CHAPTER 1

GLOBAL FINANCIAL STABILITY OVERVIEW

BRIDGE TO RECOVERY

Chapter 1 at a Glance

- **Near-term global financial stability risks have been contained** for now. Unprecedented and timely policy response has helped maintain the flow of credit to the economy and avoid adverse macro-financial feedback loops, creating a bridge to recovery.
- However, **vulnerabilities are rising**, intensifying financial stability concerns in some countries. Vulnerabilities have increased in the nonfinancial corporate sector as firms have taken on more debt to cope with cash shortages and in the sovereign sector as fiscal deficits have widened to support the economy.
- As the crisis unfolds, **corporate liquidity pressures may morph into insolvencies**, especially if the recovery is delayed. Small and medium-sized enterprises (SMEs) are more vulnerable than large firms with access to capital markets. The future path of defaults will be shaped by the extent of continued policy support and the pace of the recovery, which may be uneven across sectors and countries.
- While the **global banking system is well capitalized**, there is a weak tail of banks, and some banking systems may experience capital shortfalls in the October 2020 *World Economic Outlook* adverse scenario even with the currently deployed policy measures.
- **Some emerging and frontier market economies face financing challenges**, which may tip some of them into debt distress or lead to financial instability, and may require official support.
- As **economies reopen, continued policy support remains critical**. Accommodative monetary and financial conditions, credit availability, and targeted solvency support will be essential to sustaining the recovery, facilitating the necessary structural transformation and transition to a greener economy.
- The **post-pandemic financial reform agenda should focus on addressing fragilities unmasked by the coronavirus disease (COVID-19) crisis**, strengthening the regulatory framework for the nonbank financial sector and stepping up prudential supervision to contain excessive risk taking in a lower-for-longer interest-rate environment.

The COVID-19 Pandemic Has Led to a Deep Recession

The COVID-19 pandemic has led to an unprecedented contraction in economic activity globally, with global growth projected at –4.4 percent this year, according to the October 2020 *World Economic Outlook* (WEO). Both advanced and emerging market economies will suffer deep and broad-based declines, with more than 85 percent of countries around the world expected to see subzero growth this year (red shaded area in Figure 1.1). Confronted with a global health and economic crisis, policymakers have taken extraordinary measures to protect people, the economy, and the financial system. Despite forceful policy action, however, the prospects for recovery remain highly uncertain.

The October 2020 WEO baseline global growth forecast of +5.2 percent for 2021 assumes that continued unprecedented monetary policy accommodation and large fiscal lifelines will keep financial conditions easy and help offset COVID-19–related cash flow pressures on firms and households, thus

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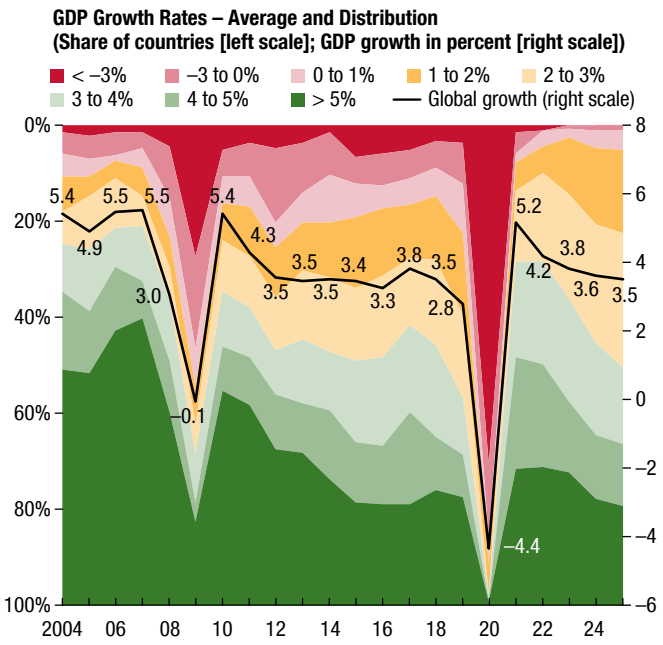
Figure 1.1. GDP Growth: The COVID-19 Crisis versus the Global Financial Crisis



Sources: IMF, October 2020 *World Economic Outlook*; and IMF staff calculations.

keeping insolvencies at bay. Nevertheless, some vulnerable firms (such as SMEs) and sectors (notably the contact-intensive sectors) will experience greater distress. Furthermore, if the recovery were delayed, liquidity pressures could reemerge and insolvencies could rise sharply and become more widespread. Such an adverse scenario would entail repricing of risk in credit markets and a tightening of financial conditions—ultimately testing the resilience of the financial system, as well as the capacity of country authorities to provide additional policy support.

The deterioration of the global economic outlook early in the year shifted the expected distribution of global growth in 2020 deeply into negative territory (Figure 1.2, panel 1). Besides changes in the WEO baseline global growth forecast, around which these distributions are centered, these shifts reflect changes in financial conditions, and hence are heavily influenced by investor perceptions and assessment of future growth outcomes. The massive easing of financial conditions (discussed in the June 2020 *Global Financial Stability Report* [GFSR] *Update*) has helped contain downside risks to growth and financial stability despite the worsening in the WEO baseline forecast between April and June.[1]

Looking ahead, current economic and financial conditions, combined with the expected rebound of 5.2 percent in global GDP growth next year, imply that the 2021 growth forecast distribution will shift back into positive territory (shown in green in Figure 1.2, panel 1). Nonetheless, the shape of the 2021 growth distribution suggests that there are still significant downside risks. For example, the probability of global growth falling below zero in 2021 is close to 5 percent, indicating that risks are elevated by historical standards (Figure 1.2, panel 2).

Several possible developments could delay the recovery and lead to worse-than-expected growth outcomes, putting financial stability at risk. A resurgence of the virus in some countries may require partial lockdowns and more prolonged social distancing, leading to job losses and renewed pressures on corporate and financial sector balance sheets (see the WEO Scenario Box). Policy missteps, such as a premature withdrawal of policy support (as discussed in the October 2020 WEO), could trigger investor reassessment of risks, market turbulence, and tightening of financial conditions. For example, market participants have been increasingly attuned to the progress on Brexit negotiations given the looming deadline, a development that could lead to increased market volatility.

Unprecedented Policy Support Has Helped Buy Time

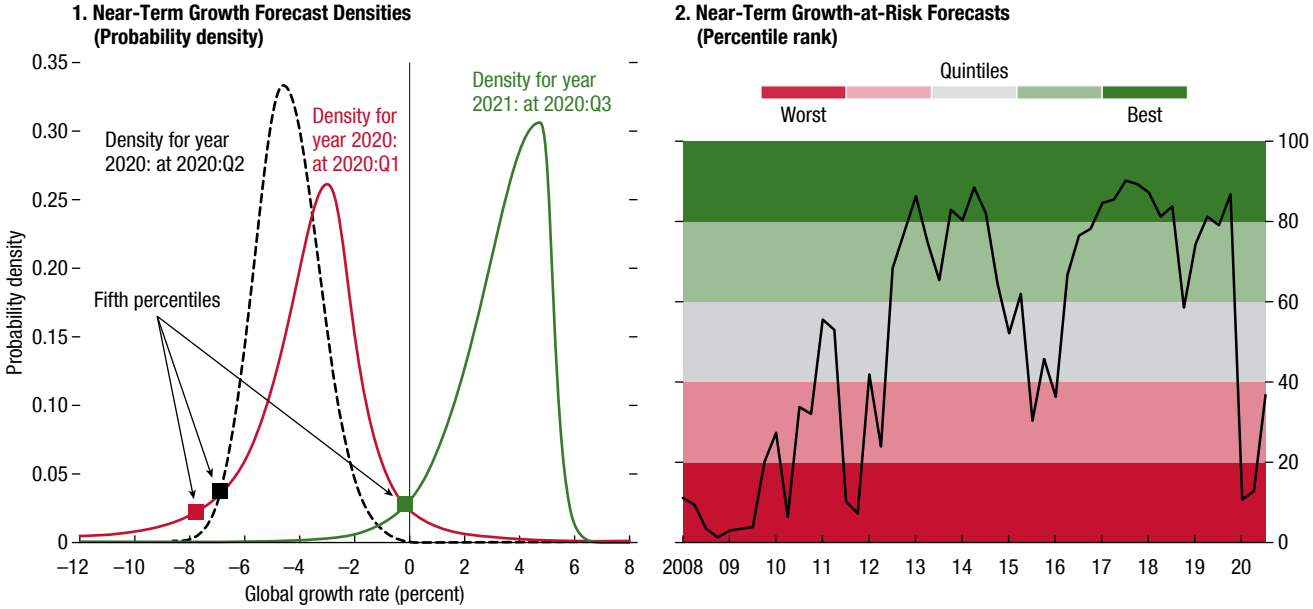
Unprecedented policy actions taken in response to the pandemic have been successful in boosting investor sentiment and maintaining the flow of credit to the economy. Central banks' interventions have stabilized key markets by lifting investor risk appetite through both anticipated and actual central bank demand for safe and risk assets (Figure 1.3).

[1]The growth-at-risk framework assesses the downside risks to financial stability by gauging how the range of severely adverse growth outcomes (5th percentile of the growth distribution) shifts in response to changes in financial conditions and vulnerabilities (see Chapter 3 of the October 2017 GFSR for details). Assumptions pertaining to policy responses or macroeconomic shocks are captured in the growth-at-risk framework to the extent that they affect the current economic and financial conditions, or the baseline growth forecast. Given the unprecedented nature of the current crisis, model-based growth-at-risk estimates are inevitably subject to larger-than-usual uncertainty bounds.

Figure 1.2. Global Growth at Risk

The unprecedented policy support helped reduce the downside risks to growth and financial stability, but even with growth projected to rebound next year ...

... risks are expected to remain tilted to the downside and within the danger zone.



Sources: Bank for International Settlements; Bloomberg Finance L.P.; Haver Analytics; IMF, International Financial Statistics database; and IMF staff calculations.
Note: Forecast density estimates are centered around the respective *World Economic Outlook* forecasts for 2020 and 2021. In panel 2, the black line traces the evolution of the 5th percentile threshold (growth-at-risk) of near-term growth forecast densities. The color of the shading depicts the percentile rank for the growth-at-risk metric, from 1991 onwards. See the April 2018 *Global Financial Stability Report* for details.

Many emerging market central banks have, for the first time, engaged in asset purchases to stabilize their local currency bond markets or to ease domestic financial conditions (see Chapter 2). Unprecedented policy support has been a game changer—it has lessened risks to financial stability and bought time for country authorities to take steps to address the health crisis and contain its economic fallout. However, these policy measures may have unintended consequences, for example, by contributing to stretched asset valuations or fueling financial vulnerabilities (see subsequent sections), especially if these policies remain in place for an extended period of time and investors become used to them. These considerations should be taken into account as central banks plan for the eventual withdrawal of support (see the policy section).

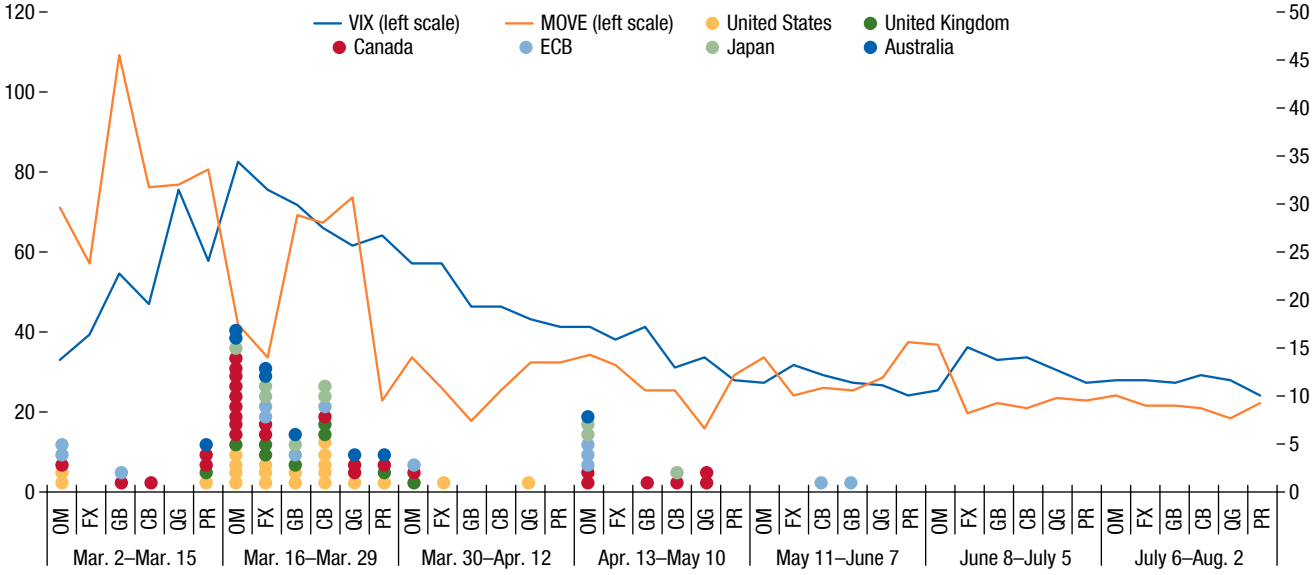
Since the June 2020 GFSR *Update*, global financial conditions have remained accommodative on the back of continued policy support (Figure 1.4, panel 1). In *advanced economies*, low interest rates and a recovery in risk asset markets have continued to support further easing in financial conditions (Figure 1.4, panel 2). With nominal yields already at low levels, central bank measures have driven real yields down to historic lows. Market-implied inflation expectations for the near to medium term have recovered since the March sell-off but remain slightly below pre–COVID-19 levels (see Online Annex 1.1).[2] In other *emerging markets* (excluding China), financial conditions have generally eased since June (Figure 1.4, panels 3 and 4), more so in emerging market economies in Asia and Latin America than in those in Europe, the Middle East, and Africa. External spreads for many emerging markets remain above the pre–COVID-19 levels, reflecting a deterioration in domestic economic activity.[3]

[2]While the decline in real yields has mechanically pushed up inflation breakevens (given stable nominal yields), this appears to have been driven in part by liquidity and technical factors.

[3]IMF staff analysis, using the fundamentals-based JP Morgan Emerging Market Bond Index Global model, shows that the key driver of widening of spreads in 2020 has been the deterioration in domestic factors, following the deep and sudden recession in most economies.

Figure 1.3. Central Bank Measures in Major Advanced Economies—Game Changer
(Index, left scale; number of policy announcements, right scale)

Central bank actions were forceful and swift, and targeted a range of key markets using an array of policy tools.



Sources: Bloomberg Finance L.P.; central bank websites; Haver Analytics; and IMF staff calculations.
Note: Intervention types refer to expansion/enhancement of OMs, FX, GBs, CBs, QGs, and PRs. Each dot refers to an announced enhancement or new operation or facility. The policy intervention types correspond to the economic nature of the interventions undertaken, even though in some cases the technical mechanism varies. CB = commercial paper, asset-backed securities, and corporate bond purchases; ECB = European Central Bank; FX = foreign exchange swap lines and foreign exchange lending operations; GB = government securities purchase; MOVE = Merrill Lynch Option Volatility Estimate; OM = open market operation, collateral framework, and standing liquidity facility; PR = reduced policy rate; QG = purchase of quasi government or government-guaranteed/-supported securities; VIX = Chicago Board Options Exchange Volatility Index.

In *China*, financial conditions have remained broadly stable over the summer (Figure 1.4, panels 1 and 2). After initially cutting policy rates and deploying measures to directly increase bank credit, authorities in May scaled back expectations for further interest rate reductions, leading to a rebound in bond and money market yields (Figure 1.4, panels 1 and 2). The policy shift came amid improving economic activity but also concerns about rising financial sector risks. Rapid increases in risky asset management product borrowing contributed to large swings in interest rates, whereas most banks saw limited pass-through from policy rates to funding costs, posing risks to bank profitability (see Online Annex Box 2.1). Other People's Bank of China measures have helped direct credit to vulnerable borrowers and support the economy, but these may be adding to nonfinancial sector vulnerabilities (Figure 1.9, panel 2).

The Pandemic Has Hit Some Economic Sectors Harder than Others

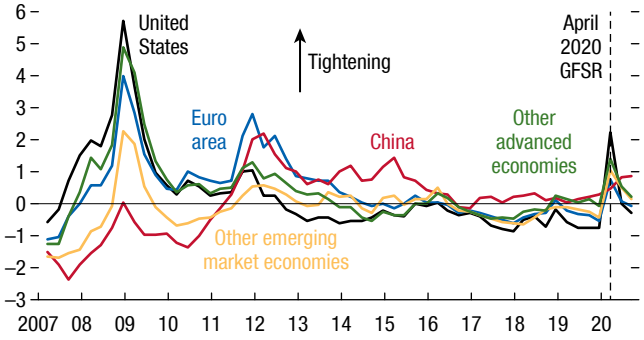
Behind the broad rebound in risk asset prices there are clear signs of *differentiation* across sectors. Some sectors (such as airlines, hotels, energy, and financials) have been more affected by the lockdown and social distancing, whereas those that are less contact-intensive (information technology, communications) have been faring better. Equity market indices with a larger share of sectors less affected by COVID-19 have seen a stronger rebound (Figure 1.5, panel 1).

Market analysts' earnings forecasts may provide an indication of the likely pace of recovery from the pandemic across sectors and countries. Certain sectors—notably consumer services (hotels, restaurants, leisure), industrials (capital goods), and financials (banks)—have seen large swing in their 2020–21 earnings per share forecasts, the large dispersion of forecasts across analysts, and significant downgrades

Figure 1.4. Global Financial Conditions

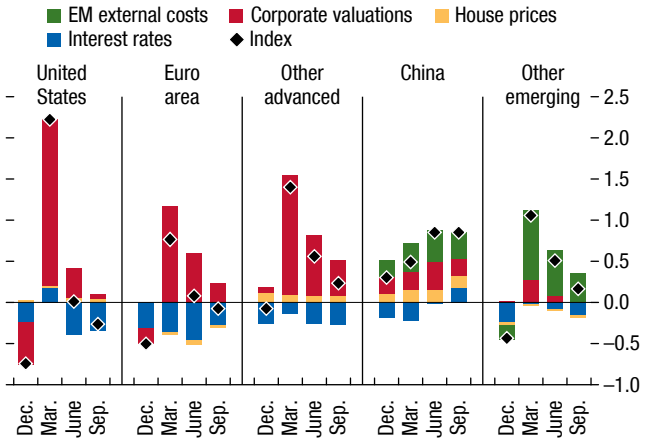
Global financial conditions have eased further since the June 2020 GFSR *Update* ...

1. Global Financial Conditions Indices (Standard deviations from mean)



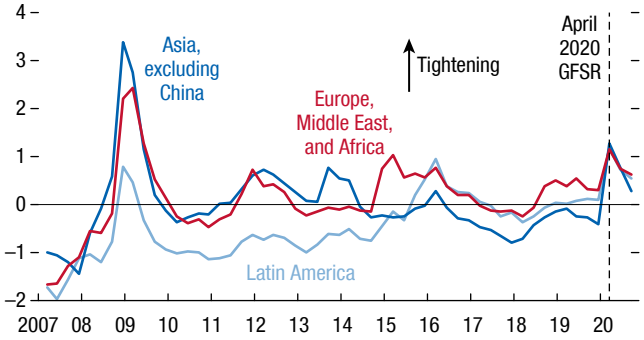
... on the back of a continued decline in interest rates and recovery in risk asset markets.

2. Key Drivers of Global Financial Conditions Indices (Standard deviations from mean)



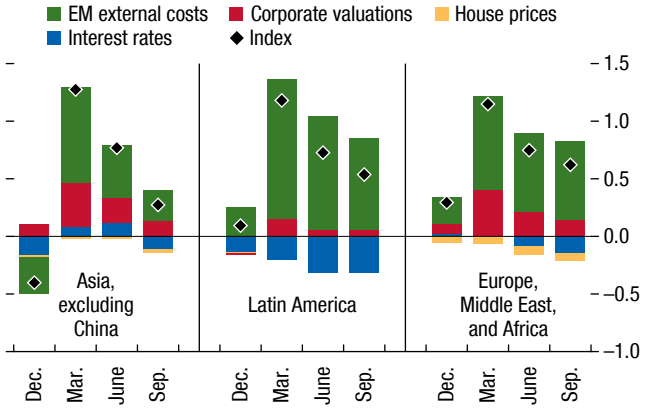
In emerging market economies, financial conditions have eased as well.

3. Financial Conditions Indices for Emerging Market Regions (Standard deviations from mean)



External funding costs have declined but remain elevated relative to pre-COVID-19 levels.

4. Key Drivers of Emerging Market Financial Conditions Indices (Standard deviations from mean)



Sources: Bank for International Settlements; Bloomberg Finance L.P.; Haver Analytics; IMF, International Financial Statistics database; and IMF staff calculations.
Note: Panels 1 and 3 show quarterly averages for 2007–2019 and monthly averages for 2020; panels 2 and 4 show monthly averages. In panels 2 and 4, the interest rate component contains real short-term interest rates, term spreads or medium-term interest rates, and interbank spreads. See the April 2018 *Global Financial Stability Report* (GFSR) for details. EM = emerging market.

of long-term earnings per share growth forecasts since the outbreak (Figure 1.5, panel 2). The downward revisions for financials likely reflect the subdued growth outlook and low interest rates. Furthermore, banks in major economies have significant exposure to commercial real estate, which has been hit particularly hard by the pandemic as the shift to working remotely has sharply reduced demand for commercial properties (see Box 1.1). The differential global recovery across sectors means that some countries may recover faster than others.

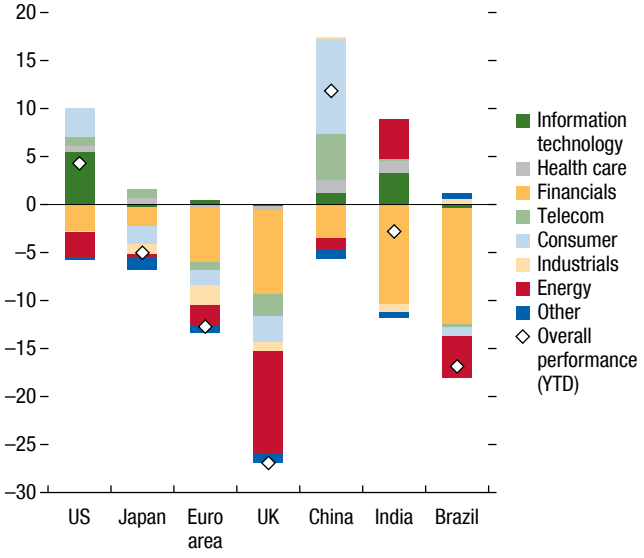
Risk Assets Have Rebounded despite High Economic Uncertainty

The disconnect between rising market valuations and weak economic activity, discussed in the June 2020 GFSR *Update*, has persisted notwithstanding

Figure 1.5. Global Equity Markets: Impact of COVID-19 on Countries and Sectors

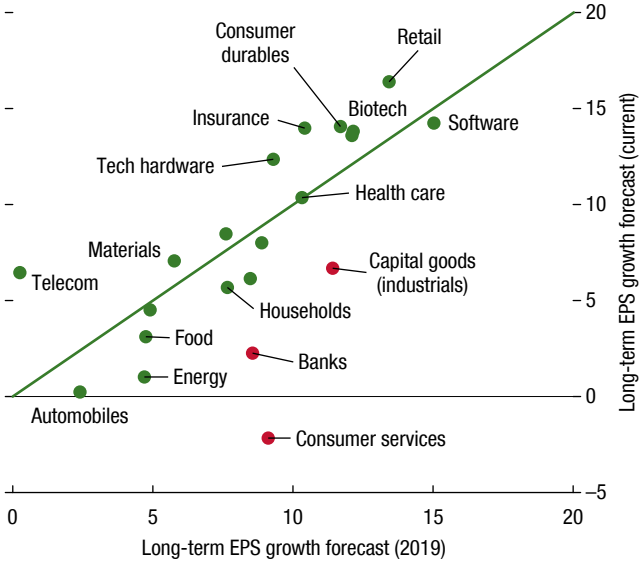
Countries and regions with a higher share of less contact-intensive sectors (such as information technology and telecommunications) have done better, whereas energy and financial stocks have been a drag on stock market performance.

1. Stock Market Performance in 2020: Sectoral Contributions (Percent, year to date)



Some sectors (such as consumer services, industrials, and financials) have seen large fluctuations in their near-term forecasts as well as notable downward revisions of the long-term earnings per share forecasts.

2. Long-term EPS Growth Forecasts: United States, Euro Area, and Japan (Percent, simple average)



Sources: Bloomberg Finance L.P.; MSCI; Refinitiv I/B/E/S; and IMF staff calculations.
Note: In panel 1, all country indices are local currency MSCI sub-indices. Overall performance is based on aggregation of sectoral indices. "Consumer" is the sum of the consumer discretionary and consumer staples sectors and "other" is the sum of the utilities, materials, and real estate sectors. In panel 2, red dots denote the largest downward forecast revisions. Long-term forecasts cover three- to five-year horizon. All indices are national benchmark indices by sector. UK = United Kingdom; US = United States; YTD = year to date.

the September correction in equity markets. Despite subdued activity and a highly uncertain outlook, global *equity markets* have rebounded from the March lows, though with notable differentiation across countries, depending on the spread of the virus, the scope of policy support, and sectoral composition (see Figure 1.6, panels 1 and 2).

The stock market recovery has been largely driven by *policy support*. A simple decomposition of the S&P 500 year-to-date performance into the contributions of three factors—earnings (current and projected), the risk-free rate, and the equity risk premium—shows that a sharp deterioration in the corporate earnings outlook has contributed negatively to stock market performance (Figure 1.6, panel 3). But such a negative contribution has been more than offset by a lower risk-free rate (green bars) and a compression of the equity risk premium (shown as a positive contribution in gray), reflecting the Federal Reserve's policy rate cuts and other policy measures that have boosted risk sentiment.

Factors such as the *sectoral composition*, *investor base, and other technical factors* have also played a role in driving equity valuations.[4] For example, US stock market performance has been boosted by a large share of tech firms in the S&P 500 index, as the pandemic has had pronounced implications for work and consumption behavior that are expected to encourage spending on new technologies (Figure 1.6, panel 4). Despite the September sell-off, five tech giants have significantly outperformed the rest of the index since June 2020, benefiting from their business models and diversified business revenues (Figure 1.6, panel 5).[5] In addition, in some countries, retail investors, who tend to chase growth and technology stocks, have

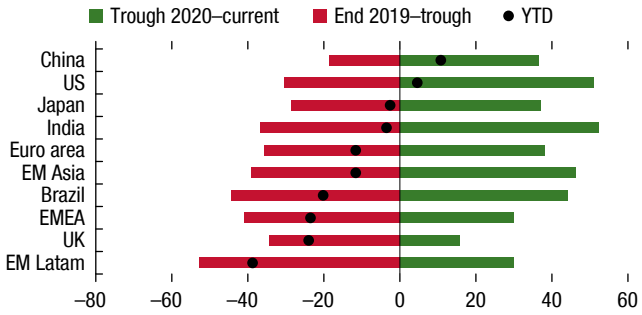
[4]For example, the US stock market is dominated by sectors and large firms that have been less affected by the pandemic than the broader economy. SMEs, which are not publicly listed but play an important role in the economy, could also account for some of this disconnect between stock market and the broader economy.

[5]The top five S&P stocks by market cap (AAPL, AMZN, GOOG, FB, MSFT) account for about 25 percent of total market capitalization.

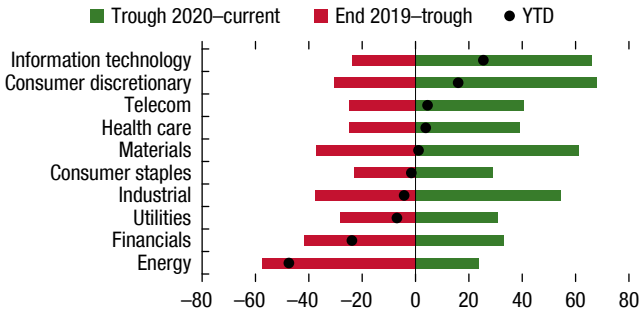
Figure 1.6. Equity Market Valuations

Markets rebounded on strong policy support, but with clear differentiation across countries and sectors.

1. Global Equity Markets: Countries and Regions
(Percent)

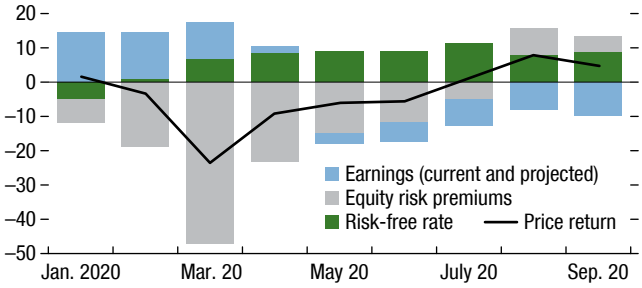


2. Global Equity Markets: Economic Sectors
(Percent)



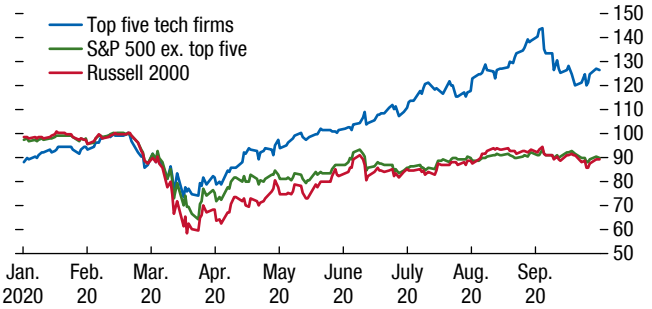
Falling risk-free rates and equity premium compression have supported equity market performance, despite the drag from a weaker earnings outlook.

3. S&P 500: Decomposition of Equity Market Performance
(Percent contribution to cumulative returns)



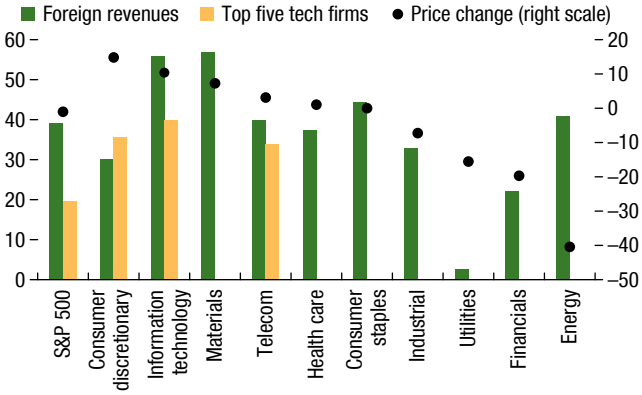
In the United States, a few large firms have significantly outperformed the rest of the stock market since the COVID-19 outbreak.

4. US Stock Market Performance
(Indices; February 19, 2020 = 100)



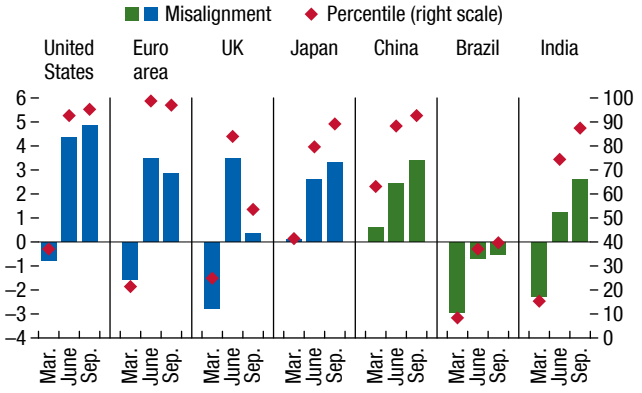
These top five firms tend to dominate certain sectors (information technology, telecommunications, consumer discretionary) and have large international exposures.

5. Stock Market Performance and Shares of Foreign Revenues and of Top Five Tech Firms by Sector
(Price changes in percent since February 19, 2020, shares in percent)



Valuations in major equity markets have become increasingly stretched by historical standards.

6. Equity Market Misalignments
(Deviation from fair value per unit of risk, left scale; percentile based on 1995–2020 period, right scale)

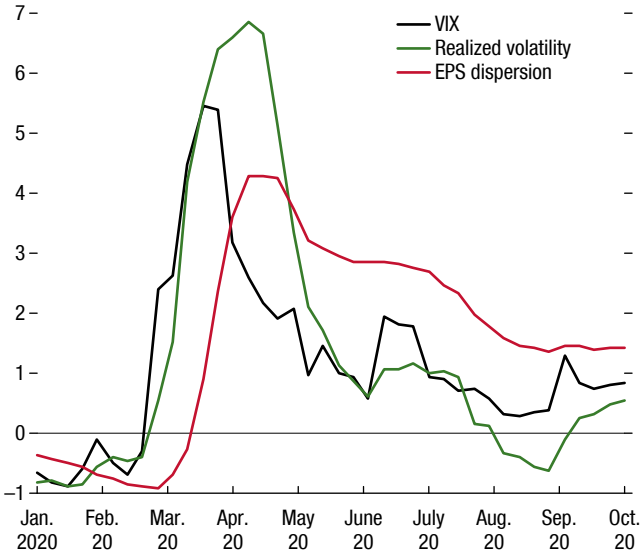


Sources: Bloomberg Finance L.P.; Consensus Economics; Haver Analytics; Refinitiv I/B/E/S; and IMF staff calculations.
Note: In panel 3, the decomposition is based on a standard three-stage dividend discount model. See Panigirtzoglou (2002). In panel 4 and 5, the top five firms are Alphabet (Google), Amazon, Apple, Facebook, and Microsoft. In panel 6, misalignment is the difference between market- and model-based values scaled by the standard deviation of weekly returns; positive values indicate overvaluation. Intuitively, this measure indicates how many standard deviations of weekly returns (or "units of risk") it would take to get back to fair value. Misalignment in the euro area, Japan, and the United States is measured at the sector level and aggregated to the index level by market capitalization. For other countries, misalignment is measured at the index level, due to data limitations. EM = emerging market; EMEA = Europe, Middle East, and Africa; ex. = excluding; Latam = Latin America; UK = United Kingdom; US = United States.

Figure 1.7. Market Volatility and Economic Uncertainty

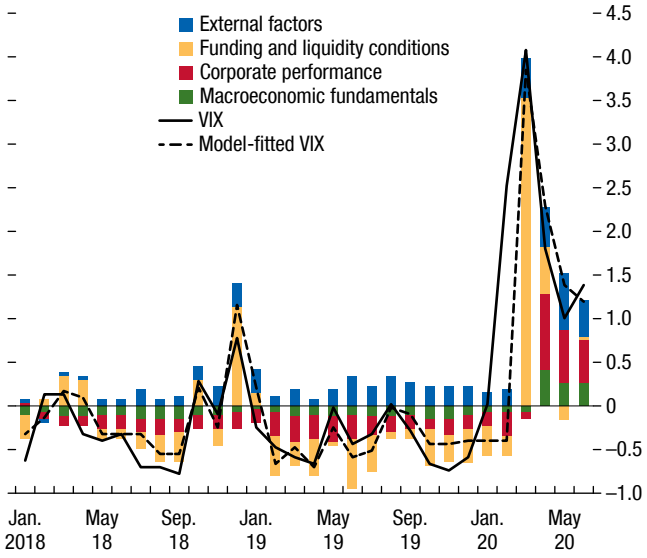
Despite an uncertain earnings outlook, the VIX and realized market volatility have declined ...

1. VIX, Historical Market Volatility, and 12-Month-Forward Earnings per Share Forecast Dispersion (Standard deviations from mean)



... as central banks' actions have stabilized market conditions.

2. Drivers of US Option-Implied Equity Volatility (Standard deviations from mean)



Sources: Bloomberg Finance L.P.; Consensus Economics; Refinitiv I/B/E/S; and IMF staff calculations.
Note: In panel 1, EPS dispersion is the standard deviation of EPS forecasts across analysts. Panel 2 is based on the VIX model presented in the October 2019 *Global Financial Stability Report* (see Figure 1.2). EPS = earnings per share; VIX = Chicago Board Options Exchange Volatility Index.

significantly increased their participation in the stock market in recent months, likely providing further support to equity prices.[6] According to market analysts, the unwind of retail positions, including in derivatives markets, may have contributed to the correction in the tech sector.

Has the stock market rebound gone too far? The IMF staff's equity valuation models suggest that overvaluations are at historically high levels in some countries (see Figure 1.6, panel 6).[7] This disconnect has also been evident in a notable divergence between elevated economic uncertainty and compressed equity market volatility, though this gap has narrowed during the September sell-off. For example, both option-implied volatility (Chicago Board Options Exchange Volatility Index [VIX]) and realized market volatility have declined sharply in late March-April, reflecting improvement in funding and liquidity conditions following policy interventions, even though uncertainty about earnings outlook has remained elevated for some time (Figure 1.7). Although these misalignments could be partially an unintended outcome of policy measures aimed at supporting investor sentiment and keeping markets open, it is difficult to separate intended from unintended effects quantitatively.

Yields in credit markets have declined since the start of the pandemic, reflecting both the decline in risk-free rates and the compression in credit spreads on the back of continued policy support. For example, the IMF staff's valuation model for US investment-grade corporate bonds suggests that central bank policy rate cuts and "other policy support" (including asset purchases and other facilities) have partly offset the impact of the deterioration in economic fundamentals that has occurred since the outbreak and that would have otherwise pushed bond

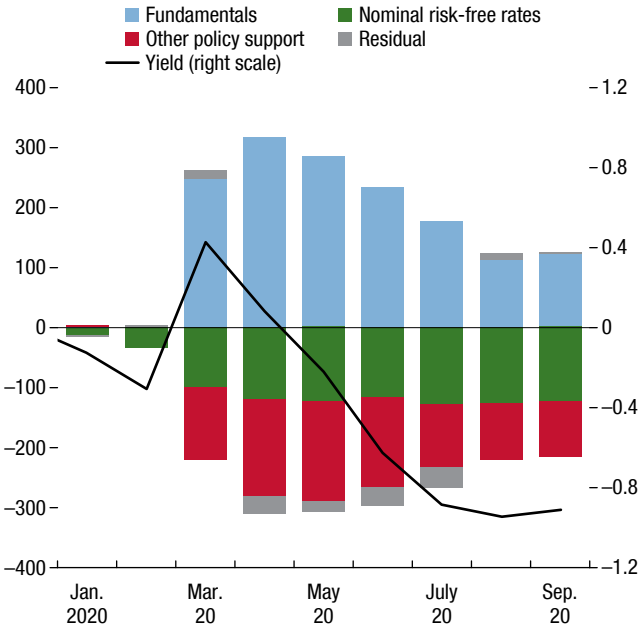
[6]For example, in China, margin trading outstanding, which is often cited as an indicator of retail investors' activities, has increased sharply since last year. In the United States, E*TRADE, Fidelity, Schwab, Robinhood, and Interactive Brokers all reported increased activity, new account sign-ups, or both. Trading on Robinhood tripled in March 2020 compared with March 2019.

[7]The extent of equity price misalignments—the difference between the actual price and the model-based value—can be interpreted as the portion of the equity risk premium that cannot be explained by the explanatory variables included in the model: expected corporate earnings (the mean earnings per share forecasts), uncertainty about future earnings (the dispersion of earnings per share forecasts), term spreads, and interest rates (see the October 2019 GFSR Online Annex 1.1 for details). The model relies on 12-month- and 18-month-ahead earnings forecasts and does not capture the impact of the longer-term earning growth expectations on equity valuations.

Figure 1.8. Credit Market Valuations

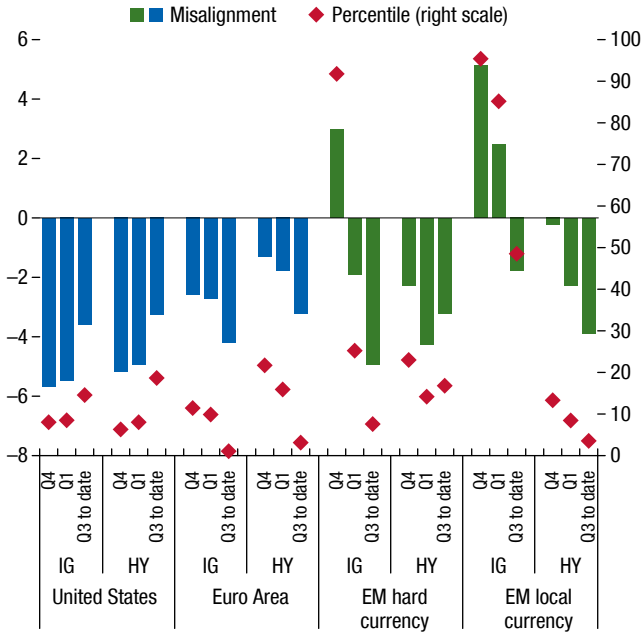
Much of the decline in the US investment-grade corporate bond yield since March has been driven by policy support.

1. Decomposition of Changes in US Investment-Grade Corporate Bond Yields
(Basis points, left scale; percentage points, right scale)



Most bond spreads appear to be too compressed relative to fundamentals across both advanced and emerging markets.

2. Bond Spread Misalignments
(Deviation from fair value per unit of risk, left scale; percentile based on 1995–2020, right scale)



Sources: Bloomberg Finance L.P.; Consensus Economics; Haver Analytics; Refinitiv I/B/E/S; and IMF staff calculations.
Note: The corporate bond valuation model in panel 1 is based on four groups of explanatory variables: economic (firm value) factors, uncertainty measures, leverage metrics, and policy support factors. The group of policy support factors includes five variables: the size of the Federal Reserve's balance sheet, the number of announced policy measures, a dummy (0 before March 2020 and 1 thereafter), the amount of the Federal Reserve US dollar swap lines used (flow), and the outstanding amount of the Federal Reserve US dollar swap lines (stock). The estimates are based on extreme bound analysis (see Durham 2002), which entails running a large number of regressions covering all possible linear combinations of the explanatory variables in each of the four groups. The final model-implied bond spread corresponds to the weighted average fitted value estimated across the various model combinations, in which the weights correspond to the *R*-squared obtained from the respective regression. In panel 2, misalignment is the difference between market- and model-based values scaled by the standard deviation of monthly changes in spreads; negative values on the left scale indicate overvaluation. Historical data go back to 1995 or earliest available. Latest data are through September 29, 2020. The valuation model for the United States and the euro area is based on three groups of explanatory variables: economic factors, uncertainty measures, and leverage metrics. For details, see October 2019 *Global Financial Stability Report* Online Annex 1.1. EM = emerging market; HY = high yield; IG = investment grade.

yields higher (Figure 1.8, panel 1).[8] More broadly, credit *spreads* appear to be too compressed relative to economic fundamentals across both advanced and emerging markets (Figure 1.8, panel 2).[9] In emerging markets, the decline in hard currency bond spreads and in local currency bond yields since March can also be traced to policy support, including the spillovers from policy easing in advanced economies. Rough estimates of the pass-through of US policy actions to emerging market yields suggest that US policy actions since the COVID-19 sell-off account for about one-quarter to one-half of the decline in emerging markets' long-term interest rates (see Online Annex 1.1). In local currency bond markets, both conventional and unconventional policies, such as asset purchases by emerging market central banks, have helped push short rates and long-term yields lower (see Chapter 2).

The sharp rebound in asset valuations, even if it is partially the intended outcome of policies aimed at creating a bridge to recovery, does raise concerns about the possibility of a market correction—as witnessed,

[8]The corporate bond valuation model in Figure 1.8, panel 1, is based on four groups of explanatory variables: economic (firm value) factors, uncertainty measures, leverage metrics, and policy support factors.

[9]The measures of misalignment shown in Figure 1.8, panel 2, for advanced economy corporate bond spreads and emerging market sovereign bond spreads/yields may partly reflect the unprecedented policy support. Adding the policy support proxies to the corporate bond valuation model (as shown in Figure 1.8, panel 1) can help explain some, but not all, of the misalignments shown in Figure 1.8, panel 2.

for example, with respect to tech stocks in September. Current market valuations may be sustained for some time, as long as there is a perception in markets that policy support will be maintained or scaled up in response to deterioration in economic conditions. Valuations may also continue to rise if pandemic- and policy-related uncertainties decline. However, the risk of a sharp adjustment in asset prices or periodic bouts of volatility remains and may rise should investors reassess the extent or duration of policy support or if the recovery is delayed.

Global Financial Vulnerabilities Have Increased since the COVID-19 Outbreak

The COVID-19 pandemic could be a major resilience test for the global financial system. Before the outbreak, financial vulnerabilities were already elevated in several sectors—including asset management companies, nonfinancial firms, and sovereigns—across 29 jurisdictions with systemically important financial sectors (henceforth, S29) (see Figure 1.9) and likely contributed to stress in financial markets during the March sell-off (see the April 2020 GFSR).[10]

Since the COVID-19 outbreak, vulnerabilities have continued to rise. Triggers such as new virus outbreaks, policy missteps, or other shocks could interact with preexisting vulnerabilities and tip the economy into a more adverse scenario (see the October 2020 WEO). In such a scenario, more widespread bankruptcies could lead to a repricing of credit risk, tightening of bank lending standards, and a renewed sharp tightening of financial conditions (see Chapter 3 for an analysis of this dynamic in March).

As the crisis continues to unfold, rising vulnerabilities may create headwinds to recovery:

- *Widespread bankruptcies* have been avoided so far thanks to large and frontloaded policy support. However, as firms have borrowed more to cope with cash shortages, some solvency risks have shifted into the future. SMEs, especially in contact-intensive industries, are much more vulnerable than large firms with access to capital markets.
- *Credit losses* could deplete banks' capital buffers, affecting their ability and willingness to provide credit to households and firms. Although the global banking system is well capitalized, there is a weak tail of banks, and some banking systems may experience capital shortfalls in the adverse WEO scenario even with the currently deployed policy measures.
- *Fragilities in the nonbank financial sector* have aggravated market dislocations during the March sell-off. Central bank support has limited the fallout from these fragilities but has not eliminated them. Market expectation that central banks will extend policy support in response to adverse shocks may encourage risk taking over and above desired levels.
- As *policy space shrinks*, the public-sector capacity to continue to provide a backstop to the private sector may come into question, especially where vulnerabilities are high and rising across several sectors of the economy.
- *External financing challenges* facing emerging and frontier markets may tip some of them into debt distress or lead to financial instability.

The rest of this section will focus on each of these areas. The rise in financial vulnerabilities increases the likelihood of adverse macro-financial feedback loops in response to negative shocks, potentially requiring further liquidity and solvency policy measures.

Solvency Risks in the Nonfinancial Sector Have Been Mitigated by Policy Support So Far

Nonfinancial firms in many systemically important economies entered the COVID-19 recession with elevated vulnerabilities, with the share of S29 economies with high or medium-high corporate sector vulnerabilities already close to 80 percent (by GDP) before the pandemic (Figure 1.9).[11] After the outbreak, cash flows took a hit as economic activity declined sharply. More vulnerable firms—those with

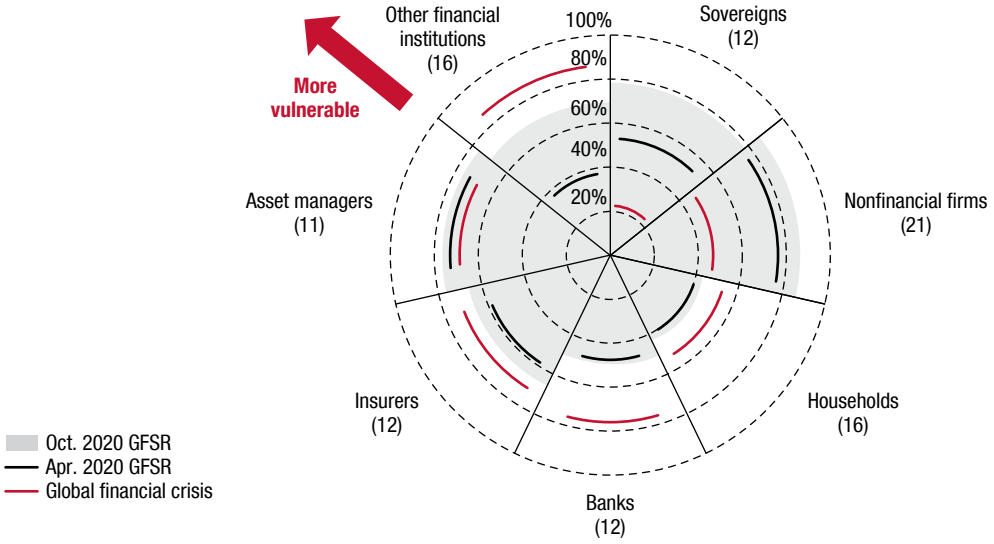
[10]The S29 include the euro area economies (Austria, Belgium, France, Germany, Ireland, Italy, Luxembourg, The Netherlands, Finland, Spain), other systemically important advanced economies (Australia, Canada, Denmark, Hong Kong SAR, Japan, Korea, Norway, Singapore, Sweden, Switzerland, the United Kingdom, the United States), and systemically important emerging market economies (Brazil, China, India, Mexico, Poland, Russia, Turkey).

[11]For example, the increased share of BBB-rated companies among investment-grade borrowers in global credit markets and the rapid expansion of risky credit markets raise the risk that credit rating downgrades and corporate defaults in the current downturn will surpass levels observed during previous recessions. For details, see the April 2019, October 2019, and April 2020 GFSR issues.

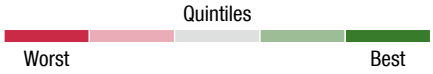
Figure 1.9. Global Financial Vulnerabilities: High and Rising

Vulnerabilities have increased across more regions in the corporate and sovereign sectors as corporate borrowing surged amid the COVID-19 pandemic, whereas vulnerabilities in the nonbank financial sectors remain elevated.

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



2. Financial Vulnerabilities by Sector and Region



	Sovereigns		Nonfinancial Firms		Households		Banks		Insurers		Asset Managers		Other Financial Institutions	
	Apr. 2020	Oct. 2020	Apr. 2020	Oct. 2020	Apr. 2020	Oct. 2020	Apr. 2020	Oct. 2020	Apr. 2020	Oct. 2020	Apr. 2020	Oct. 2020	Apr. 2020	Oct. 2020
Advanced Economies														
United States														
Euro area														
Other advanced														
Emerging Market Economies														
China														
Other emerging														

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; Reserve Bank of India; S&P Global Market Intelligence; S&P Leveraged Commentary and Data; Securities and Exchange Commission of Brazil; WIND Information Co.; and IMF staff calculations.
Note: In panel 1, "global financial crisis" reflects the maximum vulnerability value during 2007–08. In panel 2, dark red shading indicates a value in the top 20 percent of pooled samples (advanced and emerging market economies pooled separately) for each sector during 2000–20 (or longest sample available), and dark green shading indicates values in the bottom 20 percent. In panels 1 and 2, for households, the debt service ratio for emerging market economies is based on all private nonfinancial corporations and households. Other systemically important advanced economies comprise Australia, Canada, Denmark, Hong Kong Special Administrative Region, Japan, Korea, Norway, Singapore, Sweden, Switzerland, and the United Kingdom. Other systemically important emerging market economies are Brazil, India, Mexico, Poland, Russia, and Turkey. Even though the latest readings for the insurance sectors in the United States and Japan and asset managers in China—based on the available data—put them slightly below the threshold for the "medium-high vulnerability category" as of 2020:Q1, given the exceptionally high uncertainty these sectors are categorized as "medium-high" in this assessment. The assessment for the insurance sector in the April 2020 GFSR was also revised as a result of a change in Japan's reading to "medium-high," based on an update of the data available at the time. GFSR = *Global Financial Stability Report*.

weaker solvency and liquidity positions as well as of smaller size—experienced greater financial stress than their peers in the early stages of the crisis (see Chapter 3). Taking advantage of the massive easing in financial conditions, firms in advanced and emerging market economies stepped up their bond issuance (Figure 1.10, panels 1–3), and also increased their borrowing from banks (Figure 1.10, panel 4) to cope with cash shortages, refinance their debt, or build precautionary cash buffers. The rapid expansion of bank credit in the first half of this year partly reflects sizable credit line drawdowns, especially in the United States, as well as government guaranteed loans and lending under government-supported programs (Figure 1.10, panel 5). The share of firms that had to raise new debt because they could not generate enough cash to cover their debt service costs rose sharply (Figure 1.10, panel 6). In all likelihood, without the policy support that facilitated such borrowing, nonfinancial firms would have seen a sharp rise in bankruptcies. However, this further expansion of corporate debt has added to already high debt levels in several economies (Figure 1.10, panel 7).

As the crisis continues to unfold, liquidity pressures may morph into insolvencies. Increased net borrowing has helped reduce liquidity pressures and mitigated an otherwise larger increase in defaults for now. However, rising debt may lead to a deterioration in repayment capacity over the medium term, putting solvency at risk. Corporate credit quality has already shown signs of deterioration—credit rating downgrades initially spiked and year-to-date speculative-grade defaults have risen quickly, particularly in the United States (Figure 1.11, panel 1). Missed debt payments were reported as the leading cause of defaults in 2020 to date. Firms in sectors most affected by the pandemic—air travel, retail, hospitality, and energy—have seen higher default rates (Figure 1.11, panel 2). Looking across the credit spectrum, the largest increase has been among high-yield bond issuers, followed by leveraged loans and middle-market loans, even though defaults are still significantly lower than in 2008–09 (Figure 1.11, panel 3). The pace of defaults has recently slowed in the United States and has remained relatively subdued in Europe. Looking ahead, the range of speculative-grade default forecasts for 2021 by credit rating agencies is fairly wide (Figure 1.11, panel 4), which reflects significant uncertainty about the evolution of the pandemic and corporate credit quality. At the same time, credit market pricing suggests a notably more sanguine picture, likely reflecting expectations of continued policy support.

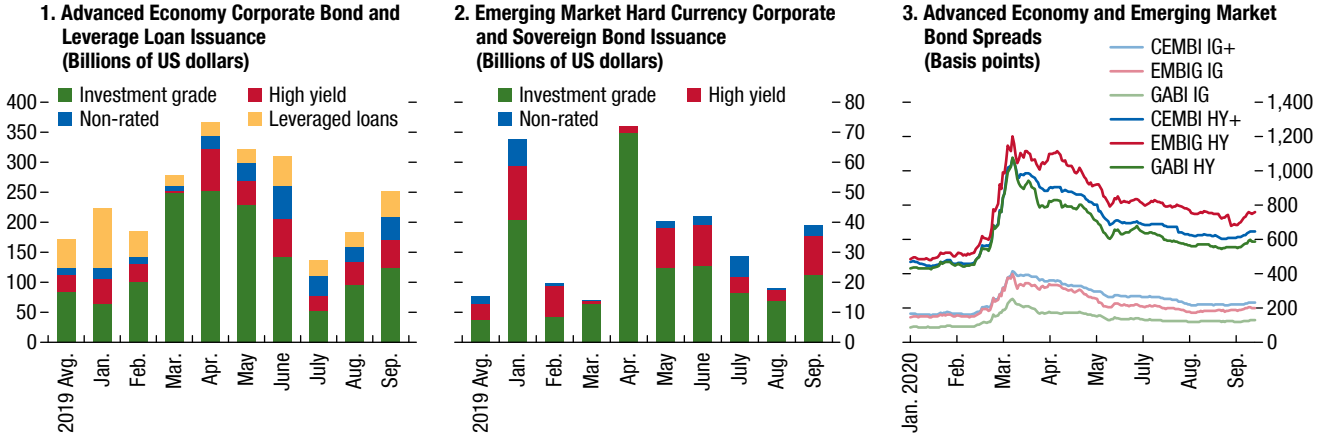
The future path of defaults and bankruptcies will critically depend on the evolution of the pandemic and on policymakers' capacity to maintain accommodative funding conditions and continue to provide fiscal support to viable firms (see the October 2020 *Fiscal Monitor*). *Large firms* with access to capital markets can likely avoid a significant erosion of their equity positions unless there is a significant tightening in funding conditions. However, *SMEs* are much more vulnerable (as discussed in Chapter 2 of the October 2019 GFSR), as they tend to have thin equity cushions, low liquidity buffers (lack of precautionary credit lines and liquid and noncore assets), limited financing options, and nondiversified revenues. Furthermore, the COVID-19 shock was particularly damaging for SMEs because they tend to dominate some of the most contact-intensive sectors (hotels, restaurants, entertainment). Widespread insolvencies among SMEs could have a significant direct macroeconomic impact as well as adverse implications for the health of the banking sector. Notably in Europe, SMEs account for more than half of total output and about two-thirds of employment and thus can affect financial stability through macro-financial linkages. Because SMEs rely almost entirely on bank financing, they could be a source of vulnerability, especially for regional and small banks.

In the *household sector*, the COVID-19 pandemic has resulted in unprecedented job losses, especially in the United States, as well as in some emerging market economies, where unemployment support has been more limited (see the October 2020 *Fiscal Monitor*).[12] With sharply reduced personal income of the affected households, their indebtedness has risen to cover lost income, further weakening their debt servicing capacity in the future. The new buildup of debt is taking place on top of already elevated household leverage in a number of major economies (Figure 1.12, panel 1). Historically, higher unemployment portends more

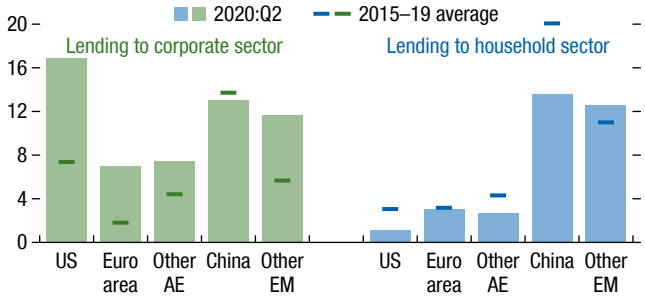
[12]A number of jurisdictions, notably in the euro area, have implemented job retention schemes aimed at sustaining employment levels and mitigating financial vulnerabilities potentially arising from households.

Figure 1.10. Easier Funding Conditions and Rising Debt

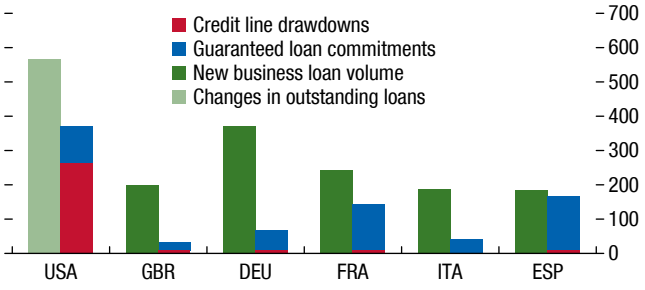
Bond markets have reopened for a broad range of issuers, with lower-rated issuers paying spreads higher than those before COVID-19.



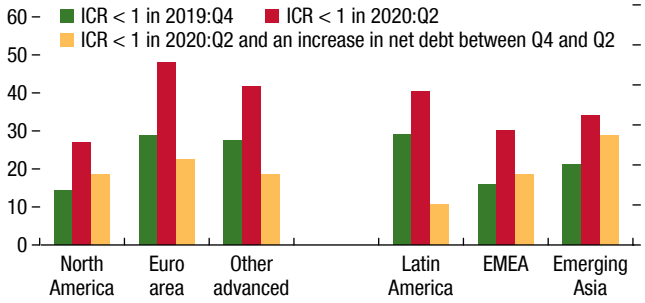
Bank lending to nonfinancial firms was strong in the first half of the year ...



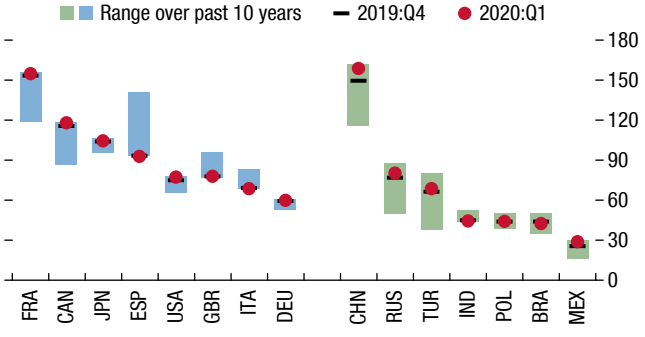
... in part driven by credit line drawdowns and government guarantees.



Increased borrowing helped firms cope with liquidity pressures as earnings collapsed following the outbreak ...



... and has pushed aggregate corporate debt levels to new highs in several countries.

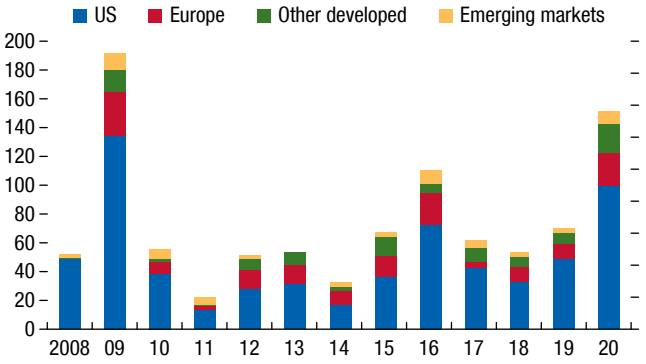


Sources: Banca D'Italia; Bank aus Verantwortung (KfW); Bank for International Settlements; Bank of England; Bank of Japan; Bloomberg Finance L.P.; BondRadar; Dealogic; Emerging Portfolio Fund Research Global; Federal Reserve; French Ministry of the Economy and Finance; Haver Analytics; JPMorgan Chase & Co.; S&P Global Market Intelligence; S&P Leveraged Commentary and Data; Spanish Instituto de Credito Oficial (ICO); and IMF staff calculations.
Note: In panel 5, the credit line draw downs are cumulative since 2019:Q4. New business loan volume and changes in outstanding loans are as of 2020:Q2. The guaranteed loan commitment is as of July for United Kingdom and Italy, and as of August for the other countries. In panel 6, the sample includes firms with quarterly statements. The bars show the share of debt at firms with ICR < 1 and with an increase in net debt as a share of total debt in the sample. In panel 7, for France, corporate debt is reported on an unconsolidated basis. Data labels in panels 5 and 7 use International Organization for Standardization (ISO) country codes.
AE = advanced economy; CEMBI = JP Morgan Corporate Emerging Market Bond Index; EM = emerging market; EMBIG = JP Morgan Emerging Markets Bond Index Global; EMEA = Europe, Middle East, and Africa; GABI = JP Morgan Global Aggregate Bond Index; HY = high yield; ICR = interest coverage ratio; IG = investment grade; US = United States.

Figure 1.11. Solvency Risks in the Corporate Sector

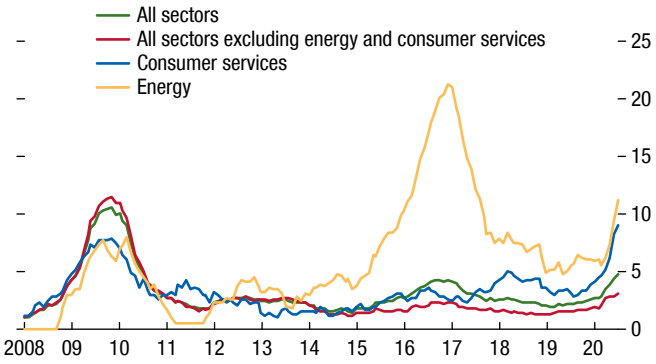
Liquidity pressures and weaker credit quality have led to a rapid rise in corporate defaults.

1. Global Speculative-Grade Corporate Defaults (Year-to-date number of defaults)



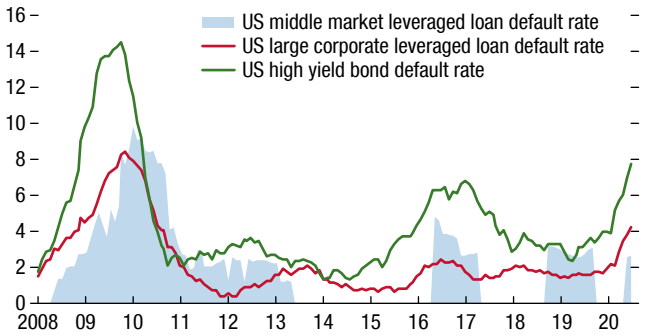
Global consumer services and energy sector default rates have been more pronounced.

2. Global Speculative-Grade Corporate Default Rates (Trailing 12-month rate, percent)



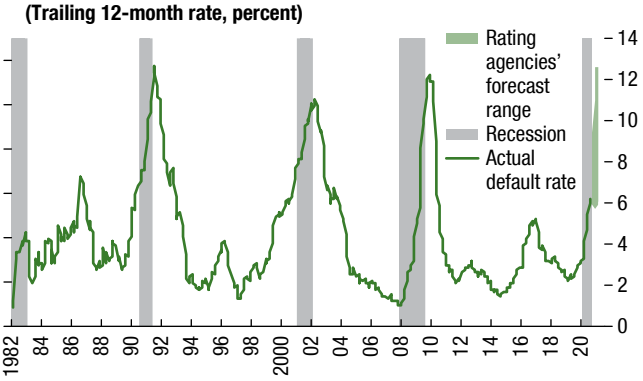
Defaults have risen across risky markets, with the largest increase among high-yield bond issuers, followed by leveraged loans and middle-market loans ...

3. US Speculative-Grade Corporate Default Rates by Market (Percent)



... and rating agencies have revised their default forecasts up, though the range of forecasts is fairly wide.

4. US Speculative-Grade Default Rate: Actual and Forecasts by Credit Rating Agencies (Trailing 12-month rate, percent)



Sources: Fitch; Haver Analytics; International Institute of Finance; Moody's; S&P Global Ratings; S&P Leveraged Commentary and Data; and IMF staff calculations.
Note: In panel 4, the range in the projection period corresponds to the forecasts from Fitch, Moody's, and Standard & Poor's.

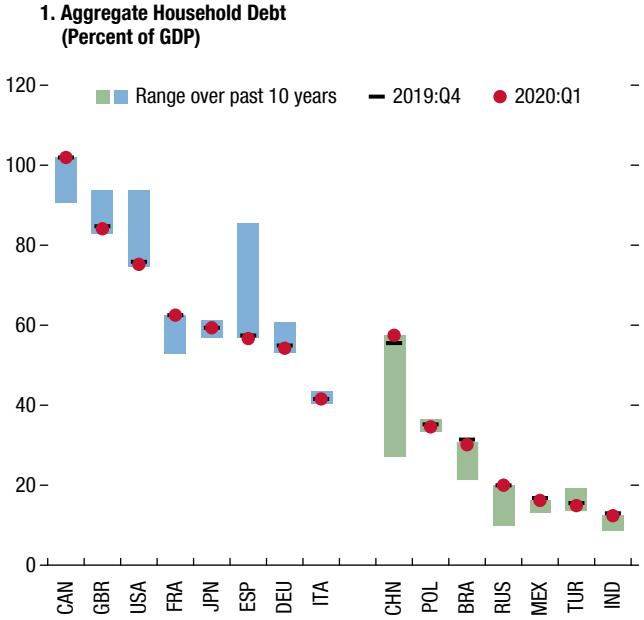
delinquencies and larger bank losses on unsecured consumer credit. For example, delinquencies on US credit cards already started to accelerate in the first quarter of this year, whereas delinquencies on mortgages remain low (Figure 1.12, panel 2). In the housing markets, real house price growth was positive in most advanced economies in the first quarter, boosted by broad policy support, particularly lower mortgage rates and moratoriums on interest payments, foreclosures, and evictions. In emerging market economies, year-over-year real house prices declined in China and India—following notable appreciation in previous years—but continued to rise in other major economies.

Most Banks Will Be Able to Absorb Losses, but There Is a Weak Tail

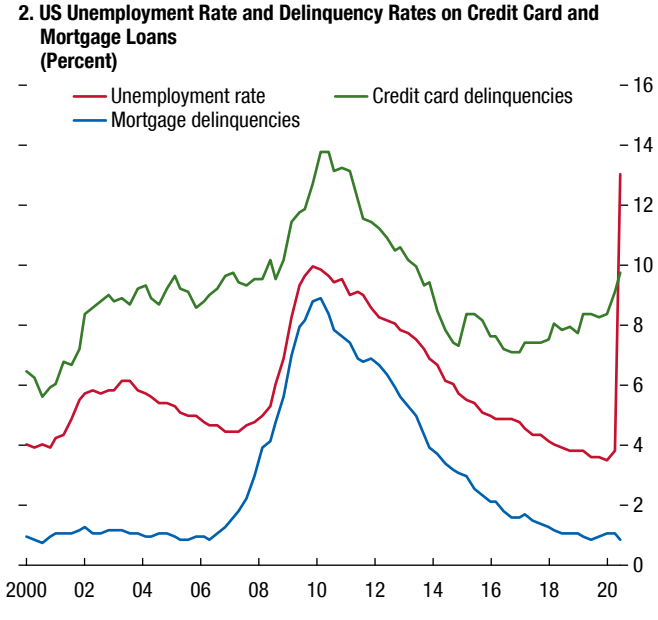
Banks entered the COVID-19 crisis with significantly stronger capital and liquidity buffers than they had at the time of the global financial crisis thanks to regulatory reforms (see Figure 1.9). Policies aimed at supporting borrowers and at encouraging banks to use the flexibility built into the regulatory framework have likely further supported their willingness to continue to provide credit to the economy. However, banks in some countries have started tightening their lending standards in response to deterioration in economic conditions and borrowers' financial positions (see Chapter 4).

Figure 1.12. Solvency Risks in the Household Sector

Household debt is elevated relative to the size of the economy in several advanced economies and in China ...



... and rising unemployment may portend higher delinquencies on loans to households.



Sources: Bank for International Settlements; Federal Reserve; US Bureau of Labor Statistics; and IMF staff calculations.
Note: Data labels in panel 1 use International Organization for Standardization (ISO) country codes.

Looking ahead, the resilience of banks will depend on the depth and duration of the COVID-19 recession, governments' ability to continue to support the private sector, and the pace of loss recognition. Chapter 4 presents a forward-looking bank solvency analysis based on the October 2020 WEO baseline and adverse scenarios, taking into account announced policies to mitigate borrower distress and support bank capital levels.[13] In the *baseline scenario*, most banks are able to absorb losses and maintain capital buffers above the minimum regulatory capital requirements. In the *adverse scenario*, characterized by a deeper recession and a weaker recovery, there is a sizable weak tail of banks whose capital falls below regulatory minimum (Figure 1.13, panel 1).[14] Global systemically important banks tend to fare better, while banks in emerging markets appear to be less resilient than their peers in advanced economies (Figure 1.13, panel 1).

In the October 2020 WEO *adverse scenario*, the capital shortfall relative to minimum capital requirements is about $110 billion, whereas the overall capital shortfall relative to broad capital requirements—which include the countercyclical capital buffer, the capital conservation buffer, and systemic risk buffers—could reach $220 billion, after accounting for policy support (Figure 1.12, panel 2, and Chapter 4). This implies that the average capital shortfall in the adverse scenario is close to 1 percent of GDP. For comparison, the median government bank recapitalization during the global financial crisis was about 3.6 percent of GDP. That said, the full fiscal cost of ensuring that banks are adequately capitalized must also include the direct fiscal support to firms and

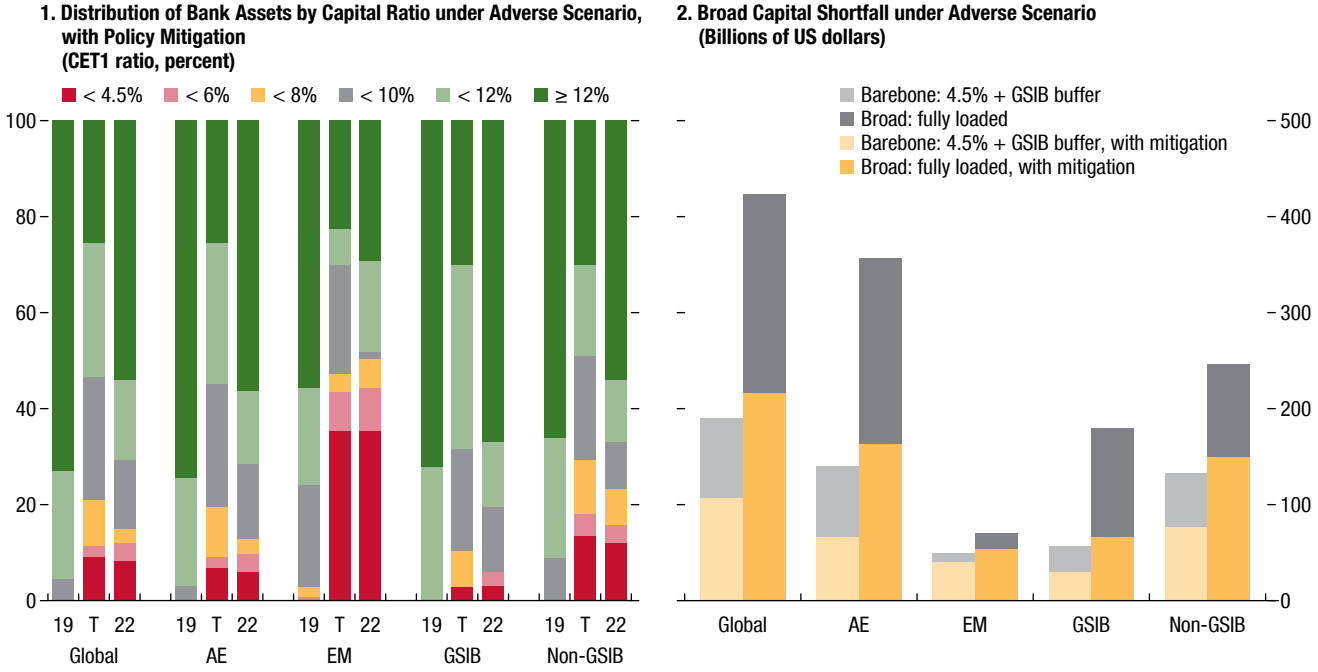
[13]The analysis is carried out for about 350 banks accounting for about 75 percent of global banking assets. The exercise covers 29 jurisdictions, comprising Australia, Austria, Belgium, Brazil, Canada, Denmark, Finland, France, Germany, Greece, Hong Kong SAR, India, Indonesia, Ireland, Italy, Japan, Korea, Luxembourg, Mexico, The Netherlands, Norway, Portugal, Singapore, South Africa, Spain, Sweden, Switzerland, the United Kingdom, and the United States. In each jurisdiction, the largest banks covering up to 80 percent of banking assets are included. Therefore, the simulation does not include the consequences of the scenarios for the solvency of small banks.

[14]The regulatory minimum is the "Pillar 1" requirement—4.5 percent of risk-weighted assets—plus the mandatory buffers required of each global systemically important bank.

Figure 1.13. Banking Sector: Potential Losses in the October 2020 *World Economic Outlook* Adverse Scenario

In the adverse scenario, the weak tail of banks is large, especially in emerging markets.

Policy mitigation helps cushion some of the capital depletion and has been stronger in advanced economies.



Sources: Bloomberg Finance L.P.; Fitch; IMF, October 2020 *World Economic Outlook*; and IMF staff estimates.
Note: In panel 2, the shortfall is measured against bank-specific and fully loaded capital requirements effective August 2020, which include a minimum CET1 of 4.5 percent, a GSIB buffer, a systemic risk buffer, a stress capital buffer, a conservation capital buffer, and a countercyclical capital buffer, where applicable.
AE = advanced economy; CET1 = common equity Tier 1; EM = emerging market; GSIB = global systemically important bank; T = trough year.

households, which effectively reduced bank recapitalization needs ex ante, and which may also adversely affect the fiscal capacity to provide additional support in the future if needed. Furthermore, a more severe adverse scenario that would entail larger losses for the banking sector cannot be ruled out, given the high degree of uncertainty around the depth and duration of the COVID-19 recession.

Fragilities in Nonbank Financial Institutions Remain Elevated

Asset managers in advanced economies entered the pandemic crisis with already elevated vulnerabilities (Figure 1.14, panel 1), including sizable liquidity mismatches (see April 2020 GFSR). After the outbreak, they faced increased credit risk and became more interconnected with banks. Exposures through investment positions, including bank deposits and money market fund shares, have risen. Borrowing from banks has increased, as funds reportedly tapped into credit lines. In combination with higher credit risk and increased leverage in other financial institutions, this could lead to larger potential losses in the event of renewed market stress.

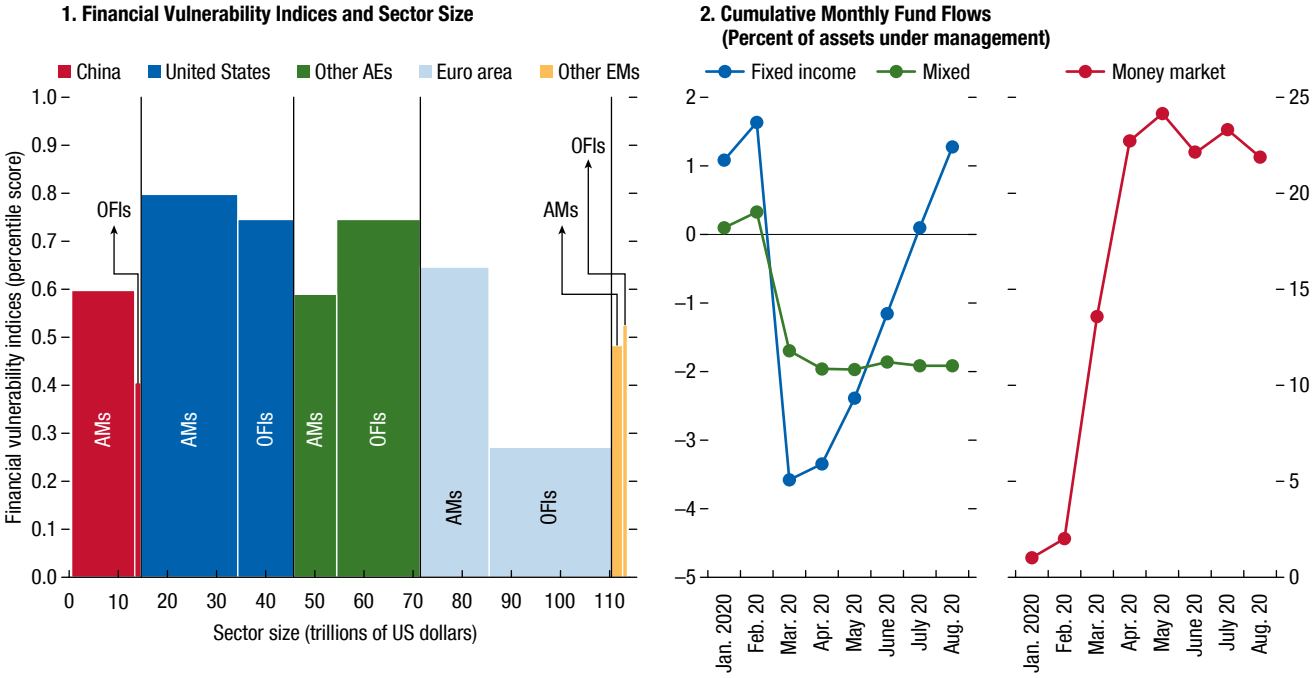
During the March sell-off, *fixed-income funds* saw a surge in redemptions, which led to selling pressures revealing some weaknesses in market infrastructures and dealers' intermediation capacity (see April 2020 GFSR). Jurisdictions with swing pricing reportedly saw less price pressure from redemptions.[15] Fund flows have generally recovered, reflecting the rebound in asset markets on the back of strong policy support (Figure 1.14, panel 2). *Insurance companies* and *pension funds*, which experienced portfolio losses during the March sell-off, have also seen the value of their portfolios recover.

[15]Swing pricing is the adjustment of a fund's net asset value with the aim to pass on the trading costs generated by purchases or redemptions to the shareholders who initiate those transactions.

Figure 1.14. Vulnerabilities in the Nonbank Financial Sector

Asset managers' vulnerabilities remain elevated in China, the euro area, and the United States, and grew in OFIs in other advanced economies.

During the March 2020 sell-off, fixed-income funds experienced large outflows, which have subsequently reversed.



Sources: Banco de Mexico; European Central Bank; Haver Analytics; Morningstar; Reserve Bank of India; Securities and Exchange Commission of Brazil; WIND Information Co.; and IMF staff calculations.
Note: Data in panel 1 are lagged at the end of the series by 18 months for UK AMs, by 15 months for Indian AMs, and by 3 months for Russian AMs as more recent data are not yet available. For OFIs, data are lagged at the end of the series by 15 months for Switzerland and by 3 months for Russia. The financial vulnerability indices reported are the base for the heatmaps reported in Figure 1.9. Panel 2 shows cumulative changes since December 2019. Data included for fixed income funds, mixed funds, and money market funds covered 73%, 57%, and 75% of assets reported by the International Investment Funds Association for the respective global fund sectors (as of end June). AEs = advanced economies; AMs = asset managers; EMs = emerging markets; OFIs = other financial institutions.

Looking ahead, risks from nonbank financial institutions could stem from their portfolio rebalancing in response to investor redemptions and market losses or from their decision to pull back from certain markets. In recent years, nonbank financial institutions have been playing an increasingly important role in credit markets, including in riskier segments (leveraged loans and private debt), which means that they could face sizable credit losses in the event of a surge in defaults and insolvencies (as discussed in Chapter 2 of the April 2020 GFSR). These losses could, in turn, lead them to step back from providing credit to these segments of the corporate sector, which would exacerbate strains on borrowers and lead to worse macro-financial outcomes.

Existing fragilities in the nonbank financial sector (Figure 1.14, panel 1) could have significant implications for the financial system if a more prolonged period of market stress were to occur, possibly due to or in conjunction with a lack of sufficient policy support:

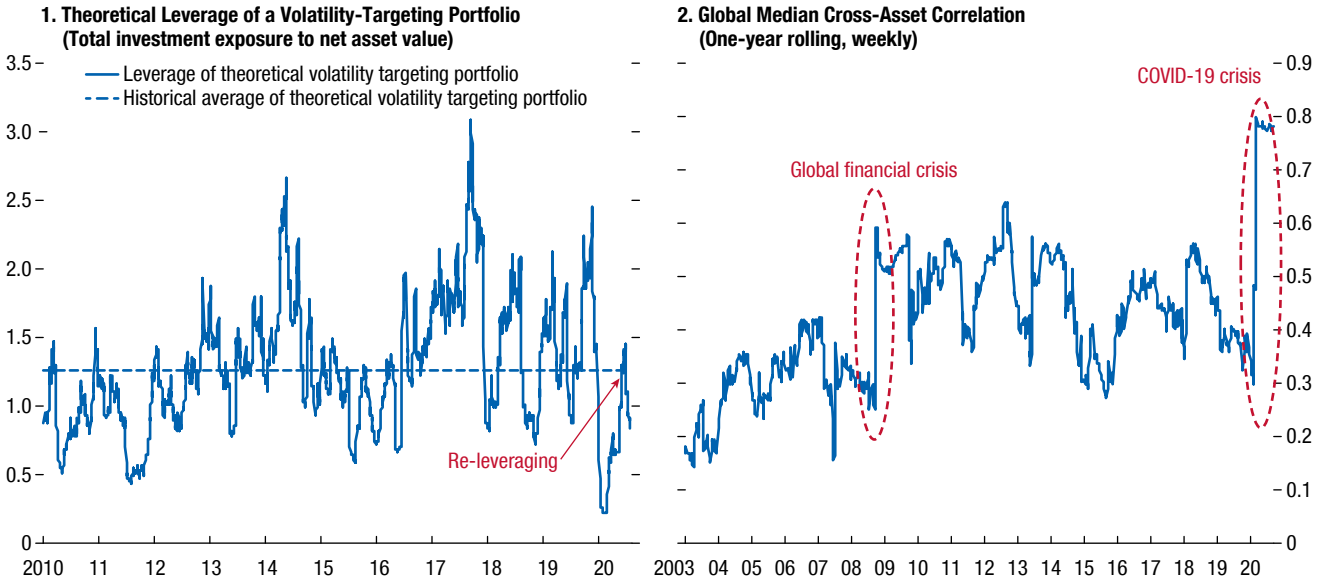
- *First*, liquidity mismatches in the asset management sector remain elevated, especially in some fragile segments.[16] The analysis of the March sell-off (see Box 1.2) shows that fixed-income funds facing large redemptions reacted primarily by reducing liquid assets, but also by selling less-liquid assets. The sell-off of riskier assets contributed to price dislocations in the underlying markets and could have resulted in larger-scale fire sales had central banks not intervened quickly to backstop the key segments of the financial system. However, these interventions have masked but not eliminated the pressure points. A more prolonged liquidity shock in the future,

[16]See Box 3.1 of the October 2019 GFSR, which presents the liquidity stress test for fixed-income funds in Europe and the United States.

Figure 1.15. Financial Leverage and Global Cross-Asset Correlations

Volatility-targeting investors have been re-leveraging as volatility normalized following the March sell-off.

Cross-asset correlations remain near the historic highs reached during the COVID-19 crisis.



Sources: Bloomberg Finance L.P.; and IMF staff calculations.
Note: In panel 1, the leverage calculation for a theoretical volatility-targeting investment strategy assumes a theoretical investment portfolio consisting of 60 percent global equities/40 percent bonds and an annual return volatility target of 10 percent. Leverage is defined as total investment exposure divided by the net asset value of the portfolio. The MSCI World Equity Index is used as a proxy for equity investments; the Bloomberg Barclays Global Aggregate Total Return Value Unhedged index is used as a proxy for bond investments. Panel 2 shows the median cross-asset correlation across nine global risky assets: global equities (proxied by the MSCI World Equity Index), emerging market equities (proxied by the MSCI Emerging Markets Index), investment-grade credit (proxied by the Bloomberg Barclays Global Aggregate Credit Total Return Index), high-yield credit (proxied by the Bloomberg Barclays Global High Yield Total Return Index), leveraged loans (proxied by the S&P Global Leveraged Loan Index), mortgages (proxied by the Bloomberg Barclays Global Aggregate-Mortgages Index), emerging market sovereign bonds (proxied by the JP Morgan EMBI Global Total Return Index), emerging market corporate bonds (proxied by the JP Morgan Corporate EMBI Broad Diversified Composite Index), and commodities (proxied by the Bloomberg Commodity Index).

should these fragilities remain unaddressed, could potentially lead to larger-scale fire sales.

- *Second*, extremely low yields, compressed market volatility, and the apparent perception that central banks will continue to backstop key markets are likely to create incentives for financial releveraging. For example, volatility-targeting investors that were reportedly forced to liquidate their positions during the March turmoil, thus amplifying the sell-off (see April 2020 GFSR), may have already started to releverage as equity and bond volatility normalized following central bank interventions (see Figure 1.15, panel 1, for a theoretical portfolio).[17] A rapid increase in financial leverage could contribute to asset price misalignments and increase the risk of a sharp unwinding of positions by leveraged investors during volatility spikes, amplifying asset price declines.
- *Third*, correlations across risk assets remain well above the 2008–09 levels (Figure 1.15, panel 2). These rising correlations may be partly driven by structural changes, including increased central bank presence in a number of markets. Higher correlations tend to reduce portfolio diversification opportunities and could therefore increase contagion risk and propagate losses across investor portfolios during abrupt price corrections.

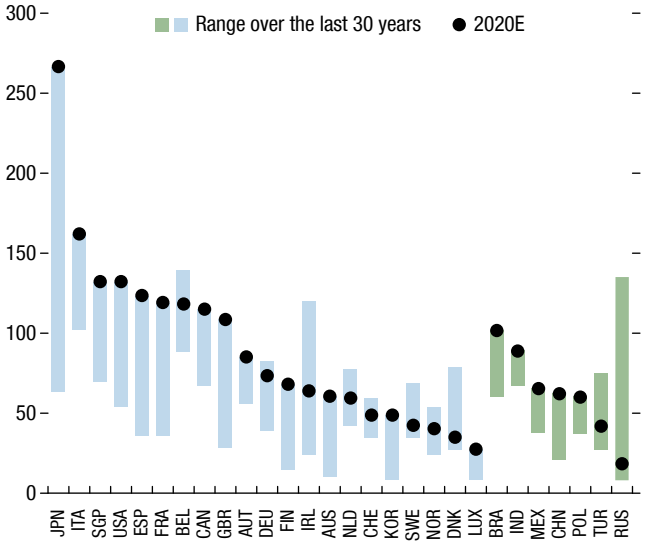
To sum up, although swift policy actions have mitigated risks to nonbank financial institutions during the March sell-off, fragilities in the sector remain elevated and may lead to larger-scale distress and fire sales in a more prolonged episode of market stress. In addition, increased linkages between nonbank

[17]Volatility-targeting strategies seek to keep expected portfolio volatility to a specific target level. Lower market volatility then means that greater financial leverage is needed to meet volatility targets. Among these, variable annuity funds are the largest, at an estimated $0.5 trillion in assets under management, and are more likely to deleverage quickly when volatility spikes. See the April 2020 GFSR for more details.

Figure 1.16. Sovereign Vulnerabilities and Interconnectedness

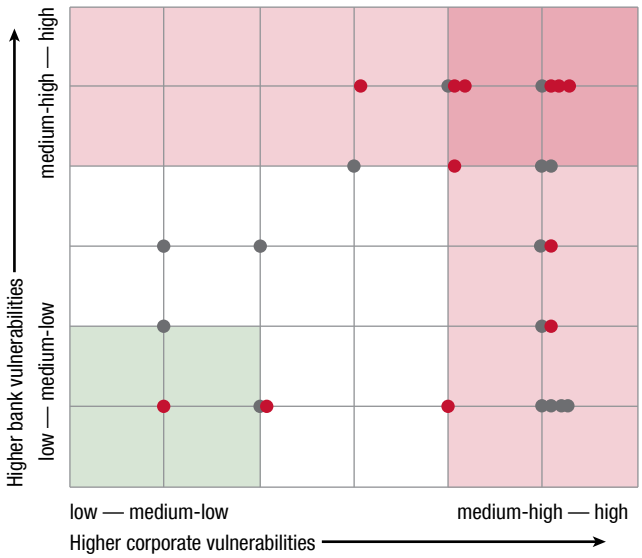
Sovereign debt has reached historically high levels in most jurisdictions with systemically important financial sectors ...

1. Sovereign-Debt-to-GDP Ratios
(Bars = range over the past 30 years; dots = the latest value)



... with 6 out of S29 jurisdictions showing elevated vulnerabilities in all three—corporate, banking, and sovereign—sectors.

2. Corporate, Bank, and Sovereign Vulnerabilities in the S29 Countries
(based on the data underlying Figure 1.9; red dots denote countries with medium-high or high sovereign vulnerabilities)



Sources: Bank for International Settlements; Haver Analytics; International Institute of Finance; IMF, October 2020 *World Economic Outlook*; and IMF staff estimates.
Note: Data labels in panel 1 use International Organization for Standardization (ISO) country codes. E = estimated; S29 = euro area economies (Austria, Belgium, France, Germany, Ireland, Italy, Luxembourg, The Netherlands, Finland, Spain), other systemically important advanced economies (Australia, Canada, Denmark, Hong Kong SAR, Japan, Korea, Norway, Singapore, Sweden, Switzerland, the United Kingdom, the United States), and systemically important emerging market economies (Brazil, China, India, Mexico, Poland, Russia, Turkey).

financial institutions and banks imply that fragilities could spread more easily through the financial system. Looking ahead, a prolonged period of low interest rates and high cross-asset correlations may pose further challenges for institutional investors, whereas a widely held belief that central banks will continue to suppress volatility may incentivize investors to take on more risk and increase financial leverage to boost their returns.

Sovereign Debt Levels and Contingent Liabilities Have Increased

The COVID-19 crisis is expected to push global public debt above 100 percent of GDP in 2020, the highest ever (see the October 2020 *Fiscal Monitor*). The large fiscal lifelines in response to the pandemic, coupled with the sharp decline in output and higher automatic stabilizers, have led to rapid expansion of sovereign debt. As a result, public debt reached historic highs in most systemically important economies at the end of the first quarter of 2020 (Figure 1.16, panel 1). In 2020, headline fiscal deficits in advanced economies are expected to be five times higher than in 2019 (see the October 2020 *Fiscal Monitor*). Emerging markets' fiscal deficits have increased at a more modest pace, largely reflecting financing constraints.

In the baseline scenario, public debt ratios are generally expected to stabilize in 2021, except in the United States and China. Unlike advanced economies, emerging market economies will face greater fiscal challenges, as their ratios of debt service to tax revenue are projected to rise (see the October 2020 WEO). Although accommodative monetary policy could push interest rates lower, hence potentially reducing sustainability concerns at higher debt-to-GDP levels, there could be a feedback loop between high public debt and the risk premium (Alcidi and Gros 2019; Lian, Presbitero, and Wiriadinata 2020). Because private sector financing costs are linked to the sovereign risk premium, central banks in emerging market economies where sovereign debt levels are already high may face greater challenges in easing financial conditions when they need to cushion the

impact of an adverse shock on the economy and the financial system. This is because a sharp increase in the sovereign risk premium could offset the central banks' efforts to lower market interest rates.

In addition, sovereigns may be facing a sharp rise in contingent liabilities. With the outbreak of the pandemic, vulnerabilities have increased across multiple sectors (as shown in Figure 1.9), with 6 out of S29 jurisdictions now showing elevated vulnerabilities in the corporate, banking, and sovereign sectors (Figure 1.16, panel 2).[18] Furthermore, bank holdings of government debt have increased in most countries, again tightening sovereign-bank linkages. The simultaneous increase in vulnerabilities in the private and public sectors can also raise financial stability risks through sovereign-corporate linkages at the local government level, as is illustrated by the analysis presented for the case of China (see Box 1.3).

Some Emerging and Frontier Markets May Face External Financing Challenges

Local currency government bond issuance—the primary source of funding for many emerging market sovereigns—picked up pace as the global backdrop improved and domestic financial conditions in many economies eased. Several emerging market economies, such as Chile, Colombia, and Thailand, have managed to fund large portions of their projected deficits for 2020–21 (see Figure 1.17, panel 1), but many other economies still face significant financing requirements. Concerns about future debt supply and weak domestic fundamentals have curtailed demand by nonresident investors, and portfolio flows into local currency bond funds remain weak since the COVID-19 sell-off (Figure 1.17, panel 2).[19] As a result, many emerging markets (India and Mexico, among others) have delayed new local debt issuance to the second half of the year; some have increased their reliance on foreign currency debt,[20] whereas elsewhere (Indonesia, Poland) central banks have purchased bonds in the secondary market (see Chapter 2). Countries where the domestic investor base may not be deep enough to absorb the additional supply could face some financing challenges.

The extraordinary level and speed of portfolio outflows from February to April 2020 created significant disruptions for emerging markets. Aggregate portfolio flows to emerging markets have recovered since then, driven primarily by hard currency bond issuance, though more than half of emerging market economies have continued to experience outflows over the past three months, suggesting that investors are differentiating across countries based on economic fundamentals and policy frameworks. IMF staff analysis based on the capital-flows-at-risk methodology (see the April 2020 GFSR) points to an improvement in the short- and medium-term outlook on the back of easy global financial conditions, with the probability of outflows over the next three quarters falling from about 60 percent at the peak of market turmoil (black line in Figure 1.17, panel 3) to about 25 percent in September (red line in Figure 1.17, panel 3), though still above the pre–COVID-19 level. Even before the pandemic, emerging market economies had elevated debt vulnerabilities (see the October 2018 GFSR) and were dependent on portfolio flows (see the April 2020 GFSR). Increased fiscal deficits and external funding needs (relative to exports) have made some emerging markets even more vulnerable to shifts in external financing conditions, and these challenges are unlikely to moderate in the near term (see Figure 1.17, panel 4).

Frontier market economies face considerable financing challenges. Even before the global recession, the share of frontier market economies in debt distress or at high risk of debt distress was relatively high (see the October 2019 GFSR). The COVID-19 shock pushed borrowing costs for many of these economies to prohibitive levels (Figure 1.18, panel 1). The Group of Twenty debt service suspension initiative sought to help some 73 countries deal with financing pressures by allowing them to temporarily stop debt payments to official creditors. The recent improvement in market

[18]The sovereign vulnerability indicators behind Figures 1.9 and 1.17 include standard balance-sheet indicators, such as government debt-to-GDP ratio, primary balance, maturity profile, etc. The assessment relies on the comparison of the latest values of these indicators with those of a panel of peer countries (cross-section and across time) (see annex to the April 2019 GFSR on the Indicator Based Framework [IBF]). The objective of the IBF is to assess the extent of financial vulnerabilities, which tend to contribute to distress, in different countries and sectors. The forward-looking assessments of the risk of distress (typically presented in the IMF debt sustainability assessments) are not part of the IBF.

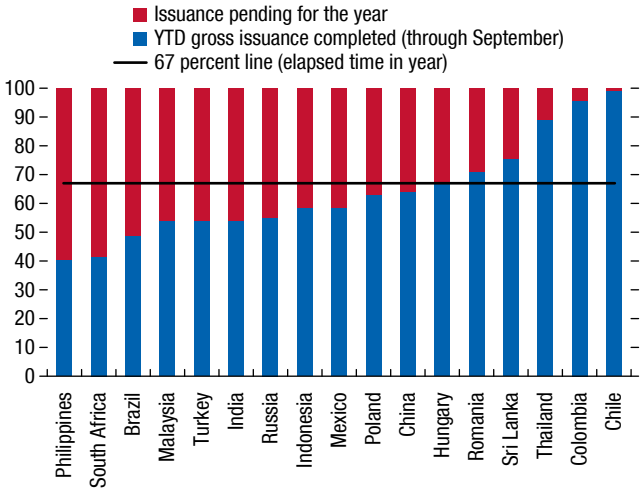
[19]This is consistent with the findings of the April 2020 GFSR that domestic fundamentals tend to influence local currency bond flows more than hard currency bond flows.

[20]Foreign-law foreign currency sovereign debt issuance has taken place at a record pace thus far in 2020. Some issuers have also relied on increased local-law foreign currency debt issuance, such as Turkey reflecting greater investor demand. Other countries with high foreign currency debt issuance in total government debt include Argentina and Ukraine.

Figure 1.17. Emerging Market Financing: Challenges, Options, and Risks

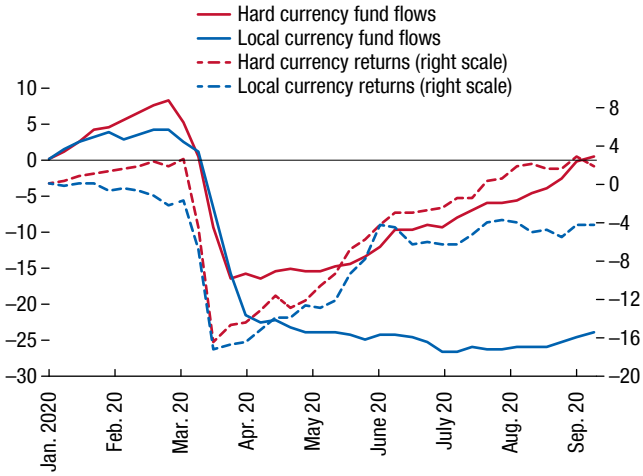
Government financing burdens remain steep in some countries with issuance still lagging.

1. Local Currency Government Bond Gross Issuance Complete Relative to Estimated Total Issuance (Percent of total)



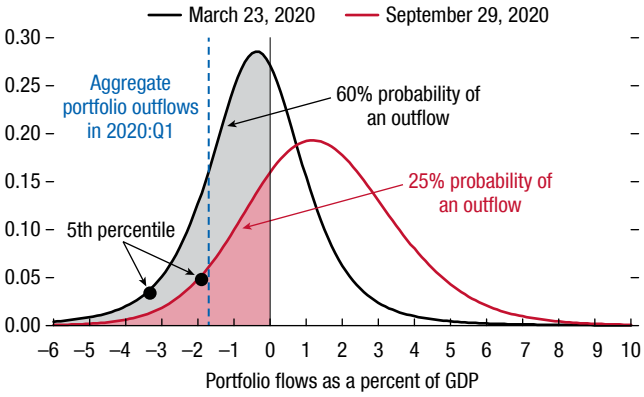
Investor flows into local currency bond funds remain weak.

2. EPFR Global Emerging Market Debt Dedicated Fund Flows and Returns (Cumulative, year to date, billions of US dollars, left scale; percent, right scale)



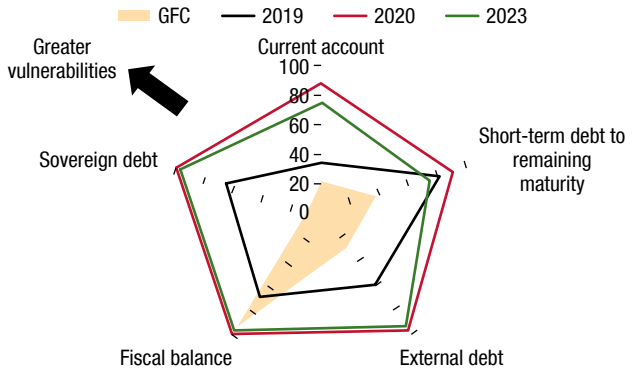
The outlook for portfolio flows remains challenging, with nearly 25 percent probability of outflows next year.

3. Capital Flows at Risk: Near-Term Portfolio Flow Forecast Densities (Probability Density)



The COVID-19 pandemic has exacerbated existing vulnerabilities, which are likely to remain elevated.

4. Evolution of Sovereign Debt and External Financing Requirements for EMs (Percentile rank since 1990)

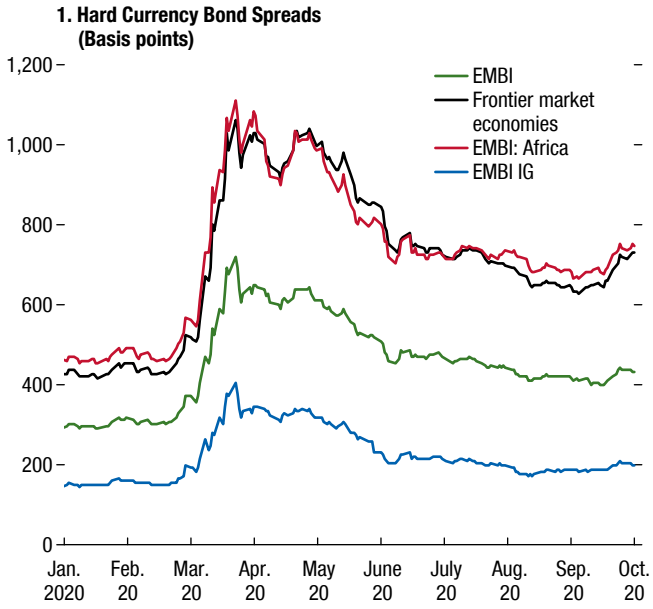


Sources: Bloomberg Finance L.P.; Haver Analytics; HSBC analyst estimates; IMF, World Economic Outlook database; JP Morgan estimates; national sources; and IMF staff estimates.

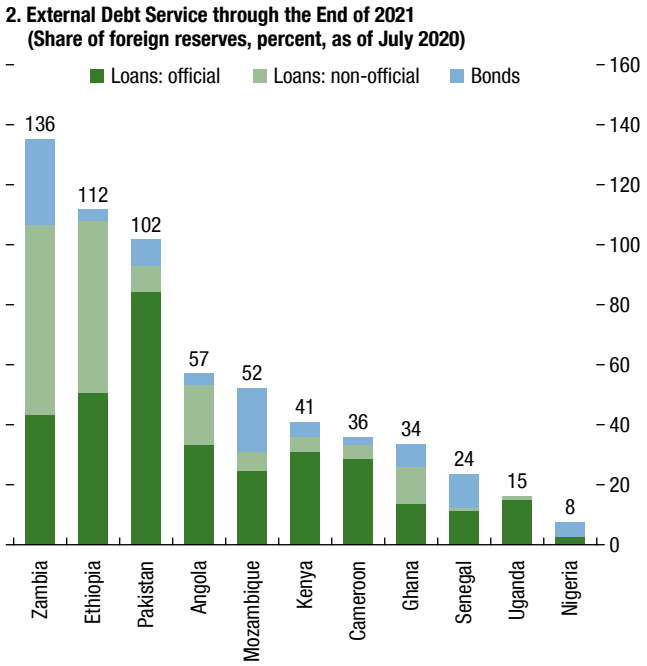
Note: In panel 1, data are not adjusted for inflation-linked debt. In panel 3, the analysis consists of portfolio flows (including both debt and equity components), based on the model introduced in the April 2020 *Global Financial Stability Report*. The sample consists of 19 large and liquid emerging markets (Brazil, Bulgaria, Chile, Colombia, Egypt, Hungary, India, Indonesia, Korea, Malaysia, Mexico, Peru, Philippines, Poland, Romania, Russia, South Africa, Thailand, Turkey). The capital flows at risk (measured as the 5th percentile of the distribution) stands at –1.9 percent of GDP according to the latest assessment, which compares with –3.3 percent of GDP on March 23 and realized portfolio outflows of almost 2 percent of GDP in 2020:Q1. In panel 4, the indicators are scaled by GDP. The figure plots the percentile rank of the median value of the respective indicators across 71 major emerging markets in the corresponding year. The percentile rank is calculated since 1990. 2020 and 2023 estimates are based on World Economic Outlook database estimates. EMs = emerging markets; GFC = global financial crisis; YTD = year to date.

Figure 1.18. Emerging and Frontier Market Economy Spreads and Market Access

The COVID-19 pandemic pushed spreads of lower-rated economies to prohibitive levels ...



... bringing into focus the large refinancing needs of several frontier market economies.



Sources: Bloomberg Finance L.P.; World Bank Debtor Reporting System; and IMF staff calculations.
Note: EMBI = JP Morgan Emerging Markets Bond Index; IG = investment grade.

conditions has reduced these pressures, but many low-income countries with marketable debt have large rollover needs (Figure 1.18, panel 2). This includes some that are eligible for the debt service suspension initiative but are still unable to access international markets at pre–COVID-19 spreads (see Chapter 2 for discussion of the role of creditor composition).

In late July and early August, Argentina and Ecuador reached restructuring deals with bondholders. These deals marked the end of protracted negotiations over both legal and financial terms and were a positive milestone for debt restructuring frameworks going forward.

Policies Need to Focus on Supporting a Sustainable Recovery

The pandemic has led to the worst global recession since the Great Depression, and decisive and timely policy actions have so far cushioned its impact on households and firms, and managed to prevent economic stress from escalating into a full-fledged financial crisis. As the economic recovery takes hold, the policy focus will shift from dealing with liquidity pressures to *managing a gradual reopening of the economy* and *supporting the recovery*. Table 1.1 provides a road map for monetary and financial sector policies at different stages of the crisis.

Policy Priorities during Gradual Reopening Under Uncertainty

During this phase, which corresponds to the current situation in a number of countries, lockdown measures are eased, but uncertainty remains high, and containment measures may need to be reimposed if there is a resurgence in cases. The priority for the gradual reopening phase is to ensure that policy support is maintained for the recovery to take hold and become sustainable.

- *Monetary accommodation should be maintained.* After aggressively cutting policy rates early in the crisis, most advanced economies are now facing effective lower bounds for conventional monetary policy, though there is still room for further policy cuts in many emerging markets. Central bank balance

Table 1.1. Monetary and Financial Policy Road Map

Policy Areas	Great Lockdown	Gradual Reopening under Uncertainty	Pandemic under Control
Monetary Policy	Ease monetary policy, including use of unconventional monetary policy tools	Maintain monetary policy accommodation	Maintain monetary policy accommodation until the policy objectives (for example, inflation target) are achieved
Liquidity Support to Core Funding Markets	Provide support to maintain market functioning and liquidity	Maintain support, but adjust pricing as appropriate to incentivize and prepare the ground for exit from use of central bank facilities	Gradually withdraw support, as warranted
Liquidity Support to Financial Institutions	Provide support to alleviate liquidity stress and support monetary policy accommodation	Maintain support, but adjust pricing as appropriate to incentivize the return to normal market funding	Maintain liquidity support only as required to support monetary policy accommodation
Measures to Maintain the Flow of Credit	Release macroprudential buffers, allow the use of capital and liquidity buffers, and apply regulatory flexibility as appropriate Suspend the distribution of banks' profits (dividend payouts and share buybacks) Provide financing support to households and businesses (see below)	Continue allowing the use of capital and liquidity buffers Suspend the distribution of banks' profits (dividend payouts and share buybacks)	Rebuild capital and liquidity buffers gradually over time while ensuring continued financial institutions' capacity to extend credit
Measures to Address Problem Assets	Provide guidance on asset classification and provisioning	Maintain prudential standards to incentivize the recognition and handling of problem assets	Require banks to develop credible plans to reduce problem assets over an appropriate period of time Handle weak banks that experience significant credit losses Foster the development of markets for distressed assets
Financing Support to Business	Provide credit guarantees (or other risk mitigation) and term funding to support new lending	Maintain financing support if containment measures are reintroduced, but tighten eligibility criteria to better target illiquid but solvent firms	Withdraw unwarranted support
Debt Restructuring for Businesses and Households	Introduce repayment moratoria	Extend repayment moratoria only if necessary to prevent widespread insolvencies Facilitate debt restructuring that reduces debt overhang and/or adjust repayment schedule Provide solvency support to viable systemic firms, grants for smaller firms Ensure efficient out-of-court agreements, with fast-track procedures to support debt restructuring	Facilitate debt restructuring that reduces debt overhang

Source: IMF staff.

sheets have also grown significantly since March 2020. Some emerging market central banks have launched asset purchase programs to stabilize local markets and ease financial conditions, but in some cases, these purchases have also facilitated financing of government deficits. In such cases, transparency and clear communication of the policy objectives are crucial to minimize risks to central bank credibility and the perception that these programs are used for monetary financing—especially in countries with weaker institutional and governance frameworks (see Chapter 2).

- *The necessary liquidity support to financial markets and institutions should be maintained.* A number of backstops remain in place.[21] Many central bank programs were designed to provide support at prices that were attractive in stressed markets but are at a premium in normal conditions. This feature creates incentives for financial institutions to return to markets as funding conditions normalize. The presence of these facilities still provides support to markets, even if actual use is limited.
- *Banks should be encouraged to continue lending.* Whereas banks should continue to make use of the flexibility built into regulatory frameworks, prudential and accounting standards for loan classification and provisioning should be maintained.[22] Timely and reliable recognition of loan losses based on the expected credit loss framework (under International Financial Reporting Standard 9) is essential, but country authorities may want to delay the impact of additional provisions on regulatory capital, with adequate disclosure of fully loaded capital positions. Supervisors should provide guidance on how banks should deal with restructured loans, including those resulting from moratoria on loan repayments. For example, in commercial real estate markets, extended forbearance and foreclosure moratoriums could help limit contagion across commercial property markets (see Box 1.1). Guidance on the usability of bank buffers, including the optimal pace of rebuilding these buffers once the recovery becomes sustainable, should be balanced against the need for banks to continue providing credit to the economy during both reopening and recovery phases.
- *Policymakers should develop effective strategies to deal with corporate and household solvency pressures*. Measures to alleviate liquidity stress can provide only temporary relief. Financing support will further increase indebtedness, whereas firms and households may still face some financing difficulties after the moratoria on debt repayments are lifted. Policymakers should shift their focus to solvency support. For instance, solvency support for firms deemed strategic or systemic could mitigate adverse macro-financial consequences. For SMEs, which account for a large share of employment in some countries, governments could consider providing grants (see the October 2020 WEO).
- *Emerging and frontier market economies facing financing difficulties may require official support.* Financing widening fiscal deficits could be a challenge because of deteriorating public finances and shallow domestic markets.[23] The IMF has proactively provided financing support to member countries during the COVID-19 crisis (80 countries to date).[24] However, public debt may become unsustainable in some countries, and debt restructuring with international creditors would be needed to safeguard macro-financial stability.

Policy Responses if Recovery is Delayed

- *In the event of a deterioration of the economic outlook (for example, due to new outbreaks), policymakers should be prepared to scale up liquidity support but in a more targeted manner.* Targeted fiscal measures would be an efficient way to help the most vulnerable firms and individuals (see the October 2020 *Fiscal Monitor*). Eligibility criteria would need to be gradually tightened to ensure that most of the support goes to viable firms.[25] This would help prevent a buildup of debt overhang further down the road, support necessary business adjustments and debt restructuring, and facilitate post-pandemic reallocation of resources. Moratoria on repayments,

[21]For example, the Federal Reserve extended its support programs until the end of 2020.

[22]According to the Financial Stability Board, there have been a few cases of measures that went beyond the flexibility of the standards (reducing certain credit risk capital and leverage ratio requirements, lowering liquidity requirements, and postponing the application of the large exposure framework), but most of these measures are temporary and will be reversed as the crisis abates.

[23]For guidance on how sovereign debt managers handle financing challenges, see IMF (2020c).

[24]For an overview of policy responses to maintain macro-financial stability in emerging market and developing economies, see IMF (2020d).

[25]For guidance on how to provide liquidity support to businesses, see IMF (2020b).

which provide temporary relief, should be extended only if necessary to prevent widespread insolvencies stemming from renewed lockdowns.

- *Monetary policy may have to be eased further as needed to support the flow of credit to the economy.* Emergency lending and unconventional monetary policy easing may have to be reactivated or expanded, depending on country circumstances, if the economy slips into an adverse scenario in coming months.
- *Policymakers should provide solvency support to mitigate systemic risk.* Targeted transfers and tax relief could be provided to hard-hit businesses and households. In addition, governments could scale up the solvency support to viable firms that are deemed strategic or systemic individually or collectively to mitigate adverse macro-financial consequences.

Policy Priorities once Pandemic Is under Control

Once the virus is fully under control, policymakers should build on the policy actions taken during the gradual reopening phase, but with a greater focus on tackling solvency issues to ensure a sustainable recovery and completing the structural transformation of the economy to the new post-pandemic normal.

- *Monetary policy accommodation should be maintained until central bank objectives are achieved.* Given expectations of continued low inflation (see Online Annex 1.1) and the likelihood of a pronounced decline in real interest rates for many years, central banks (including the US Federal Reserve and the European Central Bank) are considering adjustments to their monetary policy frameworks and communications to ensure policy efficacy, especially at the effective lower bounds.[26]
- *Liquidity support should be withdrawn as warranted once conditions improve.* Term funding provided to banks may be maintained as needed to support credit flows and ensure a sustainable recovery.[27] Prolonged central bank support in key financial markets may distort price discovery and affect market liquidity as well as encourage excessive risk taking if it becomes embedded in investor expectations. Systemwide liquidity support should be withdrawn as market conditions normalize. Protracted liquidity support, including financing support to businesses and moratoria on repayments, could keep nonviable borrowers afloat. This could delay the business restructuring, balance sheet correction, and resource reallocation that are necessary to restore macro-financial resilience.
- *Banks should be encouraged to proactively clean up nonperforming loans.* Banks with high levels of nonperforming loans should be required to develop and implement credible action plans to reduce nonperforming loans within an appropriate time frame. To underpin confidence, authorities should ensure that banks maintain transparency on the performance of their loan portfolios, the materiality of loan restructuring, and any material adjustments made to risk management and accounting policies. Some banks may face capital shortfalls as they recognize credit losses. Supervisors may consider suspending automatic triggers for corrective actions and instead require banks to present credible plans to restore their capital.[28] Exceptional measures taken to support distressed borrowers should be phased once conditions allow.
- *Policymakers should develop effective strategies to deal with private debt overhang.* Well-functioning insolvency frameworks can help ensure efficient exit of nonviable firms and facilitate the necessary structural transformation. Firms facing solvency challenges should be recapitalized, restructured, or resolved:
  - *Recapitalization* could be an option for firms deemed viable (for example, with earnings sufficient to cover interest expenses). In such cases, equity-like support could prove more useful than liquidity support (as liquidity support leads firms to accumulate more debt). Modalities could vary depending on firms' characteristics (SMEs, for example, as discussed previously) and would need to account for country-specific institutional and legal frameworks.
  - *Restructuring* of debt could be suitable for firms facing structural challenges (because of the

[26]For example, Jordà, Singh, and Taylor (2020) found that past pandemics were followed by sustained periods of depressed investment opportunities and/or increased precautionary saving.

[27]Some central banks are beginning to withdraw support with no impact on market functioning. Examples include a reduction in the size and frequency of open market operations in most advanced economies and moderation of the pace of purchases of government securities in some advanced economies.

[28]For discussion of banking regulatory and supervisory issues in response to the COVID-19 crisis, see IMF (2020a).

COVID-19 pandemic). In such cases, adjustments to firms' business models would be required to restore viability. Simplified, standardized procedures should be developed to facilitate out-of-court agreements on debt restructuring.
  - *Resolution*, or facilitation of an orderly exit, should be applied to unviable firms that cannot be saved through restructuring. Fostering the development of markets for distressed assets would facilitate their disposal.

- *Policymakers should prepare to deal with the implications of corporate and household insolvencies for banks and nonbank financial institutions, as well as for sovereigns.* Bank and nonbank financial institutions will need to absorb credit losses, and some regulated financial institutions may experience capital shortfalls. Country authorities should ensure that banks have credible recovery strategies in place and develop (or update) contingency plans for institutions displaying substantial fragilities. Resolution tools, which have been strengthened since the global financial crisis, should be used as necessary to resolve failing banks in an orderly way. At the sovereign level, steps should be taken to develop a credible medium-term fiscal strategy to ensure debt sustainability in the medium term, considering that prolonged policy support could translate into significant fiscal costs.
- *Policymakers should adopt policies to encourage more proactive management of climate-change-related risks.* The pandemic, despite substantial negative effects on firms' environmental performance (see Chapter 5), presents an opportunity to engineer a green recovery. Policymakers should encourage the appropriate pricing of climate-change-related risks through gradual and well-communicated implementation of carbon taxes, better disclosure of climate-change-related risks, and increased use of climate stress tests for financial institutions. This could in turn generate the right incentives to reduce exposures to physical risk and expedite the transition.
- *Policymakers should adopt policies to encourage greater digital investment to enhance financial sector efficiency and inclusion.* The pandemic may have accelerated the transition of the economy toward digitalization. Digital investment should enable the financial system to cut expenses (for example, physical branches) and extend services to underserved populations, thereby increasing financial inclusion. Digital currencies in particular could offer substantial efficiency gains, especially in cross-border payments, and reach unbanked populations. However, they need to be carefully regulated to ensure financial stability and integrity, operational safety, market contestability, and consumer protection.

Post-Pandemic Financial Reform Agenda

To safeguard global financial stability and promote inclusive, sustainable growth in the post-pandemic era, the regulatory reform agenda should focus on strengthening the regulatory framework for nonbank financial sector and stepping up prudential supervision to curb excessive risk taking in the lower-for-longer interest rate environment:

- *Strengthening the regulatory framework for the nonbank financial sector:* In light of lessons learned during the COVID-19 crisis—including central banks' need to backstop essential segments of financial markets—policymakers should assess the effectiveness of prudential tools that are currently available and consider strengthening the prudential regulation as well as broadening the regulatory perimeter of nonbank financial institutions.
  - The operational frameworks for central counterparty clearing houses (CCPs) have to be adjusted in light of the crisis experience (see April 2020 GFSR). While CCPs played an important role in cushioning the impact of market stress during the March sell-off, policymakers should examine options for prudently limiting procyclicality in margin calls as well as ensuring derivatives counterparties are able to anticipate and prepare for them.
  - To enhance the global financial system's resilience, a more robust liquidity risk management framework should be adopted for *investment funds* (International Organization of Securities Commissions 2018), including a broad set of tools to better manage redemptions as well as to identify related risks early (see the October 2019 GFSR). The usability of liquidity buffers in crisis times—which has proven key in the banking sector this year—could be more actively considered. To the

extent the swing pricing has been successful in helping to contain redemptions, a wider adoption would be advisable, particularly in jurisdictions with sizable asset management sectors. Given jurisdiction-specific institutional and legal arrangements, however, swing pricing will likely have to be phased in over time, requiring modifications to the existing operational infrastructure. An internationally harmonized measurement of leverage in investment funds (International Organization of Securities Commissions 2019) should help with the timely recognition and mitigation of respective financial stability risks.

- *Implementing micro- and macroprudential measures to curb excessive risk taking in the lower-for-longer interest rate environment:* With market participants anticipating interest rates to remain very low for the foreseeable future, investor search for yield is likely to resume and may lead to excessive risk taking. Given the existing balance sheet weaknesses, a further buildup of leverage in the post-pandemic world should be contained appropriately. The macroprudential policy framework should be strengthened to ensure adequate capital and liquidity buffers in banking systems, to contain excessive risk taking in the nonbank financial sector and to create macroprudential space that could be used to cushion the impact of adverse shocks on the economy and financial system.[29] Prudential authorities could implement measures such as loan-to-value ratio and debt-to-income ratio to prevent excessive risk taking that could inflate property prices, including in the commercial real estate segment (see Box 1.2).

[29]For instance, the ECB emphasized in its recent Financial Stability Review the importance of creating the macroprudential space in the euro area in the form of releasable countercyclical capital buffers (CCyBs) to help sustain credit in a downturn.

Box 1.1. Are Financial Stability Risks Rising in Commercial Real Estate Markets?

Market participants and policymakers have increasingly pointed to the commercial real estate sector as a potential source of financial stability risks because of its notable size, procyclicality, and systemic nature. In several economies, commercial real estate loans constitute a significant part of banks' lending portfolio, especially at local and regional banks.[1] Commercial mortgage-backed securities issuance has also recovered since the global financial crisis, with the total volume exceeding $100 billion in 2019 (Figure 1.1.1, panel 1). Historically, volatility in the commercial property market has often been an amplifier of macro-financial instability—for example, in the United States in 2008.

In recent years, the riskiness of the commercial real estate sector has increased globally. Over 2009–19, commercial property asset valuations rose, on average, 4.5 percent a year to reach historical highs in several economies.[2] Concurrently, capitalization rates—which measure rental income relative to the value of the property—fell to their lowest levels (Figure 1.1.1, panel 2).

The COVID-19 crisis has inflicted significant pain on the sector. Worldwide commercial property transactions slumped by about 50 percent in the second quarter of 2020 relative to last year, as containment measures imposed in response to the pandemic adversely affected economic activity and reduced the demand for commercial properties. Within the sector, retail and hospitality businesses have been the most affected, with sales down by 60 percent and 80 percent, respectively (Figure 1.1.1, panel 3). Available price data also point to a significant decline, especially in the retail sector, with the retail sector price index falling by about 18 percent and 23 percent in July, year over year, in the European Union and the United States, respectively (Figure 1.1.1, panel 4).

Stress in funding markets early this year reverberated through the commercial real estate sector. Funding costs increased sharply in mid-March, with the spread on BBB-rated commercial mortgage-backed securities and commercial mortgage-backed security indices remaining much higher in June relative to the pre-pandemic level (Figure 1.1.1, panel 5). Syndicated commercial real estate lending dropped by about 50 percent in North America, 70 percent in Europe, and 40 percent in Asia in the second quarter of 2020, year over year. Whereas the slowdown in lending may partly be a result of a drop in demand, increasing delinquency rates and tightening of credit conditions for bank loans, as is evident from the US Senior Loan Officer Opinion Survey, may have also played a role (Figure 1.1.1, panel 6).[3]

Looking ahead, there is considerable uncertainty about the outlook for the commercial real estate sector. As economies open up, activity in the sector is likely to pick up. However, based on current projections from rating agencies, the commercial mortgage-backed securities default rates are expected to more than double in the third quarter of 2020, suggesting that the sector may remain under pressure for a while. Moreover, segments such as retail could continue to face headwinds even after the pandemic is over because of the ongoing increased shift toward e-commerce. The demand for office space may also drop as companies experiencing cost savings of work-from-home arrangements consider extending them into the future.[4] All in all, these shifts could induce significant volatility in commercial property markets and bear close monitoring to limit broader macro-financial stability risks.

The authors of this box are Andrea Deghi and Salih Fendoglu.

[1]In the United States and the euro area, for example, commercial real estate loans constituted 50 percent and 23 percent, respectively, of total bank lending to nonfinancial corporates in 2019.

[2]In some economies, for example Hong Kong SAR, Sweden, and the United States, commercial real estate valuations more than doubled between 2009 and 2019.

[3]In the United States, 5.8 percent of commercial mortgage-backed securities loans were delinquent in the second quarter of 2020, an increase of more than 200 basis points relative to the previous year.

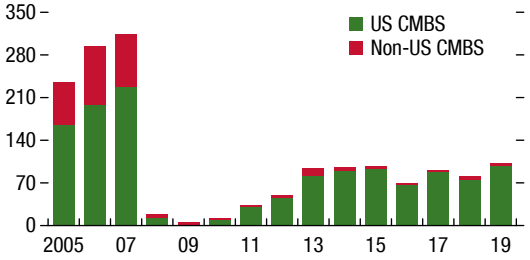
[4]For example, a recent corporate survey by Green Street Advisors shows that the propensity of staff to work from home in the medium to long term has increased by about 30 percentage points since the pandemic crisis.

Box 1.1 *(continued)*

Figure 1.1.1. Trends and Developments in Commercial Real Estate Markets

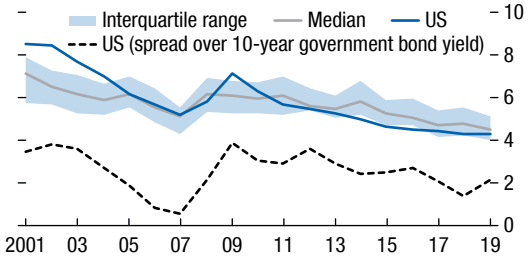
CMBS issuance has increased since the global financial crisis ...

1. CMBS Issuance (Billions of US dollars)



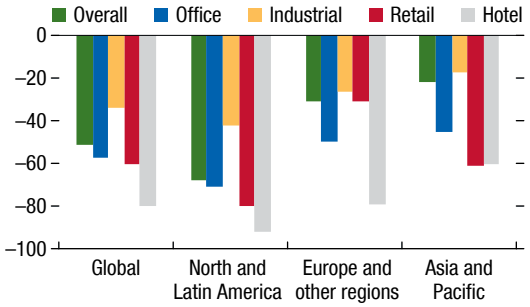
... whereas capitalization rates have continued to fall.

2. Capitalization Rates for Selected Economies (Percent)



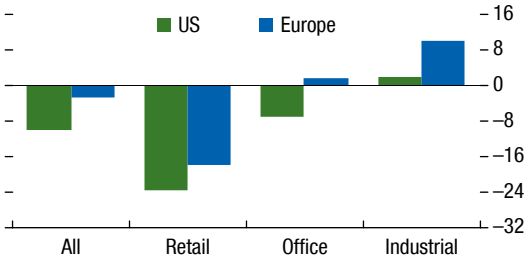
Global commercial property transactions fell sharply in 2020:Q2 ...

3. Change in CRE Transaction Volumes (Percent, 2020:Q2 versus 2019:Q2)



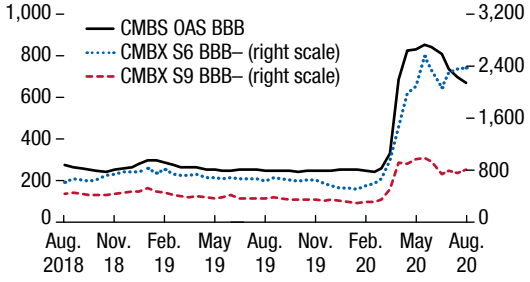
... with prices also dropping, especially in the retail sector.

4. Change in CRE Prices across Sectors (Percent, July 2020 versus July 2019)



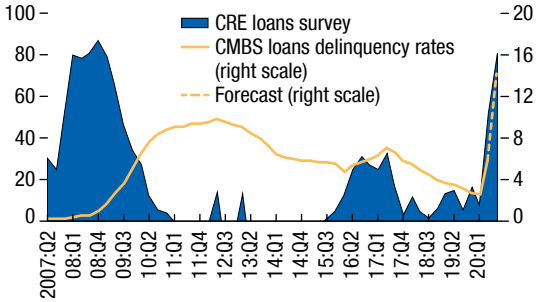
Funding costs in the CMBS market have increased sharply ...

5. CMBS Funding Conditions in the United States (Basis points)



... whereas lending standards have tightened, and delinquency rates have inched up in 2020:Q2.

6. Credit Standards and Delinquency Rates in the US CMBS Market (Percent)



Sources: Bloomberg L.P.; Commercial Mortgage Alert; Federal Reserve Bank; Green Street Advisors; Moody's; MSCI Real Estate; Real Capital Analytics; and IMF staff calculations.

Note: Panel 1 shows the total issuance of CMBS for the United States and other countries. Panel 2 shows the capitalization rate for the United States and other selected economies and the spread of the US capitalization rate over the 10-year US government bond yield. Selected economies are Australia, Austria, Belgium, Canada, China, the Czech Republic, Denmark, Finland, France, Hungary, Hong Kong SAR, Indonesia, Ireland, Italy, Japan, Korea, Malaysia, The Netherlands, New Zealand, Norway, Poland, Portugal, Singapore, South Africa, Spain, Sweden, Taiwan Province of China, Thailand, and the United Kingdom. Panel 3 shows the change in global real estate sales (single asset, portfolio, entity) in 2020:Q2 relative to 2019:Q2. Panel 4 shows the change in the commercial property price index in July 2020 relative to July 2019 for different CRE sectors and for the overall market. Panel 5 shows the spreads over the Treasury yield curve for the Bloomberg Barclays Global Aggregate BBB index and the CMBX S6 and CMBX S9. Panel 6 shows the percent of respondents in the US Senior Loan Officer Opinion Survey indicating a tightening in CRE lending standards and CMBS loan delinquency rates (historical and projected to 2020:Q3). CMBS = commercial mortgage-backed security; CMBX = commercial mortgage-backed security index; CRE = commercial real estate; OAS = option-adjusted spread; US = United States.

Box 1.2. The Behavior of Investment Funds during COVID-19 Market Turmoil

In March 2020 the global investment fund sector and, in particular, fixed-income and nongovernment money market funds experienced a short period of intense withdrawals as investors redeemed shares following a sharp increase in valuation uncertainty in many asset classes, including debt securities (Figure 1.14, panel 2).[1] The market liquidity of securities held by fixed-income funds deteriorated substantially, as evidenced by the near doubling in the average bid-ask spreads of securities held in their portfolios (Figure 1.2.1, panel 1).[2] Though liquidity declined for almost all fund portfolios, average bid-ask spreads more than tripled temporarily for the most affected portfolios, indicating that a few funds bore the brunt of the liquidity impact, while on average the industry proved resilient.

With only a handful of funds suspending redemptions,[3] most fixed-income funds resorted to a mix of strategies to deal with outflows. First, the most afflicted funds used their relatively ample liquidity buffers and shed liquid assets such as cash, cash equivalents, and US Treasuries to cover redemptions, whereas funds receiving inflows hoarded cash and delayed investments, presumably because of uncertain market conditions (Figure 1.2.1, panel 2). Second, despite large outflows, some funds were willing to purchase assets at high bid-ask spreads, possibly using cash reserves to take advantage of depressed prices of potentially illiquid assets (Figure 1.2.1, panel 2). Third, with their investors more sensitive to performance and less amenable to increased corporate exposures, fixed-income funds were less inclined to retain their relatively high exposures to corporate bonds, especially if they were anticipating more redemptions (Figure 1.2.1, panel 3). In addition, swing pricing may have helped funds manage redemptions.[4]

As a result, fixed-income funds that were forced to sell assets in response to redemption pressures seem to have had some adverse effect on both asset prices and market liquidity. In March 2020 the bid-ask spreads of assets sold most heavily by fixed-income funds facing large redemptions increased more than the bid-ask spreads of assets not facing such selling pressure. Similarly, during March 2020 cumulative returns of assets under selling pressure declined more than assets experiencing no pressure (Figure 1.2.1, panel 4). Hence, funds' sales of liquid assets are likely to have contributed to price pressures and liquidity strains observed in fixed-income markets. Similarly, increased incentives for funds to sell corporate bonds may have amplified the price dislocations observed in risky credit markets in March 2020. Some funds, however—even some of those experiencing large outflows—may have helped to mitigate price pressures, as they were willing to absorb relatively illiquid assets even under uncertain market conditions (Figure 1.2.1, panel 2, right side, and panel 4).

The behavior of fixed-income funds and their clients during the March 2020 redemption stress episode highlight some fragilities in this industry. Selling relatively liquid assets first might have further intensified funds' liquidity mismatches, if liquidity conditions had not improved so rapidly. The weakening in the average liquidity profile of funds facing outflows may have also made them more susceptible to future redemption or valuation shocks. The sale of less liquid assets has contributed to price dislocations in the underlying asset markets. In combination with fund investors' increased sensitivity to fund performance, this could have generated feedback loops resulting in larger-scale fire sales had central banks not stepped in so quickly with asset purchase programs and liquidity facilities.

Looking ahead, a comprehensive review of available prudential tools in the investment fund sector, including considering a more widespread adoption of swing pricing, would help to mitigate vulnerabilities revealed during the COVID-19 market turmoil.

The authors of this box are Frank Hespeler and Felix Suntheim.

[1]These outflows are still lower than those assumed under the liquidity stress presented in Box 3.1 of the October 2019 *Global Financial Stability Report*.

[2]Based on a sample of 323 fixed-income funds with available information on individual securities held in their portfolios.

[3]Fitch reported for 2020 that mutual funds suspended a total of $62 billion year to date, a mere 0.11 percent of the sector's total assets (Fitch Ratings 2020).

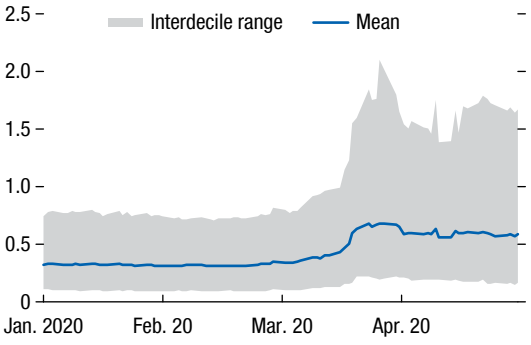
[4]Data limitations did not allow for an analysis of the effectiveness of swing pricing during the March 2020 turmoil period. However, Jin and others (2019) provide respective evidence for UK corporate bond funds during stress periods.

Box 1.2 *(continued)*

Figure 1.2.1. Vulnerabilities of Fixed-Income Funds Exposed during the March 2020 Market Turmoil

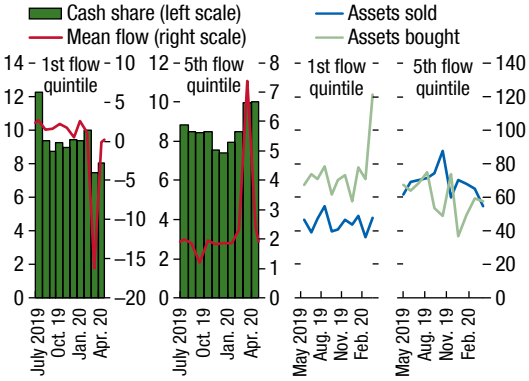
During March 2020, the liquidity of the fixed-income funds' portfolios deteriorated substantially.

1. Bid-Ask Spreads of Fixed-Income Funds' Portfolios (Percent)



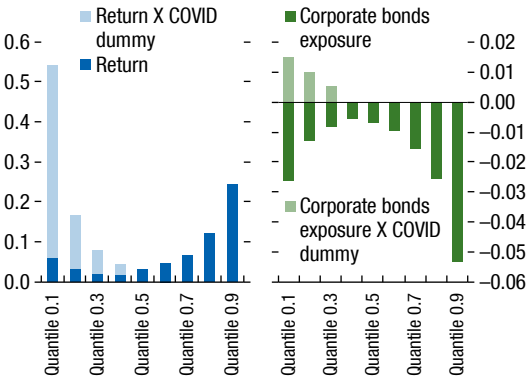
Funds facing redemptions reduced cash buffers and sold liquid assets, but in some cases also purchased illiquid assets, taking advantage of illiquidity discounts.

2. Portfolio Shares of Cash and Fund Flows (left panels) and Bid-Ask Spreads of Assets Bought and Sold by Funds (right panel), by Flow Quintile (Percent)



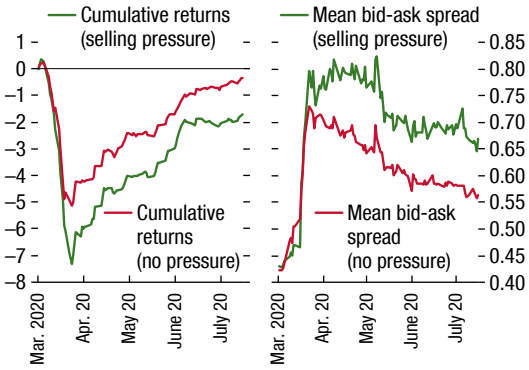
Funds facing outflows saw their investors become more sensitive to performance and were less keen to hold on to corporate bonds ...

3. Quantile Regression Coefficients of Fund Flows on Returns and Corporate Bond Exposures (Percent)



... adding to asset sales as well as lower performance and liquidity of assets under high selling pressure compared with other assets.

4. Bid-Ask Spreads and Cumulative Returns of Securities under Selling Pressure Held by Fixed-Income Funds (Percent)



Sources: Bloomberg Finance L.P.; Morningstar; Refinitiv; and IMF staff calculations.
Note: Panel 1 is based on 323 fixed-income funds providing information on securities held in their portfolios. The graph on the left in panel 2 reports average shares of cash and cash equivalents in fixed-income funds with assets over $0.5 billion in extreme flow quintiles. The graph on the right in panel 2 shows the bid-ask spread of the assets bought and sold in a given month, relative to the bid-ask spread of the fund's portfolio. The bid-ask spread of assets sold and bought is the average bid-ask spread in the month the assets were sold or bought. Panel 3 reports coefficients significant at the 5 percent level from unconditional panel quantile regressions of fund flows on portfolio shares of cash, corporate bonds, and sovereign bonds and on returns, fund size, fund age, a quarter dummy, and a coronavirus disease dummy, as well as interactions of the latter with cash, corporate bonds, sovereign bonds, and returns and a set of macro-financial variables, including the Chicago Board Options Exchange Volatility Index, a term spread, a credit risk spread, a proxy for US interest levels, and a basket of major exchange rates versus the US dollar. Fund fixed effects are included. Samples include available monthly data for fixed-income funds with assets over $0.5 billion from January 2015 to May 2020. Panel 4 is based on detailed portfolio holdings data of 390 fixed-income funds holding approximately 13,000 identifiable securities in March 2020. Prices and bid-ask spreads are computed based on Refinitiv composite end-of-day bid and ask prices. Pressure of security in March 2020 is defined similarly to the definition in Coval and Stafford (2007) as the fraction of flow-motivated trading in a security's average monthly trading volume. Flow-motivated trading is the difference between a security's purchases by funds experiencing higher inflows than 90 percent of their peers and the sales by funds facing outflows higher than 90 percent of their peers. The mentioned fraction defines a security as experiencing high selling pressure if it is in the bottom decile of the ratio's distribution across all securities; it is considered to experience no pressure if this ratio exceeds 0.

Box 1.3. Interlinkages among Local Government, Corporate, and Bank Vulnerabilities in China

In China, debt vulnerabilities at the local government level have increased in recent years. Direct borrowing by local governments was first permitted in 2015 but has risen quickly to 24 percent of GDP, significantly outpacing growth in local government tax revenues (Figure 1.3.1, panel 1). Direct borrowing growth has accelerated during the COVID-19 crisis as it became a key funding source for macroeconomic countercyclical measures, including for investment, spending, and even bank recapitalization. This direct debt is considered low risk by investors, reflecting perceptions of central government guarantees.

Local governments also remain exposed to debt owed by off-balance-sheet entities known as local government financing vehicles (LGFVs) and, indirectly, to debt of local government-owned enterprises (local state-owned enterprises [SOEs]). LGFVs are involved primarily in quasi-fiscal projects such as infrastructure, but in recent years have expanded financial linkages to local SOEs and in some cases to private firms, in the form of credit guarantees and capital injections. Entities identifying as LGFVs in bond prospectuses have outstanding debt equivalent to 39 percent of GDP (Figure 1.3.1, panel 1).

Local governments' growing direct debt burdens may affect financial stability by weakening the credibility of their backstop for LGFV and other local debt. This linkage can tighten financial conditions for the corporate sector, transmitting risks from the government to the corporate sector, and ultimately to the banking sector, which is the lender for most corporate debt.

Bond market data show that borrowing conditions for LGFVs and lower-rated non-LGFVs appear sensitive to local governments' direct indebtedness. With weak revenue, LGFVs rely on implicit or explicit government guarantees to access credit. LGFVs in provinces with financially weaker local governments have seen bond market credit spreads widen notably relative to other provinces, whereas overall debt growth has slowed or contracted (Figure 1.3.1, panel 2).

Lower-rated non-LGFV firms appear to be similarly affected by government debt. Province-level bond market credit spreads for this segment saw sharply increased differentiation based on government direct debt loads in 2019 (Figure 1.3.1, panel 2, bottom-right chart). Increased government debt may weaken backstops for local SOEs and government-backed credit guarantee institutions, indirectly tightening financial conditions for private firms, which often rely on guarantees to access credit. Non-LGFVs may also be weakened by reduced LGFV activity given the significant linkages between them.

Investor concerns about local government debt may have also limited the effectiveness of authorities' COVID-19–related credit measures in financially weaker provinces. Net new credit to the household and corporate sectors in the first half of 2020 was equivalent to 18 percent of 2019 GDP, but 40 percent of that increase occurred in just three provinces. Provinces with worse debt-to-revenue ratios saw significantly weaker credit impulses than the national average (Figure 1.3.1, panel 3).

A large proportion of LGFV and local SOE debt is likely unserviceable, implying significant further deterioration in these local fiscal backstops. Roughly 75 percent (RMB 26 trillion) of outstanding LGFV debt is likely unserviceable, defined as owed by LGFVs with a net-debt-to-earnings ratio of more than 15 or negative earnings. Local SOEs owe another RMB 10 trillion in similarly defined debt. If local governments assume this unserviceable debt, it will more than double existing debt loads and increase by tenfold the debt owed by provinces with debt-to-revenue ratios above 400 percent (Figure 1.3.1, panel 4).

The potential for spillovers to banks is also considerable. Banks are the primary creditors to LGFVs and local SOEs. If these debts develop into nonperforming loans, there will be a large negative spillover effect on banks' asset quality.

Linkages between local governments, firms, and banks could pose significant financial stability risks and underscore the urgency of accelerating structural reforms in China, even as authorities seek to support the recovery from COVID-19. Key priorities should be to strengthen the intergovernmental fiscal coordination framework, introduce bank and corporate restructuring frameworks in line with international best practices, and address remaining gaps in financial supervision and regulation.

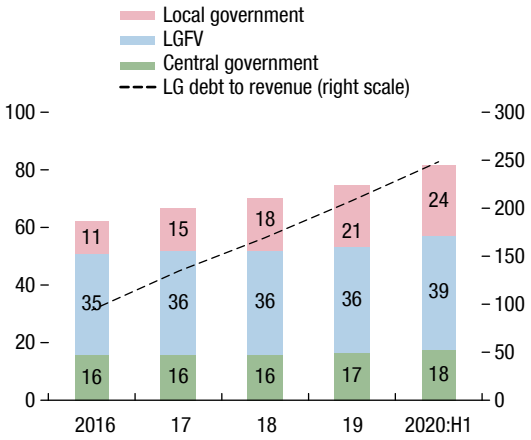
This box was prepared by Henry Hoyle.

Box 1.3 *(continued)*

Figure 1.3.1. Interlinkages among Local Government, Corporate, and Bank Vulnerabilities in China

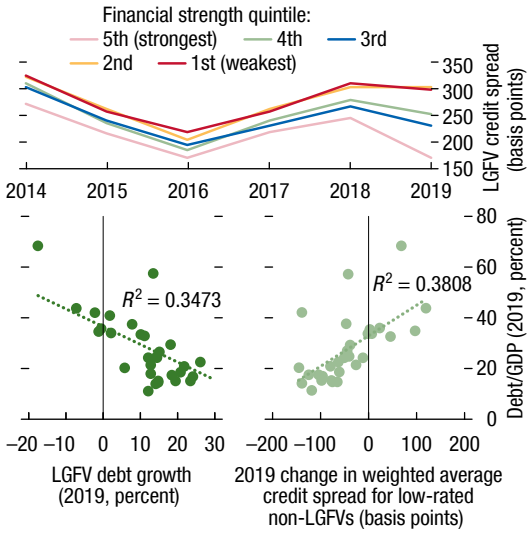
Direct local government debt has been rising faster than indirect debt incurred via local government financing vehicles, outpacing growth in local tax revenues.

1. China: Government Debt by Type: Local Government Debt to Total Revenue (Percent of GDP; ratio)



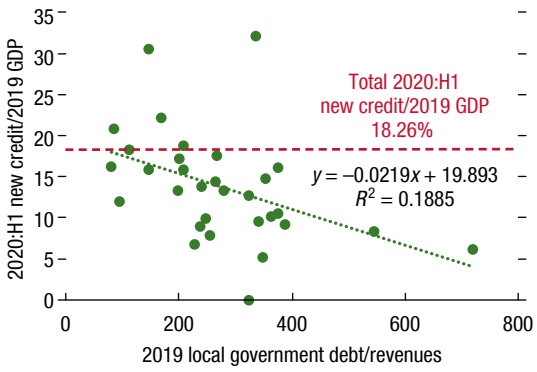
Bigger government debt loads may weaken backstops for local firms, resulting in increased credit risk premiums and deleveraging for firms with weaker stand-alone debt servicing capacity.

2. China: Selected Measures of Corporate Borrowing Conditions, by Province Quintile



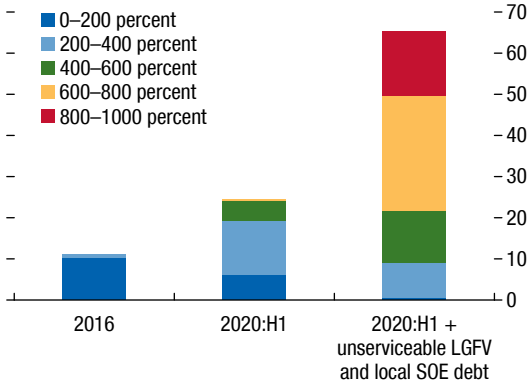
Policy-driven credit growth acceleration in response to the COVID-19 pandemic has disproportionately benefited provinces with more manageable government debt loads.

3. China: Province-Level Household and Corporate Credit Growth and Ratio of Government Debt to Revenue (Percent)



Much of the LGFV and local SOE debt local governments are exposed to is unserviceable, implying significant further deterioration in backstops.

4. China: Local Government Direct Borrowing and Unserviceable LGFV and Local SOE Debt, by Ratio of Debt to Revenue (Percent of GDP)



Sources: Bloomberg Finance L.P.; CEIC; and IMF staff calculations.
Note: In panel 1, LGFV debt is based on financial statements of 1,852 firms with bonds designated as urban investment vehicle bonds. 2020:H1 LGFV total borrowing is estimated as the 2020:Q1 level multiplied by the 2020:Q1 quarterly growth rate. In the top chart of panel 2, each line is a quintile of provinces based on equally weighted ranking of fiscal deficit and debt-to-GDP ratio. In the bottom charts of panel 2, each point represents a province. Borrowing cost measures are based on weighted average bond coupons. In the bottom-right chart of panel 2, change is the 2019 average minus the 2018 average. In panel 4, unserviceable debt is defined as debt held by firms with a net debt to EBIT ratio above 15 (or negative earnings). Consolidated firm earnings are added to local government revenues. EBIT = earnings before interest and taxes; LG = local government; LGFV = local government financing vehicle; SOE = state-owned enterprise.

References

Alcidi, Cinzia, and Daniel Gros. 2019. "Public Debt and the Risk Premium: A Dangerous Doom Loop." Centre for European Policy Studies, Brussels.

Coval, Joshua, and Erik Stafford. 2007. "Asset Fire Sales (and Purchases) in Equity Markets." *Journal of Financial Economics* 86 (2): 479–512.

Durham, J. Benson. 2002. "The Extreme Bounds of the Cross-Section of Expected Stock Returns." https://ssrn.com/abstract=333362

Fitch Ratings. 2020. "Global Mutual Fund Redemption Suspensions Highlight Liquidity Mismatches: Application of Extraordinary Liquidity-Management Tools Becoming More Common." https://www.fitchratings.com/research/fund-asset-managers/global-mutual-fund-redemption-suspensions-highlight-liquidity-mismatches-application-of-extraordinary-liquidity-management-tools-becoming-more-common-21-06-2020

International Monetary Fund (IMF). 2020a. "Banking Sector Regulatory and Supervisory Response to Deal with Coronavirus Impact (with Q and A)." IMF Special Series on COVID-19, International Monetary Fund, Washington, DC, May 13.

———. 2020b. "Considerations for Designing Temporary Liquidity Support to Businesses." IMF Special Series on COVID-19, International Monetary Fund, Washington, DC, May 8.

———. 2020c. "Debt Management Responses to the Pandemic." IMF Special Series on COVID-19, International Monetary Fund, Washington, DC, May 6.

———. 2020d. "Monetary and Financial Policy Responses for Emerging Market and Developing Economies." IMF Special Series on COVID-19, International Monetary Fund, Washington, DC, June 8.

International Organization of Securities Commissions (IOSCO). 2018. "Recommendations for Liquidity Risk Management for Collective Investment Schemes." Final Report FR01/2018, The Board of the International Organization of Securities Commissions, Madrid.

———. 2019. "Recommendations for a Framework Assessing Leverage in Investment Funds." Final Report FR18/2019, The Board of the International Organization of Securities Commissions, Madrid.

Jin, Dunhong, Marcin T. Kaperczyk, Bige Kahraman, and Felix Suntheim, 2019. "Swing Pricing and Fragility in Open-end Mutual Funds." IMF Working Paper 19/227, International Monetary Fund, Washington, DC.

Jordà, Òscar, Sanjay Singh, and Alan Taylor. 2020. "Long-Run Economic Consequences of Pandemics." NBER Working Paper 26934, National Bureau of Economic Research, Cambridge, MA.

Lian, W., Andrea Presbitero, and Ursula Wiriadinata. 2020. "Public Debt and r-g at Risk." IMF Working Paper 20/137, International Monetary Fund, Washington, DC.

Panigirtzoglou, Nikolaos, and Robert Scammell. 2002. "Analysts' Earnings Forecasts and Equity Valuations." Bank of England Quarterly Bulletin, Spring, London.