymakers should take targeted actions to contain a further buildup of financial vulnerabilities. This include tightening selected macroprudential tools to tackle pockets of elevated vulnerabilities while avoiding a disorderly tightening of financial conditions. If such tools are not available—for example, in some segments of the nonbank financial intermediation sector—policymakers should urgently develop them. Given the challenges to design and operationalize such tools, policymakers may also consider building buffers elsewhere to safe-guard financial stability. Striking a balance between containing the buildup of vulnerabilities and avoiding procyclicality appears important in light of persisting uncertainties about the economic outlook, the ongoing monetary policy normalization process, and limits on fiscal space in the aftermath of the pandemic.

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