INTERNATIONAL MONETARY FUND

GLOBAL FINANCIAL STABILITY REPORT

Preempting a Legacy of Vulnerabilities

2021
APR

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— to indicate that the figure is zero or less than half the final digit shown or that the item does not exist;

– between years or months (for example, 2020–21 or January–June) to indicate the years or months covered, including the beginning and ending years or months;

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PREFACE

The *Global Financial Stability Report* (GFSR) assesses key vulnerabilities the global financial system is exposed to. In normal times, the report seeks to play a role in preventing crises by highlighting policies that may mitigate systemic risks, thereby contributing to global financial stability and the sustained economic growth of the IMF's member countries.

The analysis in this report was coordinated by the Monetary and Capital Markets (MCM) Department under the general direction of Tobias Adrian, Director. The project was directed by Fabio Natalucci, Deputy Director; Nassira Abbas, Deputy Division Chief; Antonio Garcia Pascual, Deputy Division Chief; Evan Papageorgiou, Deputy Division Chief; Mahvash Qureshi, Division Chief; and Jérôme Vandenbussche, Deputy Division Chief. It benefited from comments and suggestions from the senior staff in the MCM Department.

Individual contributors to the report were Jose Abad, Sergei Antoshin, Adolfo Barajas, John Caparusso, Liumin Chen, Yingyuan Chen, Woon Gyu Choi, Fabio Cortes, Reinout De Bock, Andrea Deghi, Dimitris Drakopoulos, Salih Fendoglu, Ken (Zhi) Gan, Deepali Gautam, Rohit Goel, Pierre Guerin, Sanjay Hazarika, Frank Hespeler, Henry Hoyle, Mohamed Jaber, Phakawa Jeasakul, Oksana Khadarina, Sheheryar Malik, Samuel Mann, Sonia Meskin, Junghwan Mok, Natalia Novikova, Dmitri Petrov, Thomas Piontek, Patrick Schneider, Can Sever, Juan Sole, Tomohiro Tsuruga, Manchun Wang, Jeffrey Williams, Yizhi Xu, Dmitry Yakovlev, Akihiko Yokoyama, and Xingmi Zheng. Input was provided by Parma Bains, Cristina Cuervo, Shuyi Liu, and Nobuyasu Sugimoto. Magally Bernal, Monica Devi, Leroy Perumal, and Andre Vasquez were responsible for word processing.

Gemma Rose Diaz from the Communications Department led the editorial team and managed the report's production with editorial assistance from David Einhorn, Lucy Scott Morales, Nancy Morrison, Katy Whipple/The Grauel Group, Harold Medina (and team), and Vector Talent Resources.

This issue of the GFSR draws in part on a series of discussions with banks, securities firms, asset management companies, hedge funds, standard setters, financial consultants, pension funds, central banks, national treasuries, and academic researchers.

This GFSR reflects information available as of March 24, 2021. The report benefited from comments and suggestions from staff in other IMF departments, as well as from Executive Directors following their discussions of the GFSR on March 25, 2021. However, the analysis and policy considerations are those of the contributing staff and should not be attributed to the IMF, its Executive Directors, or their national authorities.

FOREWORD

The global economy has struggled to withstand the stress of a yearlong pandemic—but, even as an economic recovery approaches, new challenges confront all economies. With the risk of global financial instability high, policymakers must be ready to adapt their policies to meet potentially volatile conditions.

The IMF's forecast has been upgraded to 6 percent global growth for 2021, boosted by the $1.9 trillion fiscal stimulus in the United States. The stimulus since the start of the pandemic has contained the number of bankruptcies, restrained the increase in unemployment, and reduced economic scarring more generally. In addition, central bank asset purchases at nearly $10 trillion globally have played a crucial role in keeping interest rates low and financial conditions accommodative.

But the picture is starting to change, as longer-term interest rates are rising. The yield on the 10-year US Treasury note has increased from just over ½ percent in August 2020 to about 1¾ percent recently, almost matching its pre-pandemic level. This reflects improved prospects for inflation and growth—real yields and market-implied inflation have both risen—but medium-term inflation expectations remain anchored.

Central banks face stark trade-offs. The rise in yields could tighten financial conditions weighing on funding costs. Further asset purchases to undo such tightening may have unintended consequences in market-based finance at a time when the macro- and microprudential toolkit remains incomplete. Rising vulnerabilities in the corporate and nonbank sector could put medium-term financial stability at risk.

Emerging markets have already felt the brunt of rising yields. Borrowing costs for corporate and sovereign issuers have been steadily increasing at a time when financing needs remain exceedingly high. The still-easy financial conditions remain supportive, but the volatility in financial markets and portfolio flows presents significant risks. Emerging market policymakers could face difficult times ahead, with more constrained monetary policy space on the back of rising inflation, unless positive spillovers from the reemerging global economy take over.

Bank profitability is expected to be low in many jurisdictions, and it is becoming a disincentive against the use of capital buffers to support the recovery. While markets see a boom in finance, bank lending might become strained and challenge the stance of monetary policy in many countries. Worryingly, the sovereign-bank nexus has intensified markedly in emerging markets, with 60 percent of sovereign debt issued after January 2020 ending up on domestic banks' balance sheets.

The corporate sector is now at a crossroads. While some firms benefited from the easing in financial conditions and repaired their balance sheets, some continue to struggle and rely heavily on policy support. The solvency risk remains elevated at small and mid-sized firms—and even at some large firms in both advanced and emerging markets. This report presents a decision framework for the corporate sector to help policymakers triage among alternative policies.

Markets for assets that follow environmental, social, and governance (ESG) standards have boomed since the beginning of the recovery phase of the pandemic. In the run-up to the United Nations Climate Change Conference (COP26) in November 2021, the IMF is working with other international financial institutions, standard-setting organizations, and the Network for Greening the Financial System to establish climate disclosure standards, define climate taxonomy, and improve climate data.

Tobias Adrian
Financial Counsellor

EXECUTIVE SUMMARY

April 2021 *Global Financial Stability Report*: Preempting a Legacy of Vulnerabilities

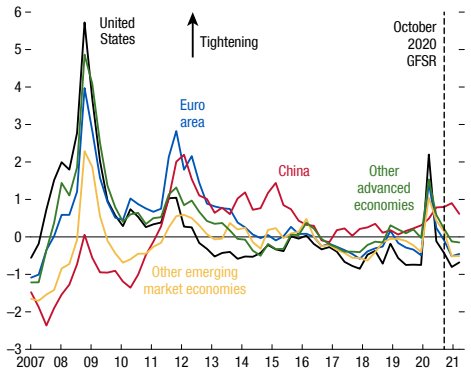
Extraordinary policy measures have eased financial conditions and supported the economy, helping to contain financial stability risks. But actions taken during the pandemic may have unintended consequences such as stretched valuations and rising financial vulnerabilities. The recovery is expected to be asynchronous and divergent between advanced and emerging market economies. Given large external financing needs, emerging markets face daunting challenges, especially if a persistent rise in US rates brings about a repricing of risk and tighter financial conditions. The corporate sector in many countries is emerging from the pandemic overindebted, with notable differences depending on firm size and sector. Concerns about the credit quality of hard-hit borrowers and the profitability outlook are likely to weigh on the risk appetite of banks during the recovery. There is a pressing need to act to avoid a legacy of vulnerabilities. Policymakers should take early action and tighten selected macroprudential policy tools while avoiding a broad tightening of financial conditions. They should also support balance sheet repair to foster a sustainable and inclusive recovery.

Thanks to massive policy support, the global financial system has been resilient during the COVID-19 pandemic and financial conditions have eased significantly (Figure 1). This has helped maintain the flow of credit to households and firms, facilitated the recovery, and kept financial risks at bay. The improved economic outlook has clearly reduced the range of adverse outcomes, but notable downside risks to future GDP growth remain.

Two overarching themes are emerging. First, unprecedented policy support may have unintended consequences: excessive risk taking in markets is contributing to stretched valuations, and rising financial vulnerabilities may become structural legacy problems if not addressed. Equity markets have rallied aggressively since the third quarter of 2020 on expectations of a rapid economic recovery and continued policy backstops, and they are now trading at levels meaningfully higher than those suggested by models based on fundamentals (Figure 2). While earnings expectations have improved, historically low real risk-free rates (despite most recent increases) have provided material support so far to valuations. In the corporate bond market, spreads have remained very tight.

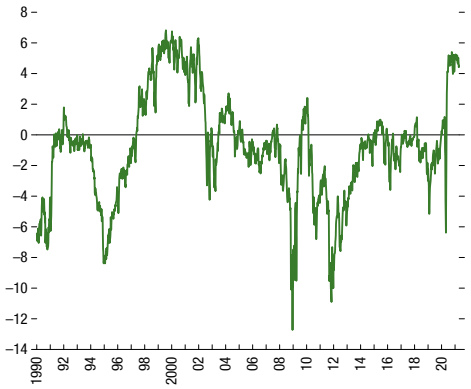
Long-term interest rates have increased significantly, especially in the United States, reflecting in part greater investor confidence in the outlook (Figure 3). While a

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



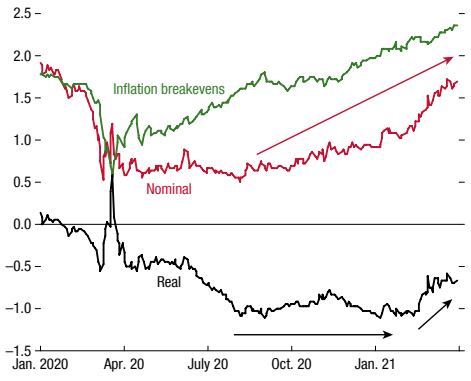
Source: IMF staff calculations.
Note: GFSR = *Global Financial Stability Report.*

Figure 2. US Equity Market Misalignment
(Deviation from fair value per unit of risk)



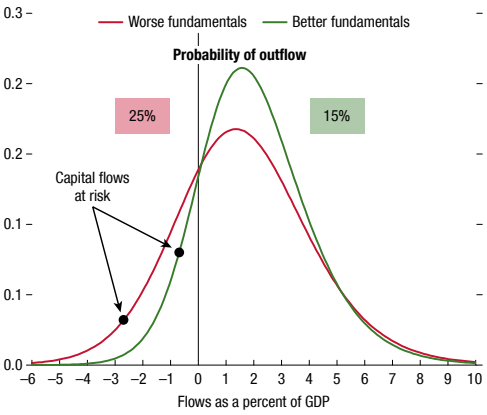
Source: IMF staff calculations.

Figure 3. US 10-Year Nominal and Real Rates
(Percent)



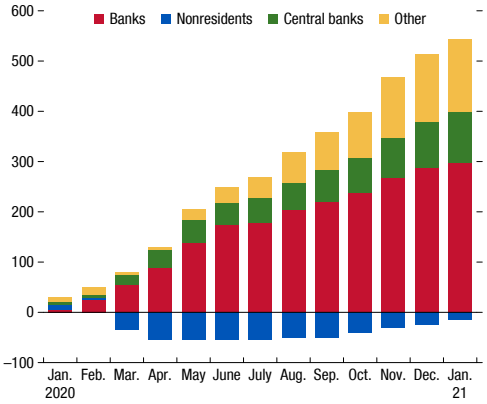
Sources: Bloomberg Finance L.P.; and IMF staff calculations.
Note: Inflation breakevens are measures of expected inflation derived from inflation-linked bonds.

Figure 4. Portfolio Flows at Risk for Countries with Better vs. Worse Fundamentals
(Probability density function)



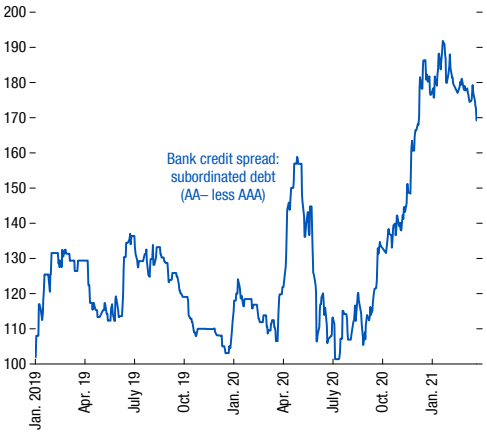
Source: IMF staff calculations.

Figure 5. Change in Domestic Sovereign Bond Holdings of Emerging Markets
(Billions of US dollars, cumulative change)



Sources: Haver Analytics; national sources; and IMF staff calculations.
Note: Based on a sample of 12 major emerging markets. Domestic bonds are primarily denominated in local currency. Figures are converted to US dollars at end-of-month exchange rates.

Figure 6. Chinese Banks: Debt Spreads
(Basis points, subordinated debt)



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

gradual rise in rates on the back of improving fundamentals may be welcome, a rapid and persistent increase, especially in real rates, may result in a repricing of risk in markets and a sudden tightening in financial conditions. Such a tightening could interact with elevated financial vulnerabilities, with repercussions for confidence and endangering macro-financial stability, especially in emerging markets.

Second, the recovery is expected to be asynchronous and divergent across economies (see the April 2021 *World Economic Outlook*). There is a risk that financial conditions in emerging market economies may tighten markedly, especially if policymakers in advanced economies take steps toward policy normalization. A less favorable financial environment may result in large portfolio outflows and pose a significant challenge to some emerging and frontier market economies, given the large financing needs they face this year. IMF staff analysis points to a continued improvement in the outlook for portfolio flows, primarily reflecting easier global financial conditions (Figure 4). Nevertheless, countries with weaker fundamentals or limited access to COVID-19 vaccines are vulnerable. The sovereign-bank nexus has worsened in emerging markets as domestic banks have absorbed the bulk of increases in domestic debt (Figure 5). For many frontier market economies, market access remains impaired.

China has recovered more rapidly than other countries, but at the cost of a further buildup in vulnerabilities, particularly risky corporate debt. Financial conditions may become less favorable amid expectations for policy tightening and new measures to impose discipline on banks, local governments, and property developers, as well as rising uncertainty about implicit guarantees. Funding conditions for capital instruments have tightened for weaker, smaller banks (Figure 6). National authorities face a delicate but urgent challenge in unwinding implicit guarantees—a task that must be handled delicately given the potential for disorderly repricing.

The global corporate sector has been hit hard by the pandemic. Extraordinary policy support has helped mitigate its impact. Large firms with market access have taken advantage of favorable conditions to issue debt and cope with liquidity pressures (Figures 7 and 8). But the buildup in corporate leverage resulting from easy financial conditions poses a dilemma for policymakers, as the short-term boost to economic activity must be weighed against an increase in vulnerabilities and downside risks to growth down the road (see Chapter 2).

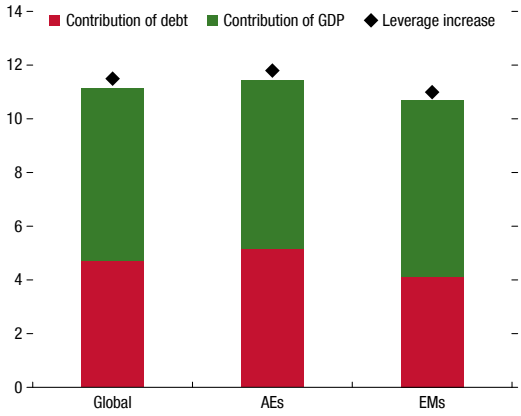
A more granular firm-level assessment finds that there are notable differences in performance across sectors and firm sizes. IMF staff analysis suggests that liquidity stress is high at small firms in most sectors and across countries, while solvency stress is high at small firms but also notable at mid-sized and even large firms in the most affected sectors (Figure 9). Chapter 1 proposes a framework to assess whether firms should rely on market financing, seek government support, or be restructured or liquidated.

The crisis has hit the commercial real estate sector hard (see Chapter 3). Commercial property transactions and prices slumped in 2020 (Figure 10). Part of the adverse impact on the retail, office, and hotel segments could be structural, as some activities increasingly take place virtually or are relocating outside of large cities. In the event of a structural decline in demand, commercial real estate fair values could drop sharply: a permanent increase in the vacancy rate by 5 percentage points is estimated to result, on average, in a drop in fair values by about 15 percent after five years (Figure 11). Since the pandemic, price misalignments appear to have increased. This development, if it persists, could pose downside risks to growth.

Banks came into the pandemic with high capital and liquidity buffers, thanks to regulatory reforms implemented after the 2007–08 financial crisis, and they have been resilient so far. But the extent to which they will continue to provide credit through the recovery is an open question. While growth of loans, particularly to businesses, has slowed in some countries, loan demand is expected to firm up once the recovery gains strength, especially where it has been weakest. But loan officers in most countries do not anticipate a loosening in lending standards (Figure 12). The phasing out of support policies could have a significant impact on some banks, likely weighing on their appetite for lending. Moreover, for most banks, uncertainties about credit losses and weak prospects for profitability are likely to discourage significant reduction in capital buffers to support the recovery. Such constraints may be particularly worrisome for firms with limited financing options that are more dependent on bank credit. Authorities should continue to encourage banks to use buffers, where prudent, to support the recovery.

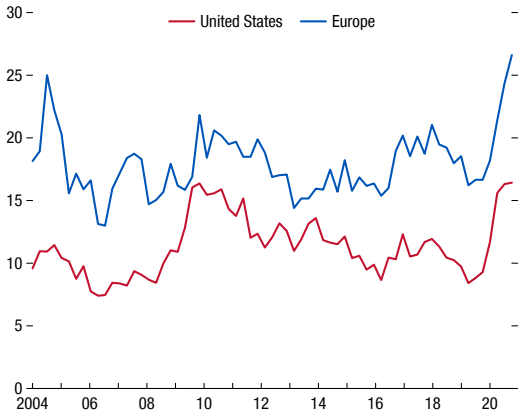
Ongoing policy support remains essential until a sustainable and inclusive recovery takes hold to maintain the flow of credit to the economy and prevent the pandemic from posing a threat to the global financial system. Monetary policy will need to remain accommodative until mandated policy objectives are achieved. Policymakers should act swiftly to prevent financial vulnerabilities from becoming entrenched and turning into legacy problems.

Figure 7. Nonfinancial Corporate Debt Change
(Percentage points of GDP, 2019:Q4 to 2020:Q3)



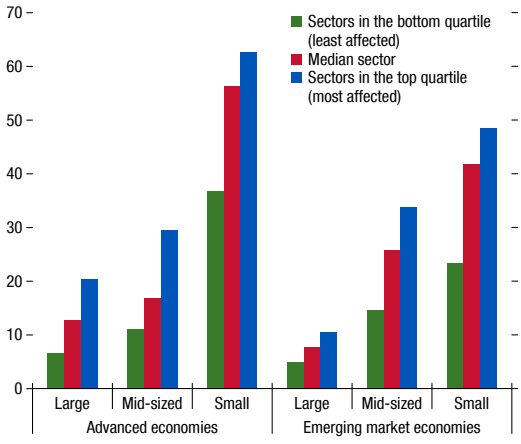
Sources: Institute of International Finance (IIF); and IMF staff calculations.
Note: AEs = advanced economies; EMs = emerging markets.

Figure 8. Median US and European High-Yield Issuer Cash
(Percent of debt)



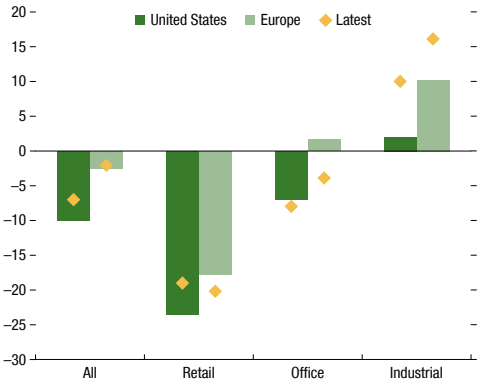
Sources: Morgan Stanley; and IMF staff.

Figure 9. Solvency Stress Indicators
(Share of debt at firms with elevated solvency stress in percent of total debt at all firms in respective segments)



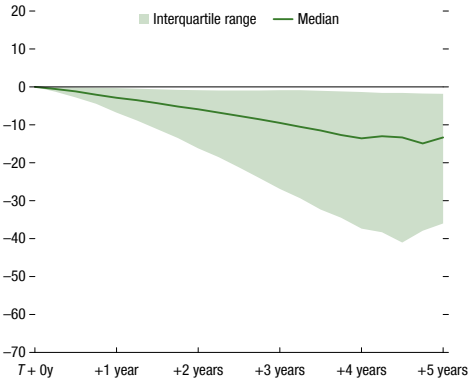
Sources: S&P Capital IQ; and IMF staff.
Note: Large, mid-sized, and small firms are defined by total assets.

Figure 10. Commercial Real Estate Prices
(Percent, 2020:Q2 and latest, year over year)



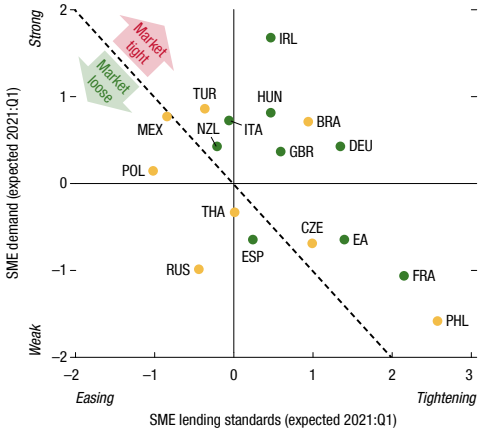
Source: Green Street Advisors.
Note: Latest data available are for January 2021 in Europe and February 2021 in the United States.

Figure 11. Response of Commercial Real Estate Prices across Economies to a Permanent Shock to the Vacancy Rate
(Percent)



Sources: Haver Analytics; MSCI Real Estate; and IMF staff calculations.
Note: See Chapter 3 for background. *T* denotes quarter of shock.

Figure 12. Small and Medium Firm Lending Standards and Loan Demand Expected
(Standard deviations)



Source: IMF staff calculations.
Note: Countries are identified by three-letter International Organization for Standardization (ISO) country codes. Expected refers to next 3 months.
Green dots = advanced economies; yellow dots = emerging markets; EA = euro area; SME = small and medium enterprises.

Taking into consideration possible lags between the activation and impact of macroprudential tools, policymakers should take early action.

They should tighten selected macroprudential policy tools to tackle pockets of elevated vulnerability while avoiding a broad tightening of financial conditions. If such tools are not available (such as in some segments of the nonbank financial intermediation sector), policymakers should swiftly develop them. Given the challenges to designing and operationalizing macroprudential tools within existing frameworks, policymakers should also consider building buffers elsewhere to protect the financial system.

In emerging and frontier market economies, countries with market access should take advantage of favorable financing conditions to improve the composition of their debt structure. Countries with limited market access will likely need additional assistance from the international community. Other countries facing significant difficulties with debt burdens could benefit from deeper restructuring. The Group of Twenty (G20) Common Framework for Debt Treatments can help address debt vulnerabilities. Rebuilding buffers, where possible, should be a key priority to prepare for any sudden price adjustments and reversal of capital flows.

Repairing corporate balance sheets should be a priority to enable a sustainable and inclusive recovery. Direct and firm-specific targeted policy support may be needed for viable firms whose market access is limited and that are facing temporary liquidity or solvency risks. Given very limited fiscal resources in some jurisdictions, policymakers should also expedite reforms to enhance resolution frameworks, including the development of distressed debt and nonperforming loan markets.

Once the extent of structural changes in the commercial real estate sector becomes clearer, targeted macroprudential policy tools (such as limits on the loan-to-value or debt-service-coverage ratios) should be deployed to reduce downside risks to growth. The optimal timing of such policy measures should depend on the economy-specific pace of the recovery and the degree of financial vulnerabilities in the commercial real estate sector. Broadening the macroprudential toolkit to cover nonbank financial institutions active in some commercial real estate funding markets will also be crucial.

In the financial sector, regulatory guidance on provisioning for expected losses to avoid excessive procyclicality remains pertinent, but such provisioning should be subject to supervisory scrutiny. Restrictions on capital distributions should be maintained or be relaxed only progressively in countries overcoming the pandemic, subject to supervisory stress tests to ensure that banks remain well capitalized.

IMF EXECUTIVE BOARD DISCUSSION OF THE OUTLOOK, APRIL 2021

The following remarks were made by the Chair at the conclusion of the Executive Board's discussion of the Fiscal Monitor, Global Financial Stability Report, *and* World Economic Outlook *on March 25, 2021.*

Executive Directors broadly agreed with the assessment of the global economic outlook, risks, and policy priorities. They welcomed the better-than-anticipated performance in the second half of 2020, which helped to dampen the sharp drop in global growth. Directors acknowledged that the synchronized, extraordinary policy support deployed across economies has played a critical role in helping mitigate the crisis and foster the conditions for recovery. However, they agreed that the shock may have persistent effects. Medium-term output losses in emerging market and developing economies in general are likely to be larger than those in advanced economies compared to pre-pandemic projections, although emerging market economies as a whole will continue to grow faster than advanced economies. Directors noted that the crisis has also likely worsened inequalities within countries, with young people, women, and those with lower levels of education being hit harder.

Directors noted that uncertainties around the baseline projections remain large. The economic recovery depends heavily on the path of the health crisis, including the effective deployment of vaccines and treatments and the potential evolution of the virus. Other factors include the effectiveness of policy actions in forestalling economic scarring, developments in financial conditions and commodity prices, and the ability of economies to adjust to the shock. The impact of additional fiscal support and whether pent up savings built up during the pandemic translate into sharp increases in demand pose an upside risk.

Directors emphasized that accelerating vaccinations and distributing vaccines at affordable cost to all countries remains the key priority. The macroeconomic policy responses will need to be tailored by country, depending on the stage of the epidemic locally, the strength of their recovery, available policy space, and the structural characteristics of their economies. Prioritizing health spending, providing well-targeted fiscal support, and maintaining accommodative monetary policy as warranted, while monitoring financial stability risks, remain key while the pandemic continues. As the recovery progresses, policymakers would need to emphasize measures that limit scarring from the crisis, shrink inequality, and boost productive capacity (such as public investment). The transition from support measures would need to be managed carefully to avoid sudden cliffs that could derail the recovery. Particular attention to reallocation in labor markets will be important. The IMF's tailored policy advice will be crucial.

Directors stressed that until the pandemic is brought under control globally, fiscal policy must remain flexible and supportive of health systems, the worst-affected households and viable firms, and the economic recovery. The need and scope for fiscal support varies across economies, depending on the effect of the pandemic and the ability of countries to access low-cost borrowing. The targeting of measures must be enhanced and tailored to countries' administrative capacity, and fiscal transparency and governance practices should be improved.

Directors stressed the need to balance the risks from large and growing public and private debt with those from premature withdrawal of fiscal support, which could slow the recovery. Credible medium-term fiscal frameworks can help set a path for rebuilding fiscal buffers at a pace contingent on the strength of the recovery. Enhancing debt transparency and management will also be important, and some countries may require debt relief or other treatment. Directors agreed that fiscal policies should enable a green, digital, and inclusive transformation of the economy, while long-standing weaknesses in public finances should be tackled once the recovery is firmly in place. Policies should reduce gaps in access to quality public services, such as social protection, more and better health care, and education. Strengthening tax capacity, gradually expanding the base for corporate and personal income taxes and ensuring a more progressive tax system, along

with improvements in spending efficiency, can help mobilize additional resources for basic services and for the Sustainable Development Goals.

Directors agreed that decisive policy action eased financial conditions and helped contain financial stability risks. They noted, however, that the support measures may also have unintended consequences. An extended period of extremely easy financial conditions could result in stretched valuations that may worsen financial vulnerabilities and put growth at risk. A multispeed recovery between advanced and emerging market economies poses a risk that financial conditions in emerging market and developing economies may tighten markedly, especially if advanced economies move toward policy normalization and rates rise rapidly. In this context, clear guidance from advanced economy central banks, together with sound policies in emerging markets, will be important in preventing financial disruption in those economies. Some Directors also noted that emerging market economies may need to resort to policy tools considered in the Integrated Policy Framework. Directors noted that in many economies the corporate sector is overindebted and weakened, especially smaller firms.

Directors agreed that ongoing support remains necessary to complete the recovery. Most Directors noted the need to prevent financial vulnerabilities from turning into legacy issues by tightening selected macroprudential policy tools to tackle pockets of elevated vulnerabilities, while avoiding a broad tightening of financial conditions. Some Directors also emphasized the need to further develop tools targeting nonbank financial institutions.

Directors highlighted that emerging market and developing economies with market access should take advantage of easy financing conditions while they can. They agreed that corporate balance sheet repair is a priority, and they noted staff's analysis that firms facing temporary liquidity risks may need policy support while nonviable firms would need resolution. Directors observed that the ability of banks to lend will be crucial for the success of the recovery.

Directors emphasized the importance of continued international cooperation to overcome the pandemic and strengthen the recovery. In addition to ramping up production and ensuring access to vaccines worldwide, ensuring that financially constrained countries have adequate access to international liquidity will be important. Collective solutions are also essential in the areas of climate change, international tax policy, and international trade. The IMF will continue to play a critical role.

CHAPTER 1

GLOBAL FINANCIAL STABILITY OVERVIEW

AN ASYNCHRONOUS AND DIVERGENT RECOVERY MAY PUT FINANCIAL STABILITY AT RISK

Chapter 1 at a Glance

- **Extraordinary policy support measures have eased financial conditions and supported the economy, helping to contain financial stability risks.** Asset valuations, however, appear stretched in some segments, and financial vulnerabilities are rising further in some sectors. A repricing of risk in markets and the associated tightening in financial conditions—for example, due to a rapid and persistent increase in interest rates—may interact with such vulnerabilities, with repercussions for confidence and endangering macro-financial stability.
- **Two themes are emerging.** First, there is a risk that an asynchronous and divergent global economic recovery—especially if accompanied by a move toward policy normalization in advanced economies and rapidly rising interest rates—may result in tighter financial conditions and large portfolio outflows in emerging market economies. Second, highly accommodative financial conditions may have unintended consequences. If not addressed, financial vulnerabilities exposed by the pandemic may become new structural legacy problems.
- **Emerging market economies may face daunting challenges.** Most emerging markets have large financing needs this year and are exposed to rollover risk, especially if domestic inflation rises or global long-term interest rates continue to rise. Countries with weaker positions or limited access to vaccines may also face portfolio outflows. For many frontier market economies, market access remains impaired.
- **In many countries, the corporate sector is emerging from the pandemic overindebted, though with notable differences across firm sizes and sectors.** Stress is high at small firms in most sectors across countries. Solvency stress is high at small firms, but also notable at mid-sized and even large firms in affected sectors. This report uses a decision tree to assess whether firms should rely on market financing, seek government support, be restructured, or be liquidated.
- **Banks have so far not been part of the problem, but will they be part of the solution?** Whether the economic recovery will be uneven and will have scarring effects will depend on the ability and willingness of banks to lend once government support is unwound. Concerns about the credit quality of hard-hit borrowers and the profitability outlook are likely to weigh on the risk appetite of banks.
- **Ongoing support remains necessary, but a range of policy measures are needed to address vulnerabilities and protect the economic recovery.** Policymakers should support balance sheet repair, for example by strengthening management of nonperforming assets. Rebuilding buffers in emerging markets should be a key policy priority to prepare for a possible repricing of risk and a reversal of capital flows.

Prepared by staff from the Monetary and Capital Markets Department (in consultation with other departments): The authors of this chapter are Nassira Abbas (Deputy Division Chief), Antonio Garcia Pascual (Deputy Division Chief), Evan Papageorgiou (Deputy Division Chief), Jose Abad, Sergei Antoshin, John Caparusso, Liumin Chen, Yingyuan Chen, Fabio Cortes, Reinout De Bock, Dimitris Drakopoulos, Deepali Gautam, Rohit Goel, Sanjay Hazarika, Frank Hespeler, Henry Hoyle, Mohamed Jaber, Phakawa Jeasakul, Shuyi Liu, Sheheryar Malik, Sonia Meskin, Natalia Pavlovna Novikova, Dmitri Petrov, Thomas Piontek, Patrick Schneider, Can Sever, Juan Sole, Jeffrey Williams, Dmitry Yakovlev, Akihiko Yokoyama, and Xingmi Zheng, under the guidance of Fabio Natalucci (Deputy Director). Magally Bernal and Andre Vasquez were responsible for word processing and production of this report.

- **There is a pressing need to act to avoid a legacy of vulnerabilities.** Due to possible lags between the activation and impact of macroprudential tools, policymakers should take early action. They should tighten selected macroprudential tools to tackle pockets of elevated vulnerabilities, while avoiding a broad tightening of financial conditions. If such tools are not available—for example, in segments of the nonbank financial intermediation sector—they should urgently develop them. Given the challenges to designing and operationalizing macroprudential tools within existing frameworks, policymakers should also consider building buffers elsewhere to protect the financial system.

Rebuild Buffers to Avoid a Legacy of Vulnerabilities Once the Pandemic Recedes

More than one year since the start of the coronavirus disease (COVID-19) pandemic, global financial stability risks are still contained, reflecting bold and timely policy actions. The combination of progress in health care solutions and continued unprecedented policy accommodation has been remarkably successful in preventing an even more devastating blow to the global economy and has bolstered hope for a forthcoming recovery. The magnitude of the output loss, although unprecedented in modern times, has had only a limited impact on the financial sector. While the pandemic has weighed heavily on some sectors of the economy and unmasked some underlying vulnerabilities, the global financial system has shown remarkable resilience so far (see Box 1.1).

Two themes are emerging as the global economy begins to recover from the crisis. First, the recovery is expected to be asynchronous and uneven, both among advanced and emerging and frontier market economies, as well as within regions, economies, sectors, and firms (see the April 2021 *World Economic Outlook*).[1] Around this baseline scenario of a divergent economic rebound from the pandemic, there is a risk that financial conditions in emerging and frontier market economies may tighten markedly, especially if policymakers in *advanced economies* take steps toward policy normalization and rates rise rapidly. A less favorable financial environment may result in large portfolio outflows and pose a significant challenge to many emerging and frontier market economies given the large financing needs they face this year.

The second theme is the possible unintended consequences of unprecedented policy support. This refers to the risk that an extended period of extremely easy financial conditions, while necessary to cushion the global economy from the impact of the pandemic, may result in overly stretched valuations and fuel financial vulnerabilities that, if left unchecked, could put growth at risk. Vulnerabilities were already elevated before the pandemic in some sectors and are now rising further amid very buoyant financial markets. This *Global Financial Stability Report* (GFSR) will focus on the large financing needs in *emerging markets*, the sharp increase in corporate debt, persistent fragilities in the nonbank financial intermediation sector, and the outlook for the banking sector.

The downside risks to growth stemming from stretched valuations and rising financial vulnerabilities can be seen in the GFSR growth-at-risk framework (Figure 1.1). While the improved economic outlook for 2021 has reduced the range of severe economic outcomes (shown by the diamonds in Figure 1.1, panel 1), risks to future GDP growth are still skewed to the downside, albeit not particularly so from a historical perspective.[2] If not urgently addressed, these vulnerabilities could evolve into new structural legacy problems weighing on growth or, worse, testing the resilience of the global financial system down the road.

Providing policy support during the pandemic has been a balancing act between today's benefits and tomorrow's potential costs and risks. There is clearly

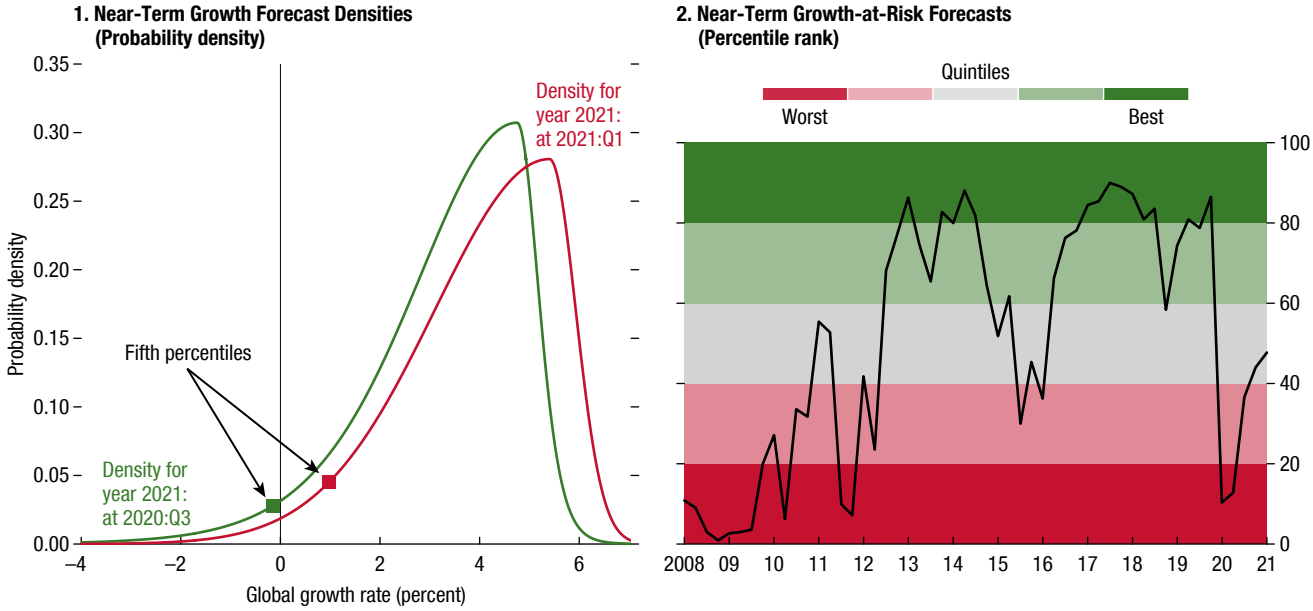
[1]This divergence can be seen in access to vaccines among countries, especially low-income economies; the different performance of various sectors of the economy; the uneven pace of recovery of large firms with broad access to capital markets, as well as of small and mid-sized enterprises more exposed to the crisis and with only limited financing options; and increasing risk taking by nonbank financial institutions compared with the more conservative and reluctant lending posture of banks.

[2]Besides changes in the *World Economic Outlook* baseline growth forecast, around which the GDP distributions are centered, shifts in the distribution reflect changes in financial conditions and hence are heavily influenced by investor perceptions and assessment of future growth outcomes.

Figure 1.1. Global Growth-at-Risk and Financial Conditions

The upward revision in global growth forecast for 2021 is accompanied by a slight improvement in ...

... the downside risk to growth, although it still remains meaningful relative to historical norms.



Source: IMF staff calculations.
Note: Forecast density estimates are centered around *World Economic Outlook* forecasts for 2021. In panel 2, the black line traces the evolution of the 5th percentile threshold (the growth-at-risk metric) of near-term growth forecast densities. The color of the shading depicts the quintiles for the growth-at-risk metric calculated since 1991. See the April 2018 *Global Financial Stability Report* for details.

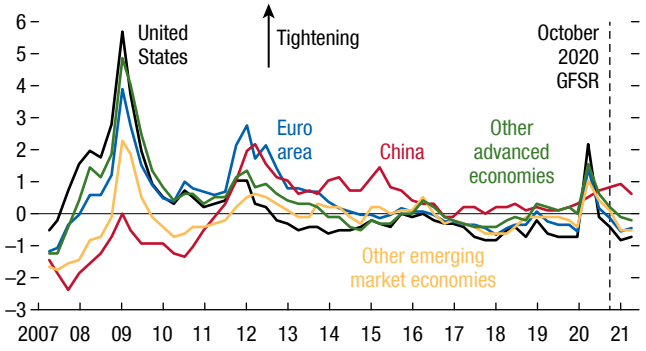
still a need for unprecedented monetary policy accommodation to bridge to the recovery. Underpinned by extremely low rates and high corporate valuations, financial conditions are easy and supportive of growth (Figure 1.2, panels 1 and 2). But buoyant financial markets have also contributed to an ongoing rally in the prices of risk assets, raising concerns about excessive risk taking and stretched valuations (see the January 2021 GFSR *Update*). Equity markets have rallied aggressively in recent months, reaching levels significantly higher than those derived by models based on fundamentals (Figure 1.2, panel 3). A few days of elevated volatility in US equity markets in early 2021, although they did not leave a lasting imprint on sentiment, brought to the fore the role of leveraged retail investors in the recent rally (see Box 1.2). In late February, equity markets have experienced some additional volatility, as investors have become concerned about the implications of rapidly rising long-term interest rates. More recently, significant losses at a highly levered fund appear to have spilled over to a number of investment banks that had provided financing to that fund, raising questions about the use of opaque financial leverage and its possible systemic implications. Other indicators also point to continued risk taking as investors actively search for yield. For example, there has been a surge in initial public offerings of special-purpose acquisition companies—public investment vehicles created specifically to acquire a private company and take it public (see also Figure 1.10, panel 3). Yet, after accounting for the very low level of real yields (notwithstanding most recent increases), valuations in risk assets may look less stretched, as the compensation for bearing risk does not appear overly compressed by historical norms (Figure 1.2, panel 4). This suggests that risk asset valuations may remain elevated for some time, as long as interest rates continue to be low.

The search for yield spurred by the low-interest-rate environment has intensified at nonbank financial institutions. For example, pension funds have increased their share of investments in alternative assets such as private equity, infrastructure, and real estate—strategies with greater leverage and liquidity risks—in an attempt to meet their return targets (Figure 1.3, panel 1). Insurers have also increased their investments in less liquid and riskier lower-rated corporate bonds, foreign

Figure 1.2. Financial Conditions and Asset Valuations

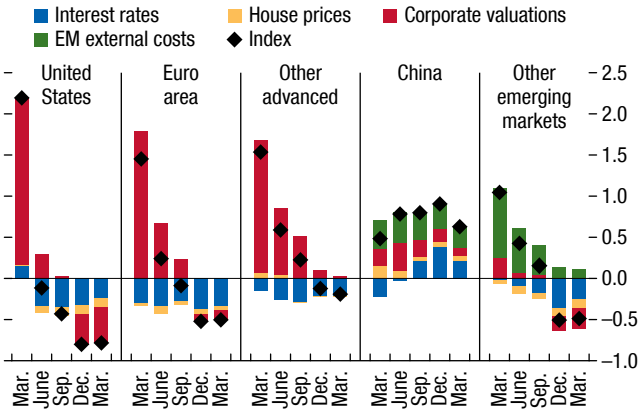
Financial conditions remain easy globally (with the exception of China) ...

1. Financial Conditions Indices
(Standard deviations from mean)



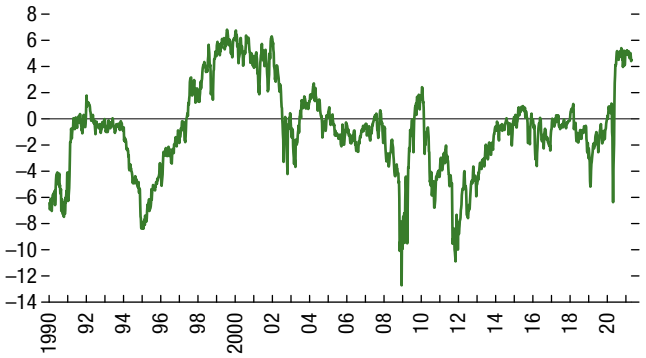
... on the back of low rates and high corporate valuations.

2. Drivers of Financial Conditions
(Standard deviations from mean, since March 2020)



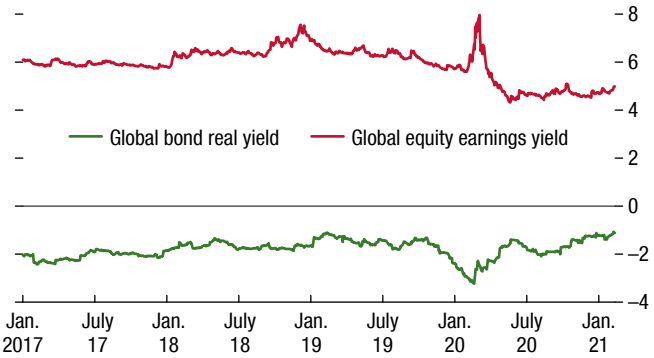
Equity markets appear stretched relative to models based on fundamentals ...

3. US Equity Market Misalignment
(Deviation from fair value per unit of risk)



... but perhaps less so after accounting for very low real rates, which have incentivized a search for yield in all asset classes.

4. Global Equity Earnings Yield and Real Bond Yield
(Percent)



Sources: Bloomberg Finance L.P.; BofA Securities; Reuters Datastream; and IMF staff calculations.
Note: EM = emerging market; GFSR = *Global Financial Stability Report*.

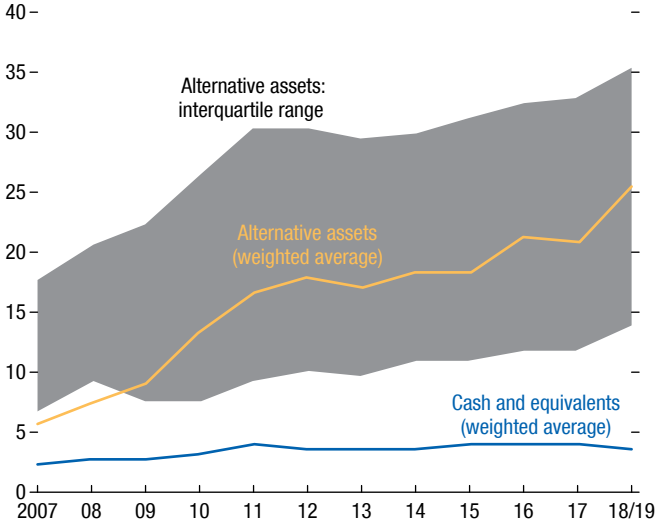
bonds, and other illiquid exposures. Not surprisingly, the equity return correlation of bank and insurance companies has reached new historical highs, likely reflecting the larger exposure of life insurance companies to banks' securities (Figure 1.3, panel 2).

Long-term interest rates in the United States have risen considerably since the summer of 2020—about 125 basis points—likely reflecting both improved investor confidence in the economic outlook and expectations of increased supply of Treasury securities to finance the fiscal expansion. Until the beginning of the year, the rise in long-term rates was driven primarily by higher inflation breakevens, reflecting both a rebound from sharp declines experienced during the early stages of the pandemic and rising commodity prices (Figure 1.4, panel 1). More recently, however, real rates have begun to increase (albeit from very low levels). Investors now expect long-term interest rates in the United States to return to pre-pandemic levels in coming months (Figure 1.4, panel 2). Higher long-end yields in the United States have also put some upward pressure on comparable-maturity yields in other advanced economies, including in countries where the recovery still appears to be lagging. Average advanced economy 10-year rates have increased 50 basis points so far in 2021. While a gradual rise in rates on the back of improving fundamentals may be healthy for the financial system, a rapid and persistent increase in rates (especially real rates) may result in a repricing of risk and a sudden tightening in financial conditions. Such a tightening

Figure 1.3. Search for Yield by Pension Funds and Insurers

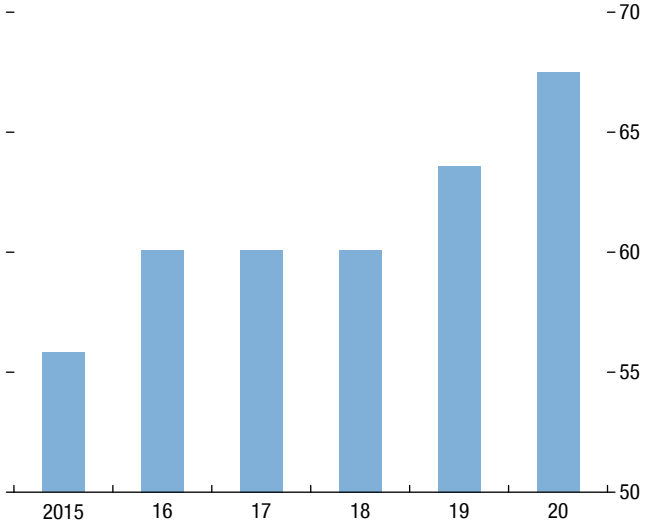
High nominal return targets are pushing pension funds further into alternative assets, raising liquidity and leverage risks.

1. Pension Allocations to Alternative Assets and Cash (Percent)



Insurers are increasing investments in higher-yielding bank debt.

2. European Insurers' Holdings of Debt Issued by Financials (Percent of total corporate bond exposure)

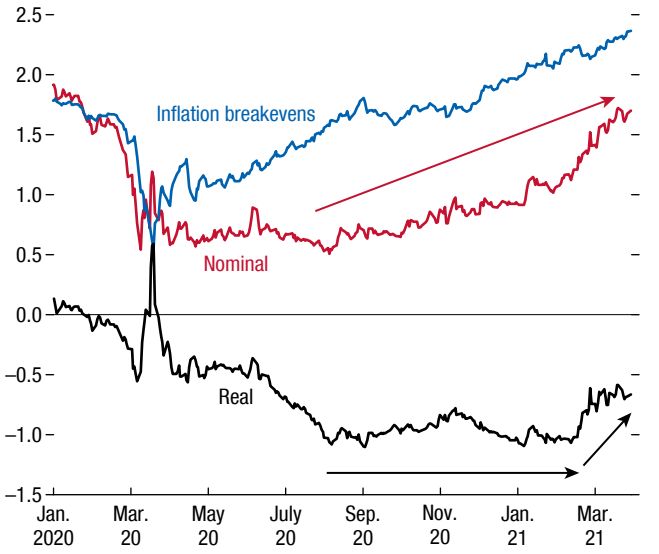


Sources: Bloomberg Finance L.P.; European Insurance and Occupational Pensions Authority; and IMF staff calculations.
Note: Panel 1 is based on asset allocation data of 700 of the largest pension funds, representing $13 trillion in assets.

Figure 1.4. Rates in the United States: Inflation Trends and Expectations

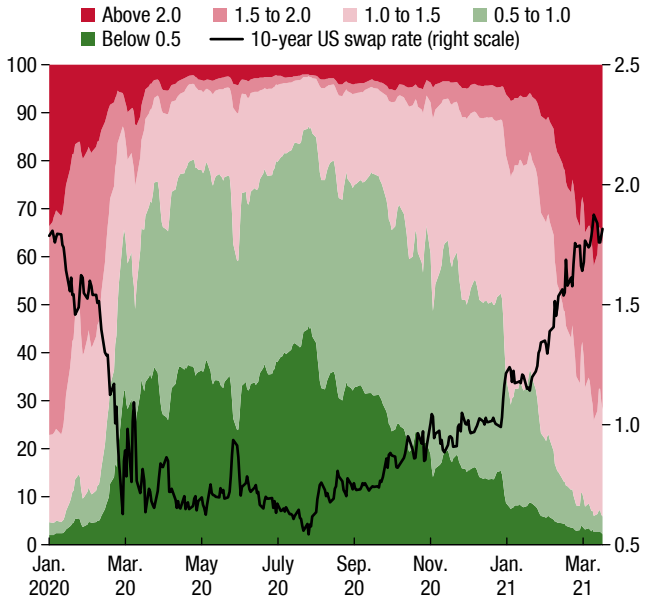
The rise in US long-term yields has been driven by higher inflation breakevens and, more recently, rising real rates.

1. US Nominal and Real Rates and Inflation Breakevens (Percent; 10 year)



Markets now expect long-end yields to increase further and return to pre-pandemic levels in coming months.

2. Market Expectations for 10-Year US Swap Rates (Percent, six months ahead using swaptions)



Sources: Bloomberg Finance L.P.; Consensus Economics; Haver Analytics; and IMF staff calculations.
Note: In panel 2, the dark red area is the option implied probability that the 10-year rate will be above 2 percent in six months.

could interact with elevated financial vulnerabilities, with repercussions for confidence and endangering macro-financial stability.

The persistent increase in long-term interest rates in the United States may pose a challenge for emerging markets, especially if accompanied by a move toward policy normalization. Against the backdrop of a divergent global economic recovery and more limited policy space, there is a risk that financial conditions may tighten in emerging market economies at a time when many of these countries have experienced significant deterioration in their fiscal position and face large financing needs in 2021. The recent increase in market volatility and rise in medium- and long-term yields in advanced economies have rattled emerging market bond markets and currencies and caused some portfolio outflows, bringing back in focus the fallout from the 2013 taper tantrum (see next section).

The rest of this chapter focuses on three important financial stability issues. First, many emerging and frontier markets face a combination of high debt, high financing needs, and volatile economic and external conditions. Managing these forces will be a difficult balancing act for authorities. Second, nonfinancial firms are emerging from the pandemic overindebted, in some cases with poor earnings prospects and dependent on continuing policy support. Third, banking systems—although resilient so far during the pandemic—may become less supportive of economic growth when policy support is eventually withdrawn, especially in countries where the recovery may be slower and profitability challenges predate the crisis.

Emerging Markets Have Considerable Financing Needs

Resilient global risk appetite and favorable external conditions have contributed to improving domestic financial conditions, albeit with large differentiation across counties. Currencies of major emerging market economies have gained against the dollar since the October 2020 *Global Financial Stability Report* but have faced some notable turbulence in early 2021 on the back of rising interest rates in the United States (Figure 1.5, panel 1). External credit spreads have been relatively insulated from the recent volatility in markets. Conditions remain favorable, especially for higher-rated issuers (Figure 1.5, panel 2), whereas frontier economies continue to face challenges. Over the past few months, markets have priced a shift toward a less supportive stance by central banks, in response to higher commodity prices, higher domestic inflation, the improved economic outlook, and higher US rates (Figure 1.5, panel 3)—and some central banks have already hiked. As a result, local currency government bond yields for many emerging market economies have increased since late January.

The recovery in emerging markets is expected to be slower than in advanced economies, with significant divergence across countries (see the April 2021 *World Economic Outlook*). Government financing needs have surged, and the resulting increase in public debt loads is a challenge for policymakers. Government debt in emerging markets (excluding China) is expected to reach 61 percent of GDP in 2021, and gross financing needs are anticipated to remain elevated at 13 percent of GDP in 2021, coming off record levels in 2020 (Figure 1.5, panel 4). These higher financing needs may continue for some time given that vaccine supplies continue to favor high-income countries (see the January 2021 GFSR *Update*).

Faced with higher post-pandemic budgetary funding needs, policymakers have adjusted and broadened their strategies over the past few quarters. These adjustments have included a mix of shorter local currency debt duration;[3] the introduction of asset purchase programs—which in some cases involved explicit monetary financing; and increased reliance on the domestic banking system for newly issued debt. Some frontier market economies also have relied on debt restructuring and, for eligible countries, participation in the Group of Twenty (G20) Debt Service Suspension Initiative and more recently in the G20 Common Framework for Debt Treatments.

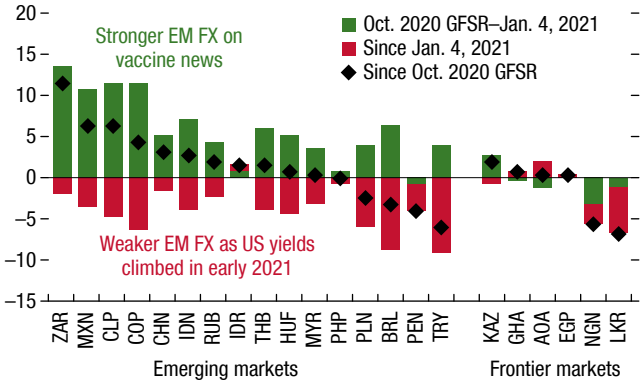
Although these actions have been largely successful to date, they may expose sovereign issuers to new risks down the road. For example, sizable external issuance is likely to make a country more vulnerable to exchange rate shocks. Shorter duration of local currency debt raises rollover risks and the sensitivity of debt servicing to increases in interest rates. Greater exposure of domestic banks to government debt strengthens the sovereign-bank nexus and may crowd out private sector loan growth. Finally, for countries

[3]This shortening of bond duration leads to higher risk of coupon resets. Higher reset risk can occur through increased issuance of shorter-maturity debt but also through higher issuance of instruments that change their coupons more frequently (for example, floating rate debt that resets every six months).

Figure 1.5. Financial Market Performance and Fundamentals of Emerging Markets

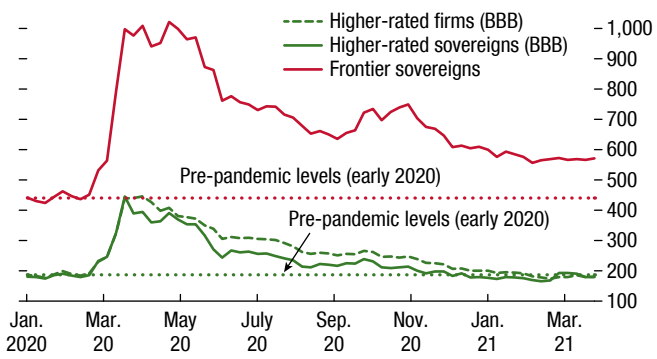
Following a strong vaccine-fueled rally in 2020:Q4, emerging market currencies faced some turbulence in early 2021.

1. Currency Performance
(Percent, against US dollar)



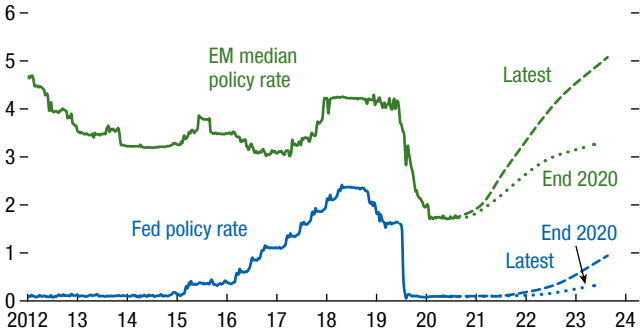
Emerging market spreads have tightened to pre-pandemic levels, especially for higher-rated issuers.

2. Emerging Market Hard Currency Credit Spreads
(Basis points)



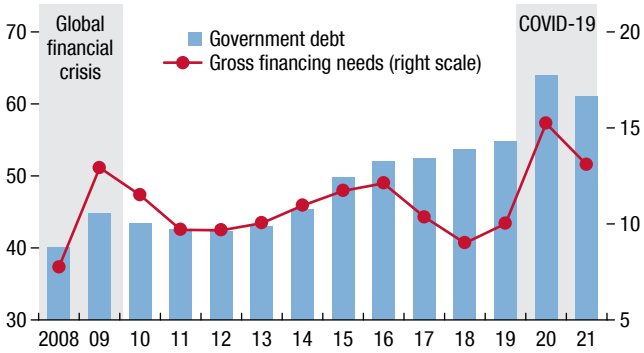
The recent increase in US rates has added to the hawkish shift by several emerging market central banks.

3. EM and US Policy Rates and Forwards
(Percent)



Government debt ratios and financing needs are set to remain high in 2021.

4. Government Debt and Gross Financing Needs
(Percent of GDP)



Sources: Bloomberg Finance L.P.; Consensus Economics; and IMF staff calculations.
Note: Panel 3 relies on a sample median of 13 EM countries. The interest rates are forwards—not adjusted for term premium—from local interest rate swaps and futures. Panel 4 includes 51 EMs, excluding China. Data labels use International Organization for Standardization (ISO) country codes. EM = emerging market; Fed = Federal Reserve; FX = foreign exchange; GFSR = *Global Financial Stability Report*.

that already enjoy market access, participation in the Debt Service Suspension Initiative or the Common Framework for Debt Treatments without transparent and timely market communication may increase uncertainty about the involvement of private bondholders and lead to an increase in external credit spreads.

Portfolio Flows Can Help Emerging Market Financing Needs—But Not Equally

Volatility has resurfaced in emerging market portfolio flows. The sharp rebound since the previous GFSR came to a halt in late February 2021, reflecting rising rates in advanced economies and volatile global market conditions. The challenges are particularly evident in hard currency bond funds, in sharp contrast with developments in 2020 (see the October 2020 GFSR, Figure 1.6, panel 1). Local currency bond inflows have also moderated in Q1 2021, after recovering sharply toward the end of 2020.[4]

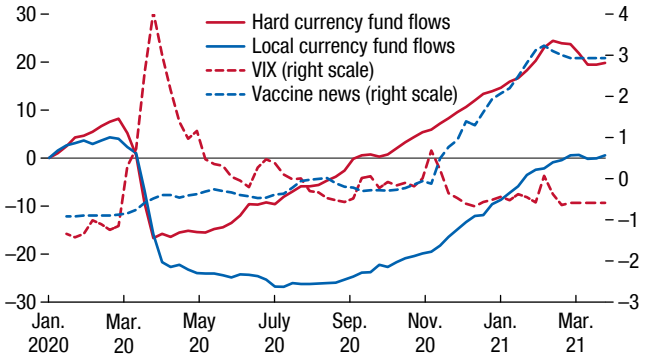
The earlier post-pandemic recovery in portfolio flows came hand in hand with the improved outlook. Quarterly portfolio inflows reached their highest level ever in the fourth quarter of 2020, amounting to more

[4]See Bango and others (2021).

Figure 1.6. Emerging Market Portfolio Flows and Sovereign Bond Holdings

The sharp rally in hard currency bond fund flows has stalled, and local currency fund flows have reversed last year's outflows.

1. Emerging Market Debt Fund Flows and External Risk Factors (Billions of US dollars, cumulative since Jan. 2020, left scale; *z*-score, right scale)

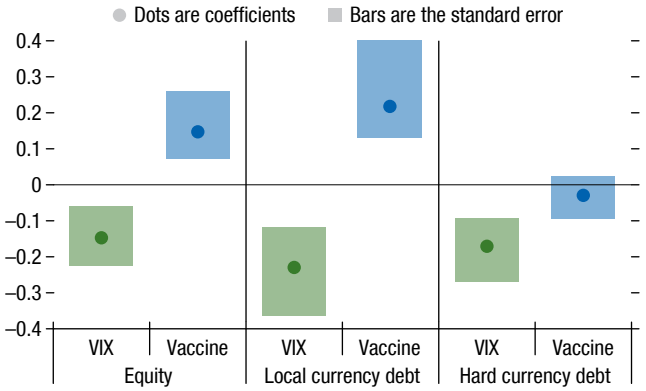


Overall, portfolio flows have rebounded sharply since the previous GFSR, despite the recent moderation.

2. Emerging Market Portfolio Flows (Billions of US dollars)

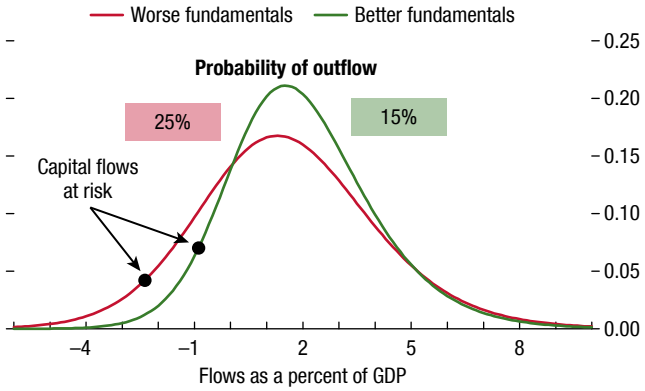
The positive risk sentiment is supportive across the board, but local currency debt and equity flows have also benefited from vaccine news.

3. Sensitivity of Fund Flows to Risk Factors (Percent)



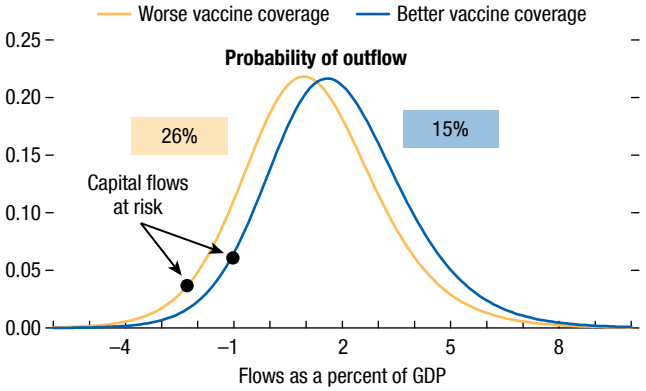
The outlook for portfolio flows has improved on average, but tail risks remain higher for countries with weaker fundamentals ...

4. Portfolio Flows at Risk for Countries, Relative to Fundamentals (Probability density function)



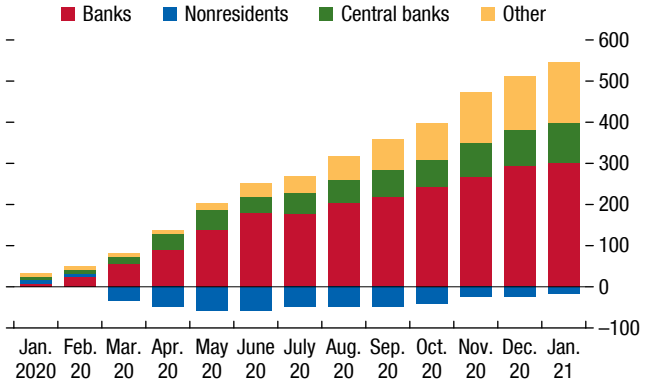
...as well as for countries with limited access to vaccines.

5. Portfolio Flows at Risk for Countries, Relative to Vaccine Coverage (Probability density function)



Domestic banks have been the dominant buyers of local currency bonds, while nonresident flows have been sluggish.

6. Change in Domestic Sovereign Bond Holdings (Billions of US dollars, cumulative change)



Sources: Bloomberg Finance L.P.; Google Trends; IMF, World Economic Outlook database; Institute of International Finance; and IMF staff.
Note: Panel 6 is based on a sample of 12 major emerging markets, and figures are converted to US dollars at end-of-month exchange rates. Domestic bonds are primarily denominated in local currency. GFSR = *Global Financial Stability Report*; VIX = Chicago Board Options Exchange Volatility Index.

than $200 billion (Figure 1.6, panel 2). The rebound in flows has been broad-based, with about two-thirds of countries experiencing inflows. IMF staff analysis shows that the recovery in equity and local currency debt flows is estimated to have benefited primarily from optimism about vaccines and the anticipated improvement in the growth outlook (Figure 1.6, panel 3). Hard currency debt flows, on the other hand, appear to have been boosted primarily by the improvement in risk sentiment after the March sell-off.[5]

The rebound in portfolio flows is beneficial to emerging markets with large financing needs. However, the recent volatility is a reminder of the fragility of these flows, as the outlook can worsen quickly in response to a shift in investor sentiment and tighter global financial conditions. Countries with weaker fundamentals and limited access to vaccines face greater risks (see the January 2021 GFSR *Update*). The capital-flows-at-risk analysis suggests that, in the event of a pullback of portfolio flows from emerging markets, countries with poorer fundamentals and limited access to vaccines would fare worse than countries with better fundamentals or those with higher vaccine coverage (Figure 1.6, panels 4 and 5). The impact would be more pronounced where financing dynamics are already at risk, such as frontier market economies, where rollover needs remain relatively large (April 2020 GFSR).

The recent volatility in portfolio flows and funding costs also brings to the forefront the rising risk of a sovereign-bank nexus in some economies. Banks in emerging markets have absorbed the bulk of domestic sovereign debt issuance since the onset of the pandemic. In a sample of 11 major emerging markets, aggregate nonresident holdings of domestic sovereign debt remain lower than they were in January 2020 (in US dollar terms), even as outstanding domestic debt has increased by nearly $500 billion (Figure 1.6, panel 6).

Several Factors May Push Emerging Market Local Currency Term Premia Higher

After declining to historically low levels in late 2020, local currency sovereign yields rose sharply in early 2021 on the back of the increase in US long-term real yields (Figure 1.7, panel 1). Most of the increase in long-end rates came from a rise in local bond term premia, which had previously compressed to levels last seen before the 2013 taper tantrum (Figure 1.7, panel 2).[6] Multiple factors likely played a role in the compressed term premia, including the decline in long-term interest rates in advanced economies, subdued actual and expected inflation despite elevated macroeconomic uncertainty, and domestic asset purchase programs and other measures aimed at supporting local bond markets (see Chapter 2 of the October 2020 GFSR).

The decline in long-term yields in 2020 allowed countries to lock in cheap funding costs, an important benefit given large current and expected pandemic-related spending. However, several countries have refrained from extending the maturity of their debt and have opted instead to increase their issuance of short-term and floating-rate debt on concerns about investor risk appetite. Although this has likely helped contain market pressure during periods of heightened risk aversion and contributed to the overall decline in term premiums, it has also exposed governments to greater rollover risks and to a future rise in interest rates (Figure 1.7, panel 3).

Local currency debt markets remain vulnerable to sudden changes in risk appetite. In terms of fiscal needs, a proxy for the fiscal risk premium (measured as the difference between interest rate swaps and government bond yields) has remained wide in some countries (such as South Africa).[7] This further underscores the risks facing countries with large financing needs in local currency markets, limited financial market depth, and less credible medium-term fiscal frameworks.

An important driver of term premia is the inflation outlook in emerging markets—both investor expectations and uncertainty about the inflation outlook (Wright 2011). Empirical analysis (Online Annex 1.1) finds that a 1 percentage point shock to inflation uncertainty and expectations tends to increase term premia by about 30 basis points and 10 basis points, respectively.

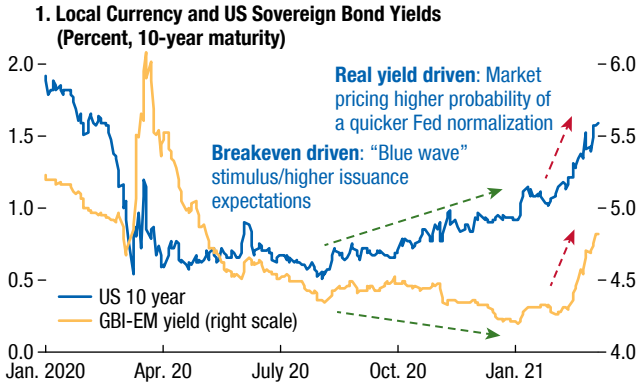
[5]This finding is in line with Goel and Miyajima (forthcoming), which finds that equity and debt flows are more sensitive to domestic fundamentals and global risk appetite, respectively.

[6]The term premium is an estimate of the expected return that investors demand over the expected rate path. The term premium is estimated following the methodology of Adrian, Crump, and Moench (2013).

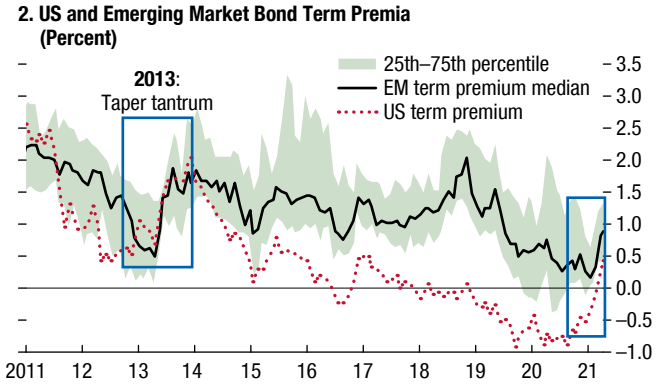
[7]Other factors could drive the spread between bond yields and swap rates, such as the relative liquidity of the instruments, investors' positioning dynamics, and in some cases changes in bank credit risk affecting the spread between the policy rate and the interest rate swap fixing rate.

Figure 1.7. Emerging Market Local Currency Bond Term Premia

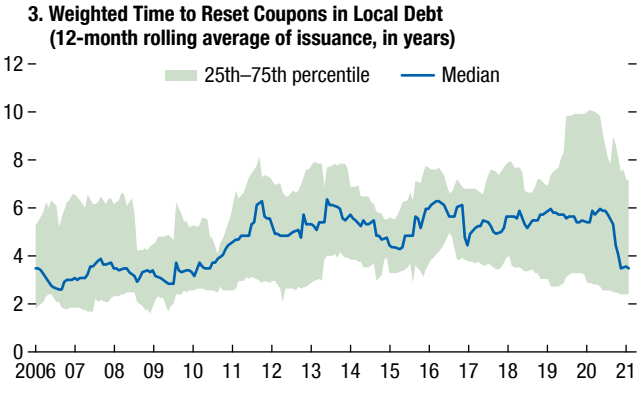
Local currency yields remained near historical lows early in 2021 before rising amid the global bond sell-off.



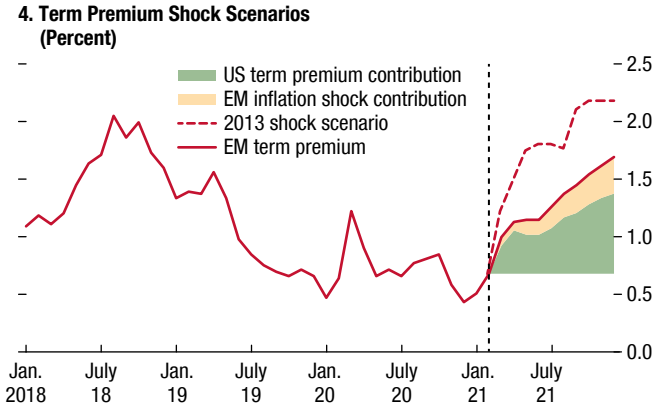
Term premia have compressed amid policy measures by advanced and emerging market central banks.



Despite favorable funding conditions, several emerging markets have continued to shorten the duration of local debt issuance.



Advanced economy monetary policy normalization and a rise in inflation create an upwards risk for premia.



Sources: Bloomberg Finance L.P.; and IMF staff calculations.
Note: Country samples include 16 emerging market economies with more developed local bond markets. In panel 4, the shock scenario overlays the 2013 taper tantrum fallout on February 2021 term premia. EM = emerging market; GBI-EM = Government Bond Index-Emerging Markets.

Market expectations of policy normalization in advanced economies could also lead to a snapback in term premia in emerging markets. The recent sharp rise in US term premia, which account for a significant share of the increase in long-term Treasury yields, is indeed beginning to show an impact on emerging market local currency term premia that could lead to a rapid rise in borrowing costs. IMF staff analysis finds that a 1 percentage point rise in US term premia leads to an increase in emerging market term premia of 60 basis points, on average.[8] If this shock is combined with an increase in inflation expectations to pre-pandemic levels, this would translate into an even larger shock: roughly a 1 percentage point increase in emerging market term premia, on average, by the end of 2021 (Figure 1.7, panel 4).

Domestic Fundamentals Weigh on External Funding Costs, Especially for Frontier Issuers

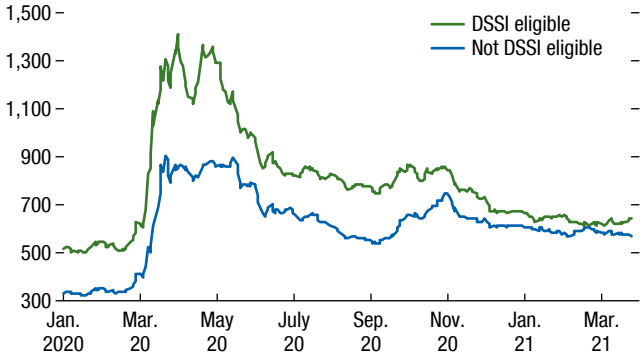
Several frontier market economies continue to face challenging market conditions. Spreads of higher-rated emerging market issuers have generally declined sharply, returning to their precrisis levels. For frontier issuers,

[8]The sensitivity of emerging market term premia to an increase in the US term premium shows significant variability over time, with country-level factors also playing a key role. The sensitivity during the 2013 taper tantrum rose well above 1.0 on average, although good macroeconomic fundamentals helped dampen the market reaction to the US monetary policy shock (IMF 2014).

Figure 1.8. Developments in Frontier Market Economies

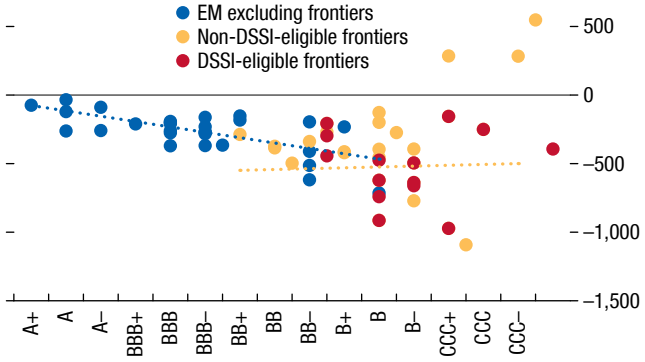
Spreads of frontier economies—both those eligible and not eligible for the Debt Service Suspension Initiative (DSSI)—have tightened significantly ...

1. Bond Spreads of Frontier Market Economies
(Basis points)



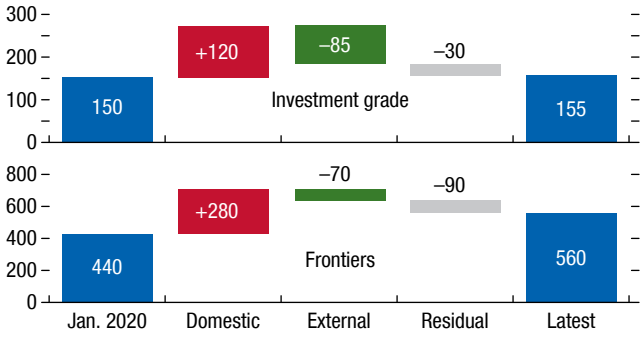
... but there is large differentiation among them.

2. Change in Credit Spreads by Rating since April 2020
(Basis points)



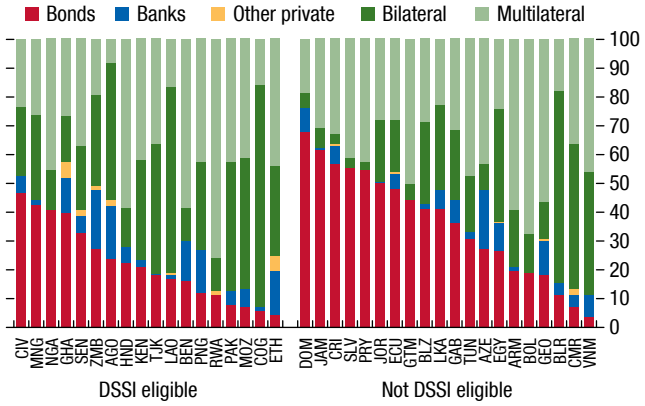
External factors have helped investment-grade emerging markets, while idiosyncratic domestic issues have weighed on frontier issuers.

3. Decomposition of the Change in Bond Spreads
(Basis points)



Several economies that are not eligible for the DSSI have elevated external debt vulnerabilities and similarities in debt composition.

4. Public and Publicly Guaranteed External Debt Outstanding, 2019
(Percent of total)



Sources: Bloomberg Finance L.P.; credit rating agencies; JP Morgan; World Bank International Debt Statistics; and IMF staff calculations.
Note: Data labels use International Organization for Standardization (ISO) country codes. DSSI = Debt Service Suspension Initiative; EM = emerging market.

however, performance has been more variable during the market recovery (Figure 1.8, panels 1 and 2). While spreads have narrowed significantly in a number of countries (led by Angola, Gabon, and Mongolia), narrowing has been relatively minor in many other countries, and spreads have continued to widen in some (Belize, Sri Lanka, Suriname).

The improvement in the global environment has helped higher-rated issuers primarily, even as the deterioration in domestic economic conditions continues to weigh on frontier economies. IMF staff analysis finds that external factors have played an important role in the recovery of higher-rated sovereigns, offsetting almost 70 percent of the drag from the worsening of domestic fundamentals during the pandemic (Figure 1.8, panel 3). By contrast, external factors have offset only 25 percent of the drag from domestic factors in frontier economies. Weaker domestic fundamentals related to growth and inflation, and weaker reserve adequacy, have weighed on funding costs for frontier issuers. In addition, idiosyncratic factors (such as political risks, IMF program relations, and composition of debt) have likely driven a large part of country differentiation.

Looking ahead, near-term debt vulnerabilities for frontier issuers remain high, but many of these issuers do not benefit from recent initiatives by the international community. Despite the fact that a large group of countries (currently 73) is eligible for the two key initiatives (the Debt Service Suspension Initiative and the Common Framework for Debt Treatments), fewer than one-third of them have outstanding international bonds.[9] At the same time, international bonds and bilateral loans are a material part of the debt structure of most frontier issuers, but only about half of them are eligible to participate in these initiatives (Figure 1.8, panel 4). This exclusion can prevent a significant group of countries with large debt vulnerability from benefiting from coordinated and comprehensive debt treatment.

China Faces Rising Vulnerabilities as It Emerges from the Pandemic

The Chinese economy has recovered from the pandemic more rapidly than other countries, but at the cost of a further buildup in financial vulnerabilities, which were already significant in some sectors before the crisis. Substantial policy support has boosted the recovery but has also led to a sharp increase in government and corporate debt, with the latter driven to a large extent by riskier corporate borrowers. Targeted credit policies have led to rapid growth in credit for small firms and microenterprises, traditionally a segment with elevated credit risk. Among larger firms, new credit has largely flowed to borrowers with weak debt servicing capacity before the COVID-19 pandemic, pointing to future default risks (Figure 1.9, panel 1). Equity market valuations have also become stretched in some segments, leading to volatile market conditions, and are raising the risk of a correction.

Financial conditions may become less favorable amid expectations of policy tightening and rising investor uncertainty about implicit guarantees. Country authorities have signaled a shift in the focus of monetary and fiscal policy to containment of debt risks and have introduced new measures to impose financial discipline on banks, local governments, and property developers. Funding conditions for capital instruments have tightened for weaker, smaller banks since the authorities bailed in subordinated debt eligible as Tier 2 capital for the first time, which could tighten financial conditions for the smaller firms serviced by these banks (Figure 1.9, panel 2). Several unexpected defaults of state-owned enterprises in the fourth quarter of 2020 have also raised investor concerns about implicit guarantees for weaker borrowers, particularly those that rely on backstops from financially strained regional governments. Credit extension to firms and households in the financially weakest provinces fell sharply toward the end of 2020, pushing these provinces' share of total credit growth to the lowest levels on record (Figure 1.9, panel 3). Linkages among local government, firm, and bank vulnerabilities could amplify the deterioration in borrowing conditions if slumping credit weighs on regional growth and government revenues, further weakening the credibility of implicit guarantees (see Box 1.3 in the October 2020 GFSR).

Chinese authorities face a delicate but urgent challenge in unwinding implicit guarantees. Many Chinese nonfinancial firms enjoy favorable bond market pricing despite debt servicing capacity that is significantly below that of the weakest speculative-grade issuers globally. This reflects the continued strong incentives for regional governments to provide backstops to local borrowers. Debt issued by firms that had sustained two years of operating losses before the pandemic or net-debt-to-EBIT (earnings before interest and taxes) ratios above 15 account for nearly 40 percent of GDP, or half of the debt of all nonfinancial bond market issuers.[10] Over two-thirds of these bond issuers enjoyed credit spreads that imply relatively low risk of default (below 200 basis points) (Figure 1.9, panel 4). This points to significant potential for disorderly repricing of credit risk, underscoring the need for a carefully sequenced and well-communicated transition away from implicit guarantees. More broadly, this transition is urgently needed to alleviate distortions in credit allocation and to limit further growth in risky corporate debt.

The Global Corporate Sector Is at a Crossroads

The corporate sector has been hit hard by the pandemic and is likely to emerge from the crisis with higher debt loads, with notable differences across sectors and firm sizes. While unprecedented policy support has led to a compression of credit spreads and averted a surge in insolvencies, a weak tail of firms continues to struggle. Firms with market access have

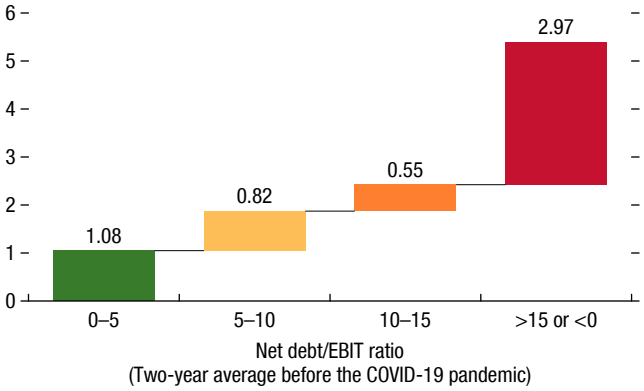
[9]As of early March 2021, nearly two-thirds of eligible countries had formally asked to join or extend their participation in the Debt Service Suspension Initiative, and three countries had expressed interest in the Common Framework for Debt Treatments.

[10]For comparison, nonfinancial firms rated CCC by global credit rating agencies have average net-debt-to-EBIT ratios of about 6.

Figure 1.9. Chinese Debt Vulnerabilities and (Mis)Pricing of Risk

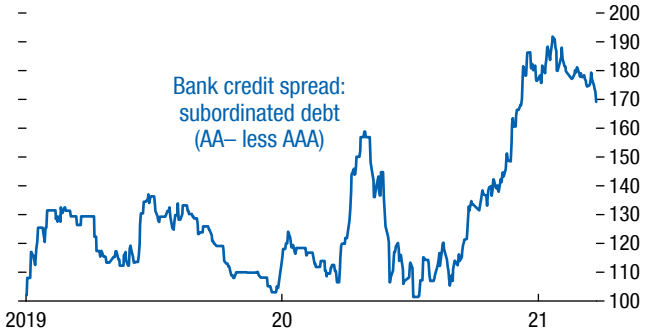
Vulnerabilities have risen as corporate debt has accumulated primarily among firms with the weakest debt-servicing capacity.

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



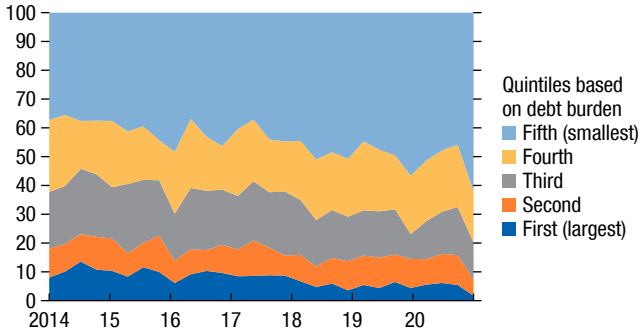
Weaker banks face more challenging capital-raising conditions after the first subordinated debt bail-in in 2020:Q4.

2. Chinese Banks: Subordinated Debt Spreads (Basis points)



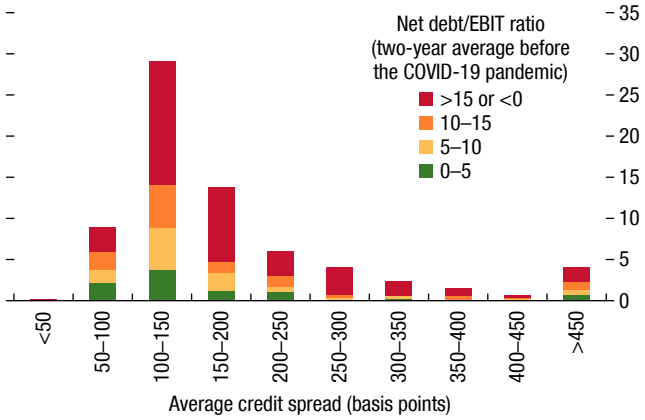
Following defaults of state-owned enterprises in debt-burdened provinces, new credit to those provinces has declined.

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



Many weak firms have favorable credit market access due to implicit guarantees, which is distorting credit allocation.

4. Debt Outstanding by Leverage and Credit Spread (Trillions of renminbi; basis points)



Sources: Bloomberg Finance L.P.; ChinaBond; CEIC; and IMF staff calculations.
Note: In panels 1 and 4, data are based on financial statement and market pricing data for over 4,400 bond-issuing firms. Color coding in panel 1 corresponds to panel 4. In panel 3, debt burden quintiles are based on the average ranking of provincial government debt-to-GDP and debt-to-revenue ratios. In panel 4, credit spread is based on averages for one- to five-year bonds during December 2020. EBIT = earnings before interest and taxes.

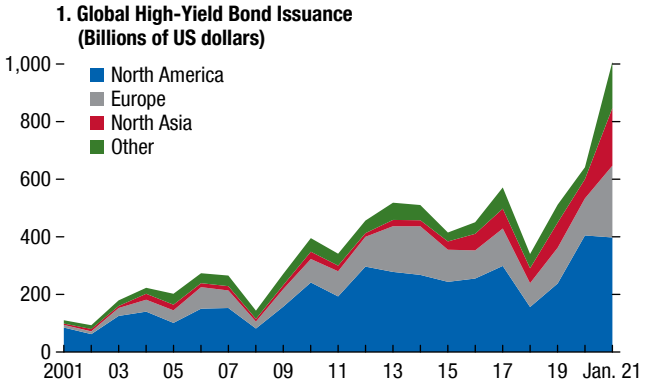
taken advantage of the easing in financial conditions to repair their balance sheets, but small and mid-sized firms (about half of the corporate sector by debt) with limited market access have fared less well, and they still rely heavily on policy support.[11]

Amid favorable financial conditions, debt issuance has risen to record levels as companies have tried to cope with liquidity pressures (Figure 1.10, panel 1). Many large companies with access to capital markets have used new debt to bolster liquidity buffers

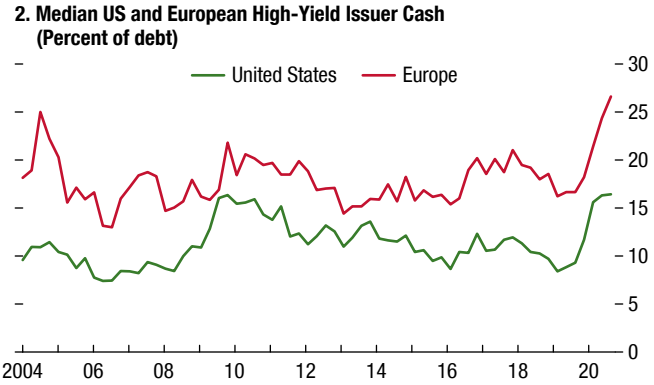
[11]Large, mid-sized, and small firms are defined here by total assets, whereas the thresholds are based on the composition of global bond, syndicated loan, and equity indices to define their main sources of funding. Small and mid-sized firms here are not to be confused with small and medium-sized enterprises (SMEs), which generally fall into the small firm category in this classification. Large firms have assets exceeding $500 million and can access all capital markets, as well as bank financing. Mid-sized firms have assets between $50 million and $500 million and cannot generally access the bond market, but often access the equity market, and the larger firms in this category access the syndicated loan market. Small firms have assets below $50 million and rely predominately on bilateral bank loans, though larger firms in this category can issue equity. The estimate for debt is for major advanced economies and China, based on Chapter 2 of the October 2019 GFSR. See Chapter 2 of the October 2020 GFSR for more analysis on the liquidity strains faced by small and mid-sized firms amid the onset and in the aftermath of the COVID-19 crisis.

Figure 1.10. Corporate Funding and Liquidity

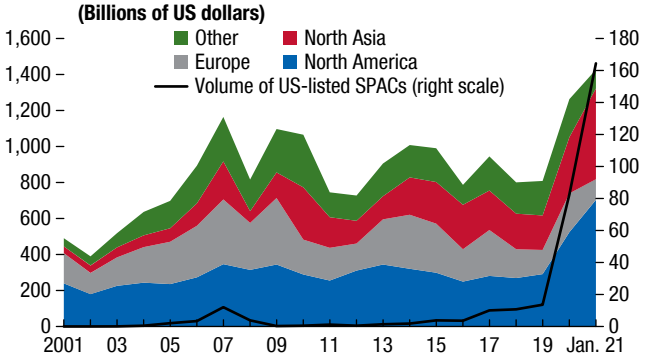
The rebuilding of liquidity positions and refinancings have driven bond issuance to record levels.



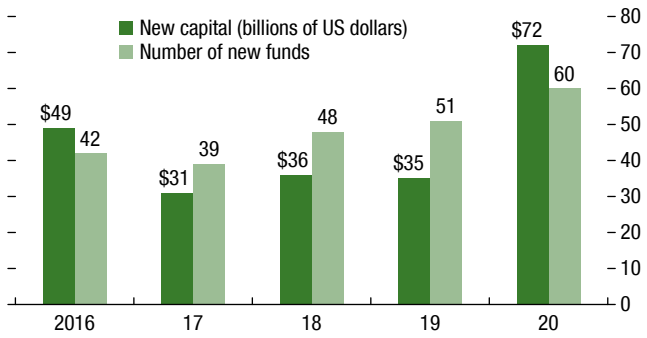
Corporate balance sheet liquidity has substantially improved.



Global equity issuance rose to a new high in 2020 as initial public offerings rebounded during the second half of 2020.



The pool of capital targeted for distressed debt has grown sharply and could be a key source of funding for troubled firms.



Sources: Dealogic; Morgan Stanley; Preqin; and IMF staff calculations.
Note: For panels 1 and 3, data for January 2021 have been annualized. For panel 4, 2020 data are through the second quarter. SPAC = special-purpose acquisition company.

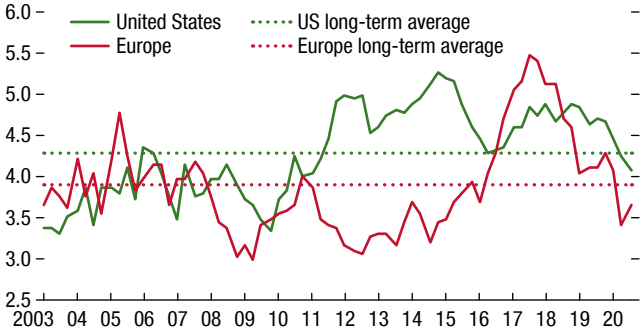
(Figure 1.10, panel 2). To address solvency risk, companies have also sought to strengthen their equity positions, with equity issuance rising to record highs amid elevated equity valuations (Figure 1.10, panel 3). As mentioned, initial public offerings by special-purpose acquisition companies to fund acquisitions of private firms have surged to historic highs. More generally, merger and acquisition activity in advanced economies has accelerated, paving the way for market-driven consolidation in the corporate sector. Countries with developed distressed asset markets are likely to benefit from readily available capital to deal with weaker firms through market mechanisms (Figure 1.10, panel 4).

With easy financial conditions (necessary to support growth in the short term), corporate debt may rise further from already high levels, putting medium-term growth at risk (see Chapter 2). A growing debt burden, together with weaker earnings, has already started to impair the capacity of many firms to service debt (Figure 1.11, panel 1). Last year, the number of high-yield defaults reached the highest level since the global financial crisis (Figure 1.11, panel 2). While the pace of defaults has recently dropped, there are still some significant differences across sectors: stress has remained elevated in sectors most sensitive to the pandemic (Figure 1.11, panel 3). Moreover, firms with limited access to credit have not benefited as much from the easing in financial conditions. Mid-sized borrowers are still finding it challenging to obtain funding in the syndicated loan

Figure 1.11. Corporate Leverage and Credit Quality

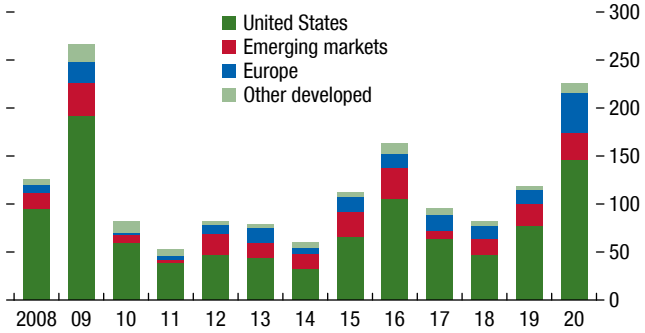
Debt service capacity continues to be constrained by weakness in earnings and rising debt.

1. Median US and European High-Yield-Issuer Interest Coverage Ratio (EBITDA–to-interest-expense ratio)



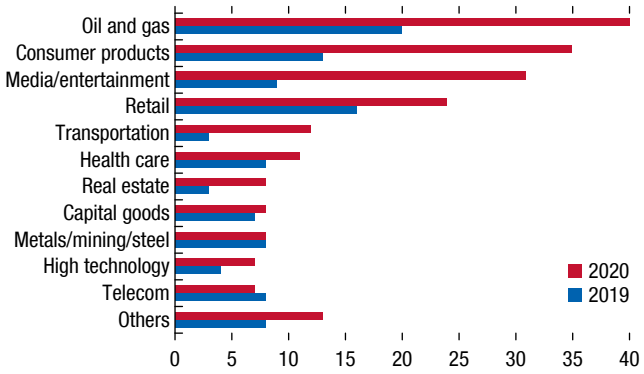
Defaults have reached their highest level since the global financial crisis—but have slowed and remain below initial expectations.

2. Global Speculative-Grade Corporate Defaults (Number of defaults)



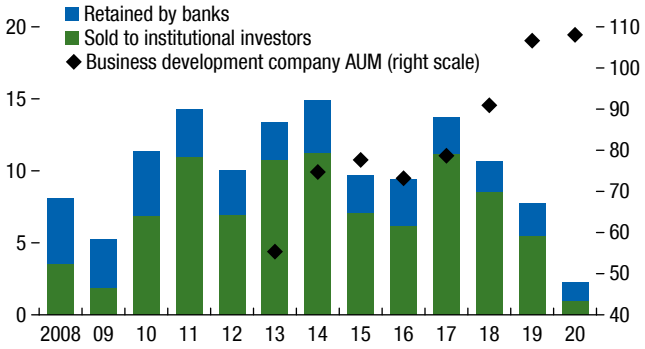
Sectors most negatively affected by the pandemic and economic lockdowns have experienced the highest defaults.

3. Global Speculative-Grade Corporate Defaults by Sector (Number of defaults)



Mid-sized firms have struggled to source liquidity as broadly syndicated middle-market loan issuance has dropped.

4. US Middle-Market Loan Issuance and Business Development Company Assets (Billions of US dollars)



Sources: Morgan Stanley; S&P Global Ratings; S&P Leveraged Commentary and Data; and IMF staff calculations.
Note: In panel 1, the data are through the third quarter of 2020. In panel 4, middle market refers to firms with EBITDA below $50 million. AUM = assets under management; EBITDA = earnings before interest, taxes, depreciation, and amortization.

market, although this difficulty is partially offset by the growing importance of private debt markets (Figure 1.11, panel 4).

A Firm-Level Assessment to Better Target Future Policy Support

Reduced fiscal space in many countries calls for a careful assessment of risks to better target future policy support. Policymakers are now faced with difficult trade-offs. *Too little support may be inadequate in the short term.* A premature, abrupt withdrawal before a sustainable recovery takes hold may lead to a sudden repricing of credit. Should insolvencies materialize, economic scarring and externalities, such as job losses, could be considerable, and a pernicious feedback loop could affect bank and nonbank lenders as well as sovereigns via government guarantees. At the same time, *too much support may lead to unintended effects in the medium term.* Abundant liquidity in financial markets or poorly targeted policy support may stretch credit valuations even further and allow nonviable firms in the corporate sector to survive (so-called zombification). This may lead to structurally slow growth, debt overhang, misallocation of credit, and a less resilient financial system in the future.

The pandemic will likely induce structural changes in many economies, as the impact of the shock has been uneven across countries and segments (sectors and firm sizes), resulting in digitalization in some

segments and possibly inefficiencies in some others. Amid heightened uncertainties, it is important to incorporate relative valuations across sectors to assess the post-pandemic evolution of firms. Given limited policy space in a number of countries, government support should be aimed at viable firms and sectors (but attentive to other objectives and considerations that may come into play regarding strategic firms and sectors). At the same time, private sector financing could facilitate orderly restructuring in weaker sectors.

Over the past year, capital markets have been open for business, but the benefits have been reaped mostly by advanced economies and higher-rated emerging market economies. Market-based finance has extended beyond the traditional capital markets in some advanced economies as private debt markets have thrown a lifeline to small and mid-sized firms. In contrast, many firms in emerging market economies, regardless of size, still rely heavily on bank financing. Thus, access (or lack thereof) to global capital markets will shape the kind of policy support that may be needed in some emerging market economies.

A Comprehensive Framework to Identify Viable Firms

The analysis that follows proposes a simple framework for policymakers to identify viable firms (see Online Annex 1.1 for details).[12] The first step is to assess current and near-term *liquidity* and *solvency* risks through a wide range of indicators. As discussed in the October 2020 GFSR, liquidity risks have been largely contained so far but could morph into insolvencies. Once liquidity or solvency risks have been deemed high, the second step is an assessment of medium-term *viability* to determine whether a firm will be profitable within a three-year horizon, when the recovery from the COVID-19 crisis is expected to take hold (see the April 2021 *World Economic Outlook).*[13]

The three key elements of the analysis are thus defined as follows. *Liquidity* refers to the ability of a company to pay off short-term financial obligations without raising additional external financing (IMF, forthcoming).[14] *Solvency* is defined as the ability of a company to meet its short- and long-term financial obligations and is often calculated simply as a residual—that is, the difference between the value of assets and the value of liabilities.[15] *Viability* is expressed as the ability of a business to generate future positive profits—that is, whether the benefits of continuing a business exceed the costs[16] or, conceptually, whether future profits exceed the liquidation value of viable firms.[17]

This framework is employed in an illustrative quantitative exercise. The analysis of liquidity, solvency, and viability is carried out for a large sample of firms in advanced and large emerging market economies.[18]

Key Findings of the Overall Assessment

The analysis suggests that liquidity and solvency concerns vary across firm size and sectors. *Liquidity stress is high at small firms in most sectors, but very low*

[12]The results of the analysis and policy implications are complementary to, and broadly consistent with, those in a forthcoming Staff Discussion Note (Díez and others, forthcoming). It covers SMEs (as conventionally defined), which have been hit hard by the crisis.

[13]The analysis assumes that central banks will maintain an accommodative monetary policy stance. Should financial conditions tighten, the fiscal costs to deal with the corporate sector could increase. The analysis also assumes that market prices embed the existing and already announced policy support. In practice, the viability assessment may be highly uncertain, depending on the continuation of existing policy support, the potential impacts of the pandemic and policies on the economy, and the extent of structural changes in post-pandemic economies.

[14]The liquidity stress indicators include the 2021 projected cash balance, liquidity buffer ratio, interest coverage ratio, and current ratio.

[15]Solvency stress indicators include the 2021 projected equity position, as well as the net-debt-to-earnings, gross-debt-to-earnings, and equity-to-assets ratios.

[16]The viability indicators include the 2021–23 projected interest coverage ratio, projected EBIT-to-revenue ratio, debt-to-assets ratio, price-to-book ratio, and price-to-book ratio relative to a firm's sectoral average, to limit the impact of misalignments. For firms with market access, viability is assessed based on market-based measures. Given the risks surrounding the current level of valuations, the analysis is complemented by a balance sheet approach. For smaller firms with limited or no market access, viability is assessed via medium-term balance sheet projections.

[17]The definitions of viability and solvency are related but differ in important ways. While solvency refers to the residual value of a business (assets net of liabilities) at any point in time, viability refers to the continuation value of a business by comparing the net present value of future net profit flows (if the firm is allowed to continue operating) with the net recovery value of assets (if the firm is liquidated). See Blanchard, Philippon, and Pisani-Ferry (2020).

[18]The sample comprises approximately 19,500 firms, of which small and mid-sized firms make up over half of the sample; about 2,500 firms are private. The sample comprises large advanced and emerging market economies with systemically important financial sectors: Brazil, China, France, Germany, India, Italy, Japan, Mexico, Poland, Russia, Spain, Turkey, the United Kingdom, and the United States.

for large firms (Figure 1.12, panel 1).[19] The finding reflects the relatively low liquidity buffers at small firms (including liquid asset holdings and bank credit lines) and the inability to benefit from easy financial conditions due to limited market access. The sectoral differentiation is also noteworthy: small firms in the more affected sectors (such as the automotive industry, telecommunication services, and energy) face notably higher liquidity risk. In emerging markets, even mid-sized firms experience considerable liquidity risk.

Solvency stress is high for small firms but also significant for mid-sized and even large firms in affected sectors (Figure 1.12, panel 2). Although large and mid-sized firms seemingly coped with liquidity pressure in 2020, they still face weak earnings and increased debt loads. This could jeopardize their solvency position, especially in the most affected sectors, such as energy, services, transportation, and real estate. Small firms face high solvency risk across sectors (Figure 1.12, panel 3).

To determine which firms should seek market funding, receive government support, or be restructured or liquidated, the chapter proposes a decision tree that separates firms according to viability (Figure 1.13, panel 1). Importantly, firms with *low liquidity or solvency risks* are likely to have market access and should be encouraged to take advantage of favorable market conditions to repair and adjust their balance sheets.

For small firms with *high liquidity risk*, the share of debt accounted for by viable firms is 30 percent in advanced economies and nearly 20 percent in emerging markets (Figure 1.13, panel 2, green bars). Most of these firms cannot obtain bond market financing and may face tighter bank lending standards. Targeted liquidity support is necessary, for example through loan guarantee programs.[20] At the same time, the share of nonviable firms' debt among small firms (red bars) is also notable, especially in advanced economies (20 percent). These firms are anticipated to face profitability pressures even after the recovery and may default, possibly entailing fiscal costs. They should therefore be restructured or liquidated.

For small firms with *high solvency risk*, the picture is similar (Figure 1.13, panel 3). In advanced economies, the share of debt accounted for by still-viable small firms is more than 30 percent (green bars), while in emerging markets the share is slightly lower. To the extent that they have market access, firms should take advantage of current conditions to raise equity. If they do not have such access, policymakers should consider equity-like support.

Firms exposed to *both solvency and liquidity risk* would require a combination of liquidity and solvency measures. For firms with market access, equity raising would likely alleviate both liquidity and solvency risk.

Appropriate Design of Policy Support

If policymakers decide that support is necessary to address liquidity and solvency risks, policy measures should be well targeted and well designed. In *advanced economies with well-developed markets*, national authorities may have enough fiscal resources to address specific corporate vulnerabilities. Larger firms can benefit from favorable market conditions and can encourage consolidation and restructuring (including of smaller firms) through mergers and acquisitions. Even some weak large firms have recently successfully raised equity in markets. Private firms can raise equity through an initial public offering. Moreover, the growth in distressed debt funds signals the availability of market-based solutions for firms in distress.

In *emerging market economies, especially those with a large share of vulnerable sectors, a sizable presence of small and mid-sized firms, and limited access to capital markets*, the authorities may have to support firms more actively. Mid-sized firms in emerging markets tend to have higher liquidity and solvency risk compared with those in advanced economies, pointing to a possibly greater need for direct firm-specific support if there is policy space for it.

If solvency support is considered, *appropriate administrative controls, transparency, and accountability* are necessary to ensure effective use of government resources. However, government expertise and administrative capacity are often limited when it comes to assessing firms' financial prospects, implementing support efficiently, and monitoring interventions. It is also crucial to have adequate safeguards in place. Forms of public equity support should receive special attention, because government equity stakes come with

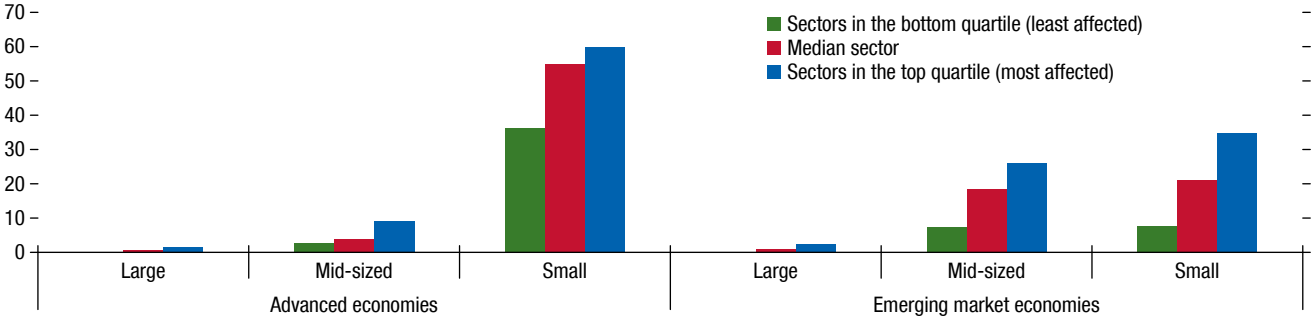
[19]The results based on balance sheet indicators for small firms in emerging market economies appear to be generally better than those for small firms in advanced economies. This can be explained by greater market access for weak small firms in advanced economies.

[20]See the April 2021 *Fiscal Monitor* for a detailed presentation of possible measures to support firms based on their size and financial situation.

Figure 1.12. Overall Assessment of Liquidity and Solvency by Sector and Firm Size

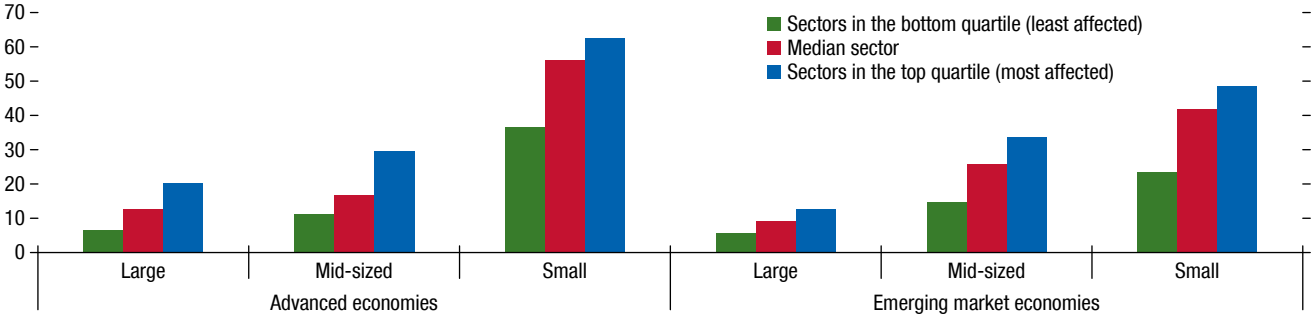
Liquidity stress is substantial at small firms and mid-sized emerging market firms, with a large differentiation across sectors.

1. Share of Debt at Firms with Elevated Liquidity Stress Indicators by Firm Size and by Sector
(Percent of total debt at all firms in these segments)



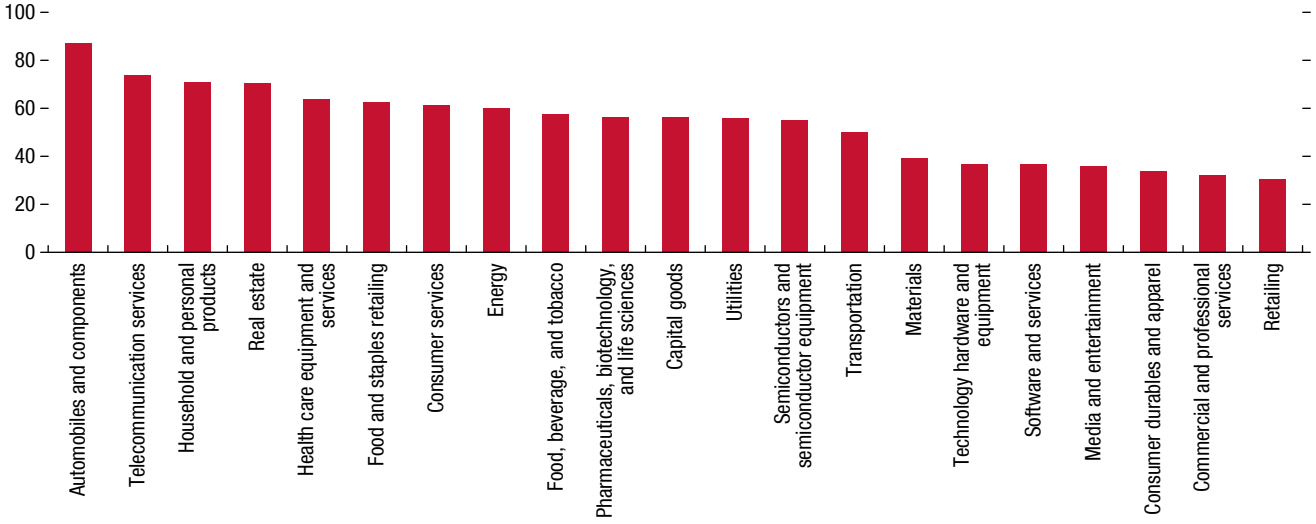
Solvency stress is substantial even at large firms in the most affected sectors.

2. Share of Debt at Firms with Elevated Solvency Stress Indicators by Firm Size and by Sector
(Percent of total debt at all firms in these segments)



Solvency stress is high at small firms and widespread across sectors.

3. Share of Debt at Small Firms with Elevated Solvency Stress Indicators in Advanced Economies
(Percent of total debt at small firms in these sectors)



Sources: S&P Capital IQ; and IMF staff calculations.
Note: Large, mid-sized, and small refer to firms' total assets. The overall liquidity, solvency, and viability stress indicators are computed as combinations of the respective components. For example, the overall liquidity stress indicator is assessed as "elevated" if at least three of four of the individual liquidity indicators exceed their respective thresholds. In panels 1 and 2, for each firm size and each type of stress—liquidity and solvency—sectors corresponding to the bottom 25th, 50th, and 75th percentile by the share of debt with high stress are shown.

Figure 1.13. Overall Assessment of Viability by Sector and Firm Size

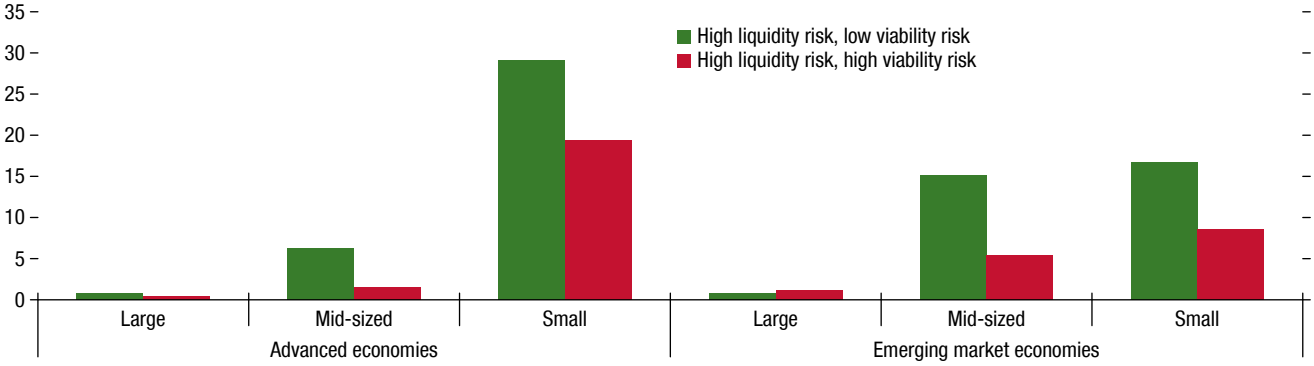
If a firm has a high liquidity or solvency risk, its viability should be assessed to take appropriate policy action.

1. Proposed Decision Tree for Policymakers

Steps:	1	2	3	4	5
			Policy action		
			Immediate, firm-specific		Medium-term, sector-wide
	Assess liquidity and solvency risk	Assess viability risk	Direct government support?	Other policy action?	
	High liquidity risk	Low viability risk	Provide liquidity support, e.g., loan guarantees, to small firms	Encourage required debt raisings by large firms with market access	Deepen capital markets to facilitate market-based options for small firms; encourage consolidation among small firms; develop distressed debt market; strengthen resolution regime
		High viability risk	None	Restructure or liquidate	
	High solvency risk	Low viability risk	Equity-like injections to small firms with no market access	Encourage equity raisings by large firms with market access	
		High viability risk	None	Restructure or liquidate	

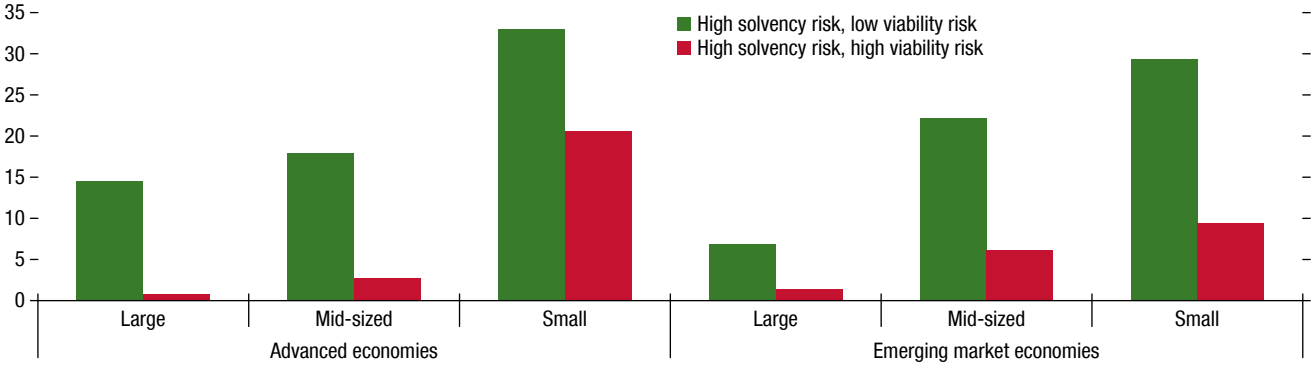
Most mid-sized firms with high liquidity stress have good viability, but a notable share of small firms has weak prospects.

2. Share of Debt at Firms with Elevated Liquidity Risk, by Viability Risk and Firm Size
(Percent of total debt at all firms in these segments, averages across all sectors)



Solvency stress is high at small firms and widespread across sectors.

3. Share of Debt at Small Firms with Elevated Solvency Stress Indicators in Advanced Economies
(Percent of total debt at small firms in these sectors)



Sources: S&P Capital IQ; and IMF staff calculations.
Note: Large, mid-sized, and small refer to firms' total assets. Overall liquidity, solvency, and viability stress indicators are computed as combinations of the respective components. For example, the overall liquidity stress indicator is assessed as "elevated" if at least three of four of the individual liquidity indicators exceed their respective thresholds. In panels 2 and 3, averages across sectors are calculated separately for advanced economies and emerging market economies.

potential costs related to governance (including political interference) and possible competitive distortions (see the April 2020 *Fiscal Monitor*).

Depending on the nature of the instrument, *conditionality could be attached*, such as restrictions on dividend payments and share buybacks. *Debt-to-equity swaps*—as a powerful instrument to boost the solvency of a firm—could be negotiated with both private shareholders and creditors. To lessen distortions, prudential authorities could provide quasi-equity injections *conditional on the participation of private lenders*. Governments should also consider partnering with the private sector to assess the viability of firms and *improve resource allocation*, particularly for smaller firms.

Targeted solvency support may take many forms, depending on a firm's size. For larger firms without market access, the authorities can provide capital injections in the form of *preference shares*—cognizant of trade-offs related to governance and efficiency and with a *clear exit strategy*. For smaller firms, *hybrid instruments*, such as profit participation loans, combine the provision of solvency support with adequate safeguards of the public interest.

Banks Have Remained Stable and Supportive through the COVID-19 Downturn

Banks came into the pandemic with high capital and liquidity buffers on the back of regulatory reforms implemented after the 2007–08 global financial crisis. Stress test results presented in the October 2020 GFSR suggest that, even under a severely adverse macroeconomic scenario laid out in the *World Economic Outlook*, more than 90 percent of banks by assets across 29 systemically important jurisdictions would remain above statutory minimum capital levels through 2022. These results reflect not only extraordinary monetary and fiscal policy support but also important bank-specific mitigation policies (changes in accounting recognition of loan losses and calculation of risk-weighted assets and suspension of capital distributions, among others). Without such policies, the estimated proportion of capital-deficient bank assets would have roughly doubled.

Despite an unprecedented economic downturn in 2020, banks have generally reported loan-loss provisions low enough to support capital positions. For example, the capital ratios of US and European global systemically important banks rose over the first three quarters of 2020. Provision charges to build precautionary reserves against potential future deterioration (rather than in response to reported borrower defaults) rose more than risk-weighted assets in advanced economies, pushing total buffers (capital plus loan-loss reserves) higher (Figure 1.14, panel 1). The outlook for credit costs has improved in most countries, notably in the United States (Figure 1.14, panel 2). As a result, some (mainly US) banks cut back loan-loss reserves in the fourth quarter of 2020 and have announced the resumption of dividend distributions.

Demand May Strengthen, but Weak Lending Appetite Could Constrain Growth

While most banks will likely remain adequately capitalized, the extent to which they may provide credit throughout the recovery is an open question. In some countries, bank lending rose in the early stages of the pandemic, but loan growth has since slowed, particularly loans to businesses (Figure 1.14, panel 3). Bank loan officer surveys suggest that, as of the fourth quarter of 2020, many countries exhibited both weak demand for credit by small and mid-sized firms and tight "supply" conditions (as proxied by bank lending standards) (Figure 1.14, panel 4).[21] As the economic outlook improves, loan demand may strengthen, particularly from small and mid-sized firms with limited alternatives and where such demand has been weakest. But loan officers in many countries see little prospect for a proportional loosening in lending standards to small and mid-sized firms, likely resulting in tighter conditions (Figure 1.14, panel 5).

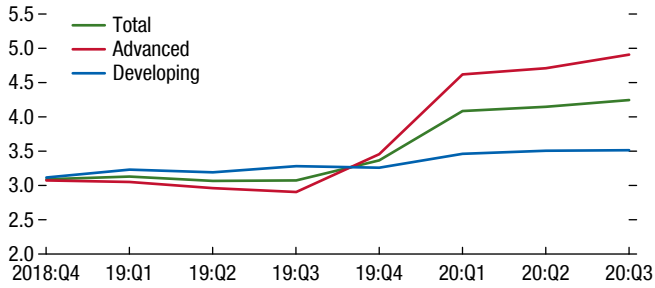
How best to address this potential headwind to the economic recovery depends in part on the drivers of banks' reluctance to lend. In most economies, both advanced and emerging, survey respondents mention "external" factors (economic outlook and borrower risk) as important reasons for tightening standards. Concerns about the credit outlook may seem inconsistent with expectations of economic recovery and improved credit conditions, but this may reflect in part the anticipated phasing out of lending support policies. Few survey

[21]This observation and the following discussion draw mainly on survey data covering corporate loans. Similar market dynamics—weak current demand and tight supply with expectations that demand will strengthen and that supply will emerge as a source of growth constraint—are also evident in data regarding household mortgages and the unsecured household lending market.

Figure 1.14. Bank Buffers, Loan Growth, and Lending Market Conditions

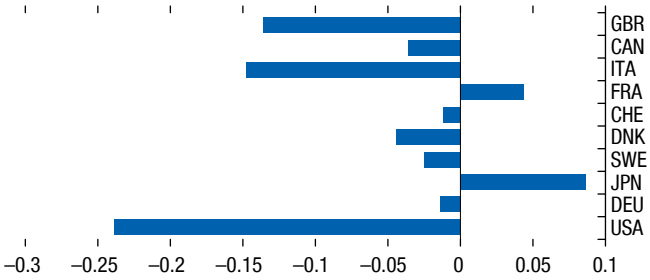
Sharp increases in loan-loss reserves have bolstered total buffers in advanced economies, but less so for emerging market banks.

1. Loan-Loss Reserves/Risk-Weighted Assets (Percent)



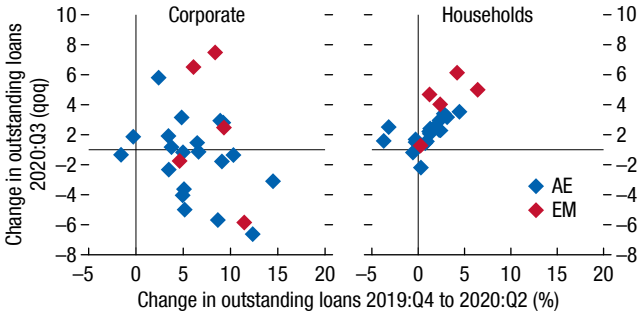
The 2021 outlook for credit costs has improved materially in the United States, but less in most other advanced economies.

2. 2021 Loan Provisions: Change of Median Forecast, July 2020 to January 2021 (Percentage points)



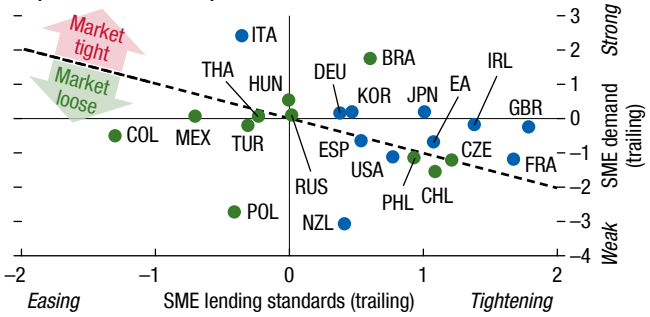
Loan growth is decelerating, and in many countries corporate loan growth is negative.

3. Loan Growth (Percent)



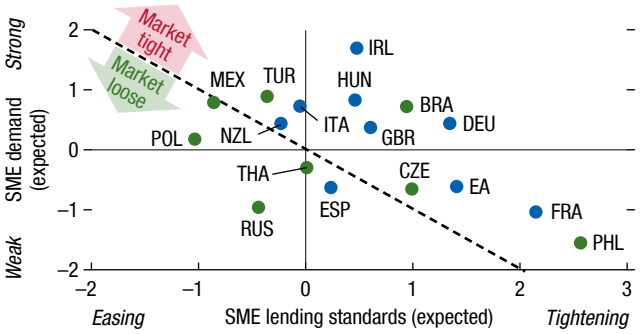
Business lending conditions were roughly balanced in the fourth quarter of 2020 ...

4. SME Firm Lending Standards and Loan Demand, 2020:Q4 Trailing (Standard deviations)



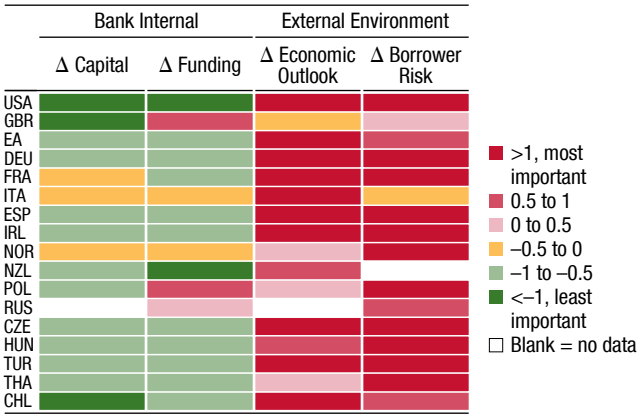
... but are expected to tighten as demand strengthens and lending standards remain roughly stable.

5. SME Firm Lending Standards and Loan Demand, 2021:Q1 Expected (Standard deviations)



External conditions are driving lending standards everywhere, and bank capital and funding in emerging markets.

6. Drivers of Lending Standards to Firms, 2020:Q4 (Standard deviations)



Sources: Bank lending surveys; Bloomberg; CEIC; Haver Analytics; SNL Financial; and IMF staff analysis.
Note: Small and medium-sized is defined according to the criteria used by each reporting country. To normalize across differences in jurisdictions' metrics, panels 4 and 5 show lending standards and demand measured as each country's current position relative to its own history, in standard deviations; and panel 6 compares the relative importance of drivers within each country in the disclosures for the fourth quarter of 2020, expressed as each driver's deviation from the average across all drivers. "Market tight" and "market loose" indicate balances between changes in lending standards and borrower demand. "2020:Q4 trailing" indicates change over the three months before the end of 2020; "2021:Q1 expected" indicates expected changes over the three months following the end of 2020. In panels 4 and 5, blue and green dots indicate AEs and EMs, respectively. Data labels use International Organization for Standardization (ISO) country. AE = advanced economy; EM = emerging market; EA = euro area; qoq = quarter over quarter; SME = small and medium enterprises.

respondents regard "internal" factors (capital and liquidity) as drivers of tightening standards (Figure 1.14, panel 6). The stress test in the October 2020 GFSR concluded that emerging market banks are more vulnerable than developed market peers to capital shortfalls, suggesting that these banks may meet an unanticipated shock.

Banks in emerging markets face two additional challenges. First, as discussed, banks' ownership of (in some instances vulnerable) domestic sovereign debt has increased sharply. Moreover, tight bank lending conditions in emerging markets tend to have a more pronounced effect than in advanced economies because borrowers have fewer alternative sources of credit. In fact, in most emerging markets, banks account for 70 percent or more of credit to nonfinancial borrowers, compared with only 36 percent in advanced economies.[22]

Lending Support Policies Will Be Phased Out

Loan repayment moratoriums and government loan guarantees have supported much-needed credit flows. Moratoriums have sharply reduced payment defaults, which would have hit capital directly and curtailed lending appetite. Loan guarantees relieved banks' need to bear potential loan losses and risk-weighted assets on new loans. However, loans under moratorium are slated to expire in most countries during 2021, and guaranteed loans, while still growing in some jurisdictions, should decline gradually as these loans mature. Expiration and runoff of these support policies may drive higher defaults on existing loans and require banks to increase provisions and apply higher risk weights on new nonguaranteed loans.

As a result, loan-loss reserves may have to be raised to absorb the phaseout of repayment moratoriums. Among European banks monitored by the European Banking Authority, loans under moratorium amounted to €600 billion, or more than 3 percent of total loans, as of the third quarter of 2020. However, in some countries, such loans account for more than 10 percent of total loans (dark green bars in Figure 1.15, panel 1). These loans are generally of lower quality than banks' overall portfolios, with a higher share of risky loans, and lower loan-loss reserve coverage (Figure 1.15, panel 2).[23] Termination of loan moratoriums will therefore require an increase in loan-loss provisioning when banks need to raise the reserve coverage ratio to the same standard used for the overall loan book, resulting in an average reduction of about 20 basis points in capital ratios (the average of the red bars in Figure 1.15, panel 3). These losses are manageable, on average, but the impact varies considerably across countries. In the worst-affected countries, the end of loan moratoriums could reduce system-average capital ratios by nearly 100 basis points.

Guaranteed loans accounted for almost 2 percent of total loans on average as of the third quarter of 2020, though in some countries that figure was as high as 4 percent (light green bars in Figure 1.15, panel 1). When these guaranteed loans run off, their replacement with loans without guarantees will require higher provisions and risk-weight requirements. This "cliff effect" is estimated to result in an average decline of about 25 basis points in capital ratios, and up to 100 basis points in countries that have large guarantee programs (Figure 1.15, panel 3, sum of dark and light green bars).[24] In those countries where the pandemic is having a larger macroeconomic impact, a carefully managed exit strategy will be relatively more important. On the positive side, for guaranteed loans there is more of a "ramp" than a "cliff" effect because their maturity averaged about 2.5 years at origination, so their runoff will proceed gradually. However, some banking systems that could face the largest downside risks from the phaseout of policy relief (moratoriums and guarantees) also have comparatively low buffers (Figure 1.15, panel 4). These are countries where the pandemic is having a larger macroeconomic impact, so a carefully managed exit strategy will be critical.

Banks' Capital Buffers: Ample but Unlikely to Be Used

Shortly after the COVID-19 pandemic hit in early 2020, many supervisors released countercyclical capital

[22]Migration of credit creation from banks to nonbank financial institutions can mitigate the immediate stress created by banks' reluctance to lend in the wake of severe shocks. However, while such migration relieves pressure on borrowers, it also moves lending activity outside the bank regulatory perimeter, where it is most actively monitored and supervised.

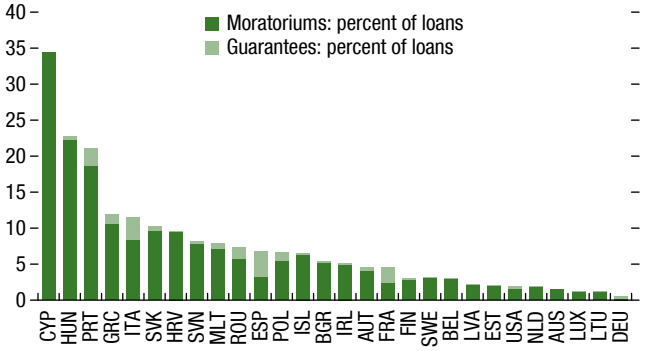
[23]"Risky" loans refer to the sum of nonperforming loans and loans categorized as "Stage 2" loans under International Financial Reporting Standard 9, an accounting standard indicating that credit risk has increased significantly since origination but the loan remains current on interest and principal payments.

[24]In computing the impact on capital ratios as guarantees expire, the effect of an increase in the denominator due to higher risk weights (typically increased from 0 to 100 percent on loans other than mortgages) is generally larger than the reduction in the numerator due to higher loan-loss provisions.

Figure 1.15. Lending Support Measures: Volumes, Quality, and Impact of Withdrawal

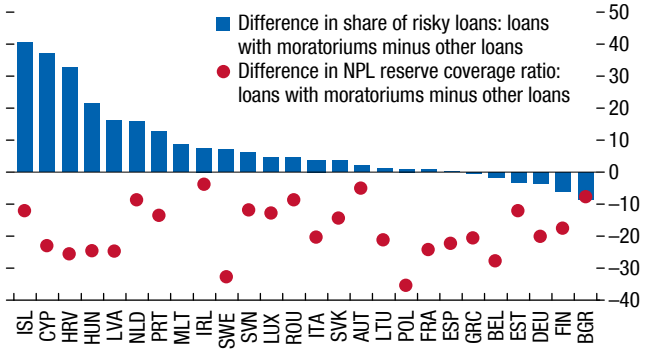
Some countries have a large share of loans under lending support programs.

1. Loans under Moratoriums and Guaranteed Loans, as of 2020:Q3 (Percent)



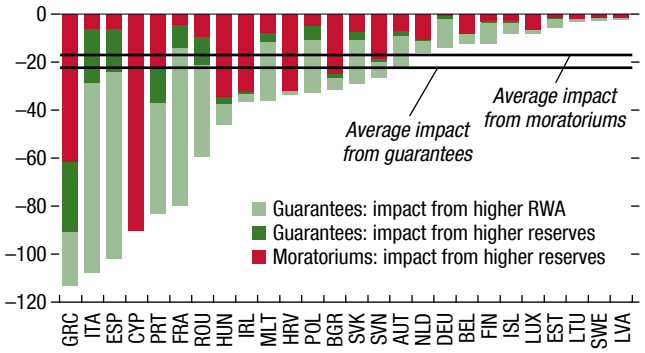
The asset quality and level of provisions of loans under moratoriums are weaker than the overall loan book.

2. Asset Quality and Reserve Coverage of Loans under Moratorium and Loans Not under Moratorium, as of 2020:Q3 (Percentage points)



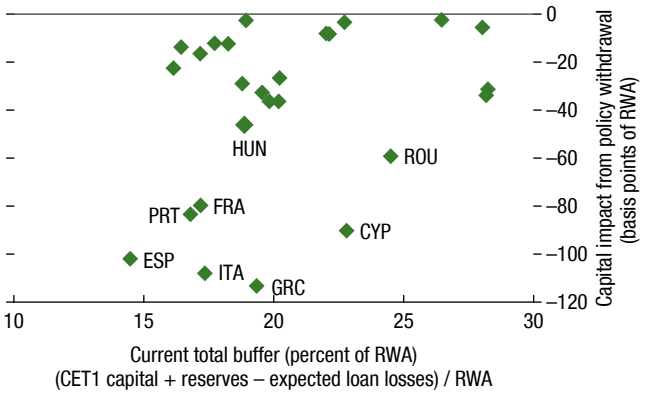
Phaseout of moratoriums and guarantees could lower CET1 ratios by about 40 basis points on average.

3. Total Capital Impact from the Phaseout of Moratoriums and Guarantees, as of 2020:Q3 (Basis points of RWA)



Systems that combine the lowest total buffers and the greatest downside risks from the phaseout of policy relief are of most concern.

4. Adjusted CET1 Ratio vs. Capital Impact from the Phaseout of Moratoriums and Guarantees, as of 2020:Q3 (Basis points of RWA)



Sources: European Banking Authority; European Central Bank; Federal Reserve; Reserve Bank of Australia; and S&P Global Intelligence.
Note: In panel 2, risky loans are defined as Stage 2 plus NPLs. Expected loan losses = NPLs × loss given default. Data labels use International Organization for Standardization (ISO) country codes. CET1 = common equity Tier 1; NPL = nonperforming loan; RWA = risk-weighted assets.

buffers, recalibrated, or revised the implementation timeline of other macroprudential buffers, and encouraged banks to use regulatory capital buffers, allowing banks to operate temporarily below the capital requirements defined by the combined buffer requirements.[25] These actions were intended to stimulate lending, supporting economic growth and (indirectly) bank credit quality, without materially compromising the resilience of the banking system. It is vital that buffers are used to ensure continued supply of credit to the real economy. Banks, however, do not appear to have drawn down their capital buffers, and most have reiterated their medium-term capital ratio targets.[26] Why are banks so reluctant to use their capital buffers, even as regulators have been supportive (Botin 2021; Rohde 2020)?

Bank management's reluctance to draw down capital buffers may reflect concerns about credit quality going forward amid a highly uncertain economic outlook, as

[25]The Basel Committee supports a "measured" drawdown of capital buffers as "anticipated and appropriate in the current period of stress" (BCBS 2020). For a description of the mechanics of buffer usability, see BCBS (2019).

[26]ECB (2020b) shows that the announcement of the release of buffers in March 2020 did not have any material impact on banks' publicly announced medium-term common equity Tier 1 (CET1) targets.

the October 2020 GFSR stress tests show. In addition, banks may be worried about capital levels, as there is ample evidence that a bank's capital position matters a great deal for valuations, credit rating(s), and funding costs.[27] Therefore, banks may be disinclined to lower capital ratios unless they have ample management buffers (defined here as buffers above and beyond the maximum distributed amount threshold) and, critically, a profitable lending plan that justifies the capital deployment.[28] Even when ample management buffers are available, banks with a return on equity well below their estimated cost of equity may not have the economic incentives to (voluntarily) draw down the buffers in order to increase lending.

How Do Banks Assess the Usability of Capital Buffers?

To assess the main factors behind the decision to draw down buffers, this section considers three conditions it is assumed banks must satisfy before using their buffers. First, a bank must have a sufficient amount of "management buffers," so that using them is both possible and safe (*capacity hurdle*).[29] Second, it must have the capacity to rebuild the buffers within a time frame that does not trigger supervisory pressure that could stigmatize the bank (*supervisory hurdle*).[30] Third, using the buffers must provide higher returns than not using them (*management hurdle*).[31]

For a sample of 72 banks representing about 60 percent of the global banking system's aggregate market capitalization, only banks accounting for 5 percent of market capitalization manage to clear all three hurdles (Table 1.1).[32] *Less profitable banks* (banks in the bottom three quartiles of the profitability distribution; Table 1.1, first column) generally clear the capacity hurdle because they tend to operate with larger (nonmandatory) management buffers, but they struggle to clear the other two hurdles. For these relatively low-return banks, it would be too costly to use the buffers because of the long rebuilding period and the large negative impact on their equity value. In contrast, the *most profitable banks* (in the top quartile of the profitability distribution; Table 1.1, first column) often struggle to clear the capacity hurdle because they tend to be relatively capital-efficient and operate with thinner discretionary buffers. For these high-return banks, drawing down capital buffers would be too risky: their capital ratio would end up being too close to—if not at or even below—their regulatory threshold (the so-called maximum distributable amount). This is shown by a value below 1 for banks in the top quartile, on average.

The key message from this analysis is that most banks have insufficient economic incentives to draw down their buffers if they are (or expect to be) asked to rebuild them later. Only for about 5 percent of banks—mainly those with returns well above their cost of equity—does the additional value generated by the new loans offset the negative impact from the capital shortfall resulting from using the buffers in the first place. Importantly, the management hurdle is binding for most banks. The rationale is that reducing a bank's capital ratio only to rebuild it later opens up a capital shortfall for the bank that the market will always reflect in the bank valuation, making shareholders

[27]The empirical evidence suggests (1) a negative relationship between capital levels and funding costs; and (2) a positive relationship between management buffers and credit ratings, whereby downgrades limit access to select funding markets. For a review of both relationships, see ECB (2020a).

[28]Within a bank's CET1 requirements, the maximum distributable amount (MDA) threshold is defined as the CET1 capital level that includes Pillar 1, Pillar 2, and the combined buffer requirements but excludes selected—and normally undisclosed—prudential buffers (for example, Europe's Pillar 2 guidance). The portion of CET1 above the maximum distributable amount is typically known as the "management buffer," because it is a voluntary buffer the bank's management team feels is adequate to run the bank. Importantly, should a bank's CET1 ratio fall below its MDA threshold, such a breach would automatically trigger a set of distribution restrictions involving dividend and additional Tier 1 capital (AT1) coupon payments, as well as management remuneration.

[29]The analysis here assumes that a bank has enough available "management buffers" if the difference between CET1 and the MDA is larger than the regulatory buffers the bank could be expected to draw down.

[30]Two complementary factors are considered. The first is whether the bank is able to rebuild its buffers in five years or less, consistent with policymakers' guidance that banks using the buffers should expect to be given ample time to rebuild them later. The second is the extent to which the bank has a large legacy of nonperforming loans from the previous cycle. Institutions with 2019 pre-pandemic nonperforming loan ratios greater than three times their respective regional averages are considered to have ratios that are too high and would not clear this hurdle.

[31]The third hurdle evaluates whether a bank's equity fair value exceeds the fair value under the counterfactual (of no buffer usability) by 20 percent and whether it does so within a reasonable time frame, which is set as the third year following the buffer drawdown.

[32]The analysis presented here is based on 2022 consensus expectations compiled by Bloomberg for the following key variables: assets, risk-weighted-asset density, net earnings, and cash payouts. For CET1 ratios, instead of using 2022 expectations, the analysis considers each bank's medium-term targets. The analysis is also based on bank-by-bank specific CET1 requirements as of the end of 2020. Finally, the model assumes that a bank's AT1 yield equals half its cost of equity capital. The sensitivity analysis is shown in Online Annex 1.1.

Table 1.1. Drivers of Buffer Usability

Only banks representing 5 percent of the sample used here (covering 60 percent of the global banking system's aggregate market capitalization) clear the three key hurdles to draw down their capital buffers.

Banks Ranked by Price-to-Book Ratio	❶ Capacity Hurdle	❷ Supervisory Hurdle		❸ Management Hurdle	Capital Buffer Usability
	Capital buffer availability (hurdle at 1 times buffers drawn)	Years to rebuild buffers (hurdle at ≤5 years)	Asset quality (hurdle at 3 times the region's pre-COVID NPL ratio)	Bank's equity fair value (hurdle at a 20 percent RoI by Year 3)	Percent of banks clearing all three hurdles
1st Quartile [bottom]	1.5×	17.9	✗	✗	0
2nd Quartile	1.1×	5.9	✓	✗	0
3rd Quartile	1.3×	5.2	✓	✗	0
4th Quartile [top]	0.7×	2.9	✓	✓	10
World	1.0×	4.8		✗	5

Sources: Banks' financial statements; Bloomberg Finance L.P.; and IMF staff calculations.
Note: Banks are ranked by their price-to-book ratios, defined as their market capitalization over their common equity Tier 1 capital levels. All market-related data used in the analysis are as of January 23, 2021. Light green (pink) depicts banks that clear (do not clear) a particular hurdle. NPL = nonperforming loan; RoI = return on investment.

generally worse off compared with the counterfactual of no use of the buffer. And while generating a high return on investment within a reasonable time frame is possible, it is rare for most banks.

Profitability is the single most important factor that enables a bank to clear the supervisory and management hurdles. Credit quality of new loans, bank leverage, and dividend payments also play important roles:

- The more profitable a bank is, the less time it takes to rebuild buffers. In addition, structural improvements in future profitability increase the likelihood of banks making a sufficient return on investment from use of the buffer.
- Worse-than-expected credit quality on new loans (for example, due to looser lending standards) lengthens the time it takes banks to rebuild buffers. On the other hand, a higher return on new loans (for example, due to guarantees that reduce the effective cost of risk) improves the return on investment from the buffer drawdown and makes the use of such drawdowns more likely.
- Among all the potential actions a bank management team can take to accelerate the capital rebuilding process, deleveraging seems to be the most attractive, regardless of a bank's return profile (this, however, would run contrary to policymakers' intended outcome of supporting the economy). Under an asynchronous recovery with divergent recovery paths, asset quality and capital buffers at banks in emerging markets may be hit harder than those in advanced economies (October 2020 GFSR); emerging market banks may therefore face a comparatively higher risk of forced deleveraging.
- For high-return banks, dividend cuts are also helpful, as the value the market would assign to the incremental earnings (that is, a multiple greater than 1) may be higher than the forgone dividend-related income.[33]

Policies for the Recovery and Beyond

Extraordinary policy measures have eased financial conditions and sustained the economy, helping to contain financial stability risks. Ongoing policy support remains necessary until a sustainable and inclusive economic recovery takes hold in order to maintain the flow of credit to households and firms and to prevent

[33]It is important to discuss some of the key assumptions driving these results. First, the model assumes that the new loans a bank generates by drawing down buffers are equal—in terms of returns and quality (their risk-weight density)—to the bank's back book of loans. Second, it also assumes that banks would manage to fill the AT1 debt shortfall via issuance in the capital markets. These two assumptions would, if anything, err on the side of optimism and tend to skew results in favor of the use of buffers. Third, even if reducing the size of the initial capital drawdown (from 2.5 percent to 1 percent of risk-weighted assets) increases the likelihood that a bank will clear the first and second hurdles, sensitivity analysis shows that it barely changes a bank's likelihood of clearing the third hurdle.

the crisis from posing a threat to the global financial system. Monetary policy should continue to be accommodative until mandated policy objectives are achieved (see the April 2019 and October 2020 GFSR). But easy financial conditions may have unintended consequences, such as stretched valuations and rising financial vulnerabilities. A range of policy measures are needed to address these vulnerabilities and protect the economic recovery.

Policymakers should maintain borrower-support measures such as debt repayment relief, credit guarantees, and direct support for borrowers until economic indicators point to a sustainable recovery. Once the recovery gains momentum, general borrower support programs should be limited to borrowers deemed by banks and other creditors to be temporarily distressed but fundamentally viable. More generally, policies to support borrowers and banks should adjust to reflect the effectiveness of existing programs, the scope for more targeted and time-bound programs, and the estimated current and future impact on banks' capital, earnings, and liquidity.[34] Country authorities should recalibrate policy support carefully to avoid disrupting the nascent recovery and should communicate openly and transparently to provide appropriate signals and incentives.

Unprecedented monetary, fiscal, and financial policies may also have unintended consequences, especially if maintained for a long time. Valuations appear stretched across a number of asset classes. Financial vulnerabilities, which were already elevated in some sectors before the COVID-19 crisis, are rising, fueled by extremely accommodative financial conditions globally. In the event of a sudden repricing of risks in markets—caused, for example, by a rapid and persistent rise in interest rates—financial conditions may tighten abruptly, with repercussions for confidence and endangering macro-financial stability.

Policymakers should act to prevent financial vulnerabilities from becoming entrenched and turning into legacy problems, thus putting growth at risk. Taking into consideration possible lags between the activation and impact of macroprudential policy tools, policymakers should take early action and tighten selected macroprudential tools. This may help tackle pockets of elevated vulnerability while avoiding broad tightening of financial conditions. If such tools are not available—for example, in some segments of the nonbank financial intermediation sector—policymakers should swiftly develop them. Given the challenges to design and operationalize such tools, policymakers should also consider building buffers elsewhere to protect the financial system.

Relatedly, a key policy priority is strengthening the resilience of the nonbank financial intermediation sector. The IMF is contributing to enhancing the international framework by working with international standard setters and the Financial Stability Board to (1) assess the role of different risk factors, including the behavior of nonbank financial institutions, during the March 2020 market turmoil; (2) understand more comprehensively systemic risks in the nonbank financial intermediation sector through interconnections with the global financial system and cross-border spillovers; and (3) strengthen the resilience of nonbank financial institutions (see also page 42 of FSB 2020).

More Granular Policy Recommendations to Address Specific Areas of Concern

In emerging and frontier markets, many countries face a challenging combination of low vaccine availability and historically high financing needs. While financial conditions are generally loose and continue to be supportive of growth for a large group of countries, global risk appetite can change swiftly, as seen recently. The international community needs to ensure and accelerate access to vaccines for all countries, including by providing funding for the COVAX facility to guarantee global equitable access to COVID-19 vaccines.

As conditions allow, rebuilding buffers should be a key priority to prepare for possible sudden price adjustments and a reversal of capital flows. It may be desirable for countries with low reserve adequacy to put in place a transparent strategy to accumulate reserves, to the extent that it does not undermine the inflation objective. Macroprudential policies and prudent macro-financial risk management should be employed where vulnerabilities are building.

Countries with market access should take advantage of favorable financing conditions to improve the composition of their debt structure (for example, by extending maturities and locking in the currently historically low interest rates) and reverse any departures

[34]For details on banking systems' strategies on how to phase out support and mitigation policies, see IMF (forthcoming).

from sound public debt management that may have occurred during the pandemic (for example, by reducing reliance on the domestic banking system). The trade-offs between additional near-term support for the economy and medium-term financial stability risks can be ameliorated by credible fiscal and monetary policy frameworks and by sound debt management strategies (see the April 2021 *Fiscal Monitor*). Countries with stronger fundamentals, where economic activity is still weak versus its potential, may need to provide additional policy support tailored to the evolution of the pandemic. Countries with high debt and financing needs may need to consider consolidation plans and credibly communicate such plans to markets to reduce the risk of fiscal dominance concerns (October 2020 GFSR).

Countries with limited market access or that are not benefiting from favorable financing conditions face more daunting challenges. An increase in the allocation of special drawing rights for all countries can provide temporary liquidity relief and mitigate a lack of policy space. Many of these countries will likely need additional assistance, including through the Debt Service Suspension Initiative as well as through concessional and emergency financing from official creditors. Some countries with sustainable debt could also benefit from rescheduling or reprofiling of their debt service to ease immediate liquidity pressures and moderate risks. Other countries facing more significant difficulties with debt burdens could benefit from deeper restructuring of their commercial and bilateral debt. The Common Framework for Debt Treatments can serve as a flexible tool to meet the specific needs of countries on a case-by-case basis. The international community should consider broadening the coverage of eligible countries for the Common Framework beyond the current list of countries eligible for the Debt Service Suspension Initiative.

In the nonfinancial corporate sector, firm-specific support may be needed for viable firms facing liquidity or solvency risks, based on firm size and sectoral differences, as discussed earlier in the chapter. Other measures are also crucial to address a possible deterioration in credit quality and to facilitate orderly post-pandemic structural changes in the global economy. These measures include the following:

- Development of distressed debt and nonperforming loan markets to reduce the cost of corporate restructuring.
- Consolidation, particularly among smaller firms, to lower the fiscal cost of supporting weaker firms while minimizing the economic cost associated with bankruptcies. Countries with traditionally strong mergers and acquisitions are likely to benefit more from consolidation.
- Improvement of the debt resolution regime to address large numbers of distressed firms. A wave of corporate distress may overwhelm the court system, creating difficulties for the reorganization of firms and slowing all procedures. Countries should augment the capacity of the court system with out-of-court restructuring and hybrid restructuring alternatives.[35] More complex cases may need operational restructuring through a judicial reorganization.
- Resolution for firms that are not expected to be viable. Resolution frameworks should be supplemented by a fast-track process that will facilitate a timely and orderly exit of nonviable firms and better allocation of economic and fiscal resources.

To avoid excessive procyclicality in the financial sector, regulatory guidance on provisioning to cover expected losses remains pertinent, but it must be subject to adequate supervisory scrutiny to prevent underprovisioning. Observed variability in provisions across banks may reflect not only the uncertain outlook but also greater discretion provided to banks. The diversity of provisioning practices therefore warrants further investigation from supervisors to ensure that problem loans are adequately classified and provisions gradually recorded.

As long as uncertainty remains high, policy restricting capital distributions should continue to apply on grounds of prudence. In countries more advanced in the fight against the pandemic, and where losses can be quantified with a greater degree of comfort, system-wide policies limiting capital distributions can be relaxed progressively, using supervisory stress tests to ensure that banks remain sufficiently well capitalized to support the economy.

Policymakers should support balance sheet repair by strengthening management of nonperforming loans, including through market-based solutions to dispose of

[35]Hybrid restructuring combines the flexibility of informal negotiations between creditors and debtors with limited judicial intervention to protect assets and bind dissenting creditors to a restructuring agreement.

problem assets. As policy measures such as insolvency moratoriums expire, a wave of bankruptcies and loan defaults may follow. Insolvency regimes should be strengthened, focusing particularly on fast-track procedures to restructure debt.

With an increasing retail presence in equity markets and growing availability of no-fee trading apps, regulators should ensure that investors have adequate and timely information to make trading decisions that suit their investment profiles. Regulatory authorities should consider whether investor education programs can help mitigate some consumer protection risks, especially when derivatives are involved. Looking ahead, supervisors should closely monitor changes in trading behavior with a view to assessing their market impact and determining whether different regulatory approaches or modified supervisory practices are needed.

Box 1.1. Update on the Indicator-Based Framework on Global Financial Vulnerabilities

Amid the ongoing COVID-19 pandemic, global financial vulnerabilities remain elevated across several sectors, according to the Indicator-Based Framework, a quantitative methodology to systematically monitor key financial vulnerabilities of the global financial system arising from leverage, liquidity, maturity, and currency mismatches (Figure 1.1.1).[1]

In the *sovereign* sector, vulnerabilities are elevated in systemically important countries that account for about 80 percent of the GDP of sample countries, as debt levels have hit historic highs in response to the large fiscal lifelines put in place in response to the pandemic. While loose financial conditions have eased debt service burdens, many economies could be left with large post-pandemic fiscal deficits and high debt overhangs in the absence of a robust recovery. Emerging market economies, in particular, could face significant challenges in servicing debt, especially if sovereign risk premia rise.

Nonfinancial firms have taken advantage of easy financing conditions and the reopening of capital markets after the March 2020 turmoil to strengthen balance sheets by issuing debt and equity, particularly in the United States and other advanced economies. Data available through the second quarter of 2020 indicate that, even though leverage has increased across most regions, the liquidity position of firms has improved as they have built cash buffers, extended maturities, and often reduced interest on new and existing debt.

In the *household* sector, vulnerabilities continue to be elevated in China and a number of advanced economies. Unemployment benefits and other support measures have been critical in bridging the gap from lockdowns to the reopening of economies. However, household debt servicing capacity has deteriorated in a number of major economies as some households have taken on more debt to cover lost income.

In the *financial sector*, close to half of banks in systemically important economies are now in the medium-high and high vulnerability category. Banking sectors in some emerging market economies, and to a lesser extent in the euro area, remain the most vulnerable, as lower interest rates and uncertainties about the economic outlook have weighed on profitability. Banks in other regions have seen profitability and liquidity positions recover much faster from the COVID-19 shock.

Among *nonbank financial institutions*, vulnerabilities continue to be generally moderate to elevated. In the insurance sector, vulnerabilities have increased in some advanced economies as profitability measures were hit amid the pandemic and foreign exchange mismatches rose. For asset managers, vulnerabilities have not changed materially since the October 2020 GFSR. In some regions, liquidity mismatches improved as funds increased holdings of short-term liquid assets. However, interconnectedness remains a concern, as the mutual funds sector sustains large precautionary credit lines with banks.

This box was prepared by Sergei Antoshin, Yingyuan Chen, Fabio Cortes, Rohit Goel, Frank Hespeler, and Tom Piontek.

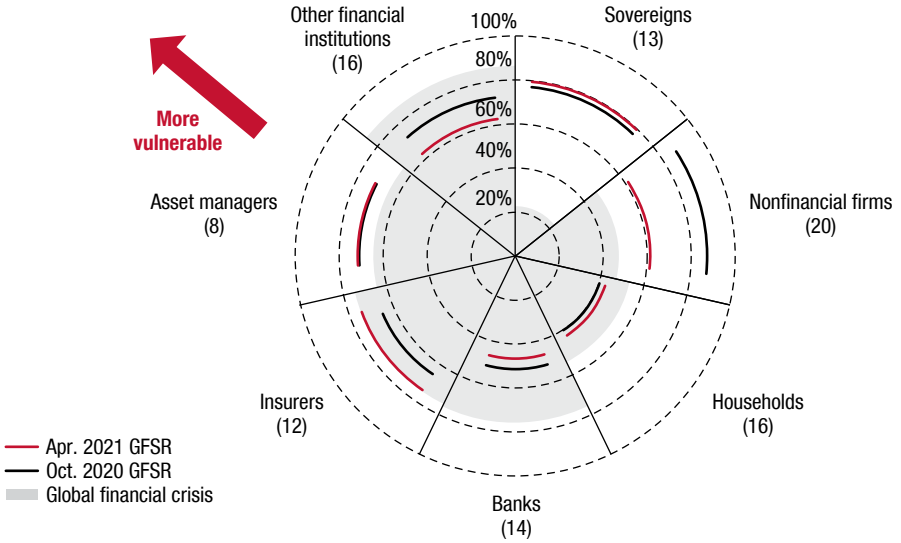
[1]The focus of the framework is restricted to on-balance-sheet vulnerabilities, given the absence of available data for off-balance-sheet vulnerabilities for a cross-section of countries. Due to the nature of the data and their reporting frequency, most of the current data points are through the second quarter of 2020. For further details on the methodology employed in the framework, see the technical annex to Chapter 1 of the April 2019 *Global Financial Stability Report* (GFSR).

Box 1.1 *(continued)*

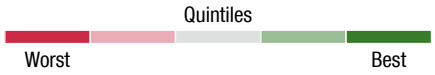
Figure 1.1.1. Global Financial Vulnerabilities

Vulnerabilities remain elevated across the large firms of the nonbank financial sector and amid rising debt levels in the sovereign sector, while improved liquidity conditions in the corporate sector have tempered near-term risks for large firms.

1. Proportion of Systemically Important Economies with Elevated Vulnerabilities, by Sector
(Percent of countries with high and medium-high vulnerabilities, by GDP or assets; numbers of countries in parentheses)



2. Financial Vulnerabilities by Sector and Region



	Sovereigns		Nonfinancial Firms		Households		Banks		Insurers		Asset Managers		Other Financial Institutions	
	Oct. 2020	Apr. 2021	Oct. 2020	Apr. 2021	Oct. 2020	Apr. 2021	Oct. 2020	Apr. 2021	Oct. 2020	Apr. 2021	Oct. 2020	Apr. 2021	Oct. 2020	Apr. 2021
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 Board of India; Securities and Exchange Commission of Brazil; WIND Information Co.; and IMF staff calculations.
Note: Panel 1 is based on 29 jurisdictions with systemically important financial sectors. Vulnerabilities are by GDP for sovereigns, households, and nonfinancial firms; and by assets for banks, asset managers, other financial institutions, and insurers. "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 the longest sample available). 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 firms and households. In panel 2, a change in data sources for India and a related reorganization of the data for India led—due the relative ranking used in the methodology—to some changes in the values for other emerging markets compared to the values reported in the October 2020 GFSR. "Other advanced" economies are Australia, Canada, Denmark, Hong Kong Special Administrative Region, Japan, Korea, Norway, Singapore, Sweden, Switzerland, and the United Kingdom. "Other emerging" market economies are Brazil, India, Mexico, Poland, Russia, and Turkey. GFSR = *Global Financial Stability Report*.

Box 1.2. The GameStop Short Squeeze: Market Structure and Regulatory Implications

A short squeeze in early 2021 led to significant volatility in US equity markets for a brief period. Inspired by a forum on the website Reddit and discussions in other social media, retail investors purchased stocks of companies with small market capitalization through online commission-free platforms such as Robinhood. Most prominent among the companies was GameStop, a video game retailer. As prices of these stocks started to increase, institutional investors—most prominently, hedge funds—with short positions in the stocks rushed to decrease their positions by purchasing back the stocks, pushing stock prices even higher and generating so-called short squeeze dynamics. The resulting increase in volatility was confined mostly to stocks representing a small share of the US stock market (less than ½ percent).

The short squeeze was magnified by leverage through margin debt in brokerage accounts and expiring options on the stocks involved. In particular, the hedging behavior of options market makers—which led them to purchase stocks as they were rising in value—also contributed to the sharp price moves. On January 27 and 28, 2021, several retail trading platforms suspended trading activities in these stocks. Over the course of the next few days, the share prices of these stocks declined rapidly.

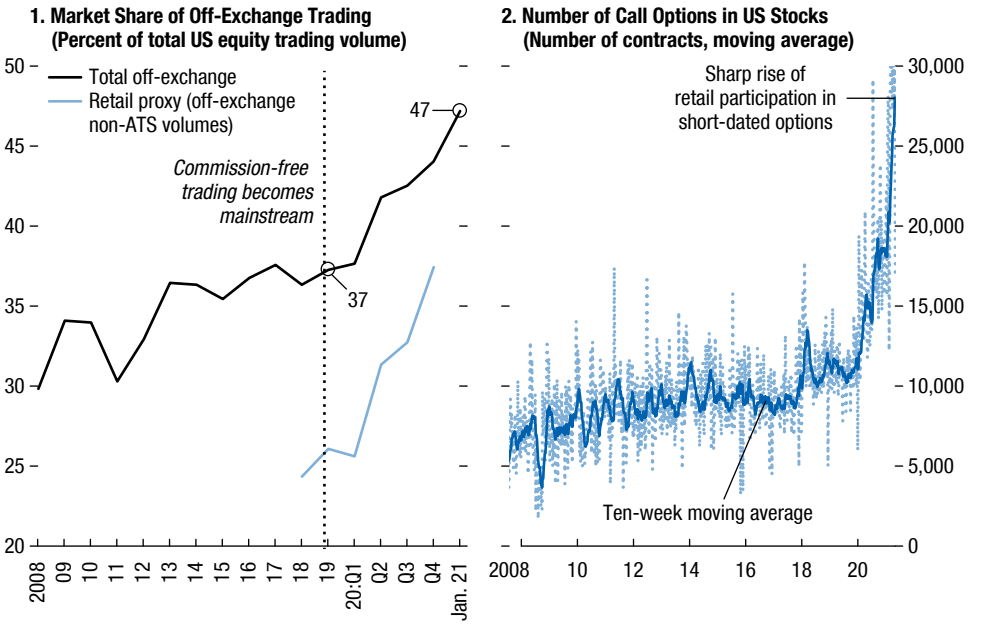
Despite the brief impact on market sentiment, this episode did not pose a systemic threat to the financial system. Policy lessons from this episode are likely to encompass several aspects of market regulation. Selected relevant issues include the following:

- *The rise in retail social media investing:* Retail trading activity has increased substantially in recent years, as proxied by the rise in off-exchange trading (Figure 1.2.1, panel 1 and note). Another notable increase has been the jump in options volumes (Figure 1.2.1, panel 2). Retail has played a key role in this increase. The number of customers with small options positions rose to record highs in early 2021. This rise in retail activity reflects both the collapse in trading commissions and the boom in enabling technologies such as online trading platforms. This increase has also been driven by greater use of social media, which allows like-minded investors to share tips and strategies. A recent survey by the Financial Industry Regulatory Authority (FINRA 2021) finds that the new retail investors are on average younger people with less investment experience. They also tend to rely more on advice from friends and family and less on personal research or professional advice.
- *Shorting practices:* When investors "short" a stock, they first must borrow it—typically from a broker—and then sell it. An elevated number of short positions normally acts as a precondition for short squeeze dynamics. For example, the number of short positions against GameStop as a percentage of tradable shares has been above 100 percent since 2019. Even though several other stocks have surpassed the 100 percent mark, in this episode this positioning lasted an unusually long time. How can short positions surpass the amount of securities available for trading? While so-called naked short selling (the practice of selling stocks not owned or borrowed from others) is generally prohibited in the United States, additional shares for short selling can be obtained through rehypothecation (a process whereby broker-dealers reuse assets posted as collateral by their clients), essentially lengthening the trading chain. Short selling contributes to price discovery and market efficiency. The US Securities and Exchange Commission has erected safeguards to preserve these benefits while protecting against a range of abusive practices. This incident highlights the adverse impact of inadequate disclosure of short selling practices on public trust in capital markets.
- *Payment for order flow:* Amid significant growth in retail volumes, commission-free brokers are outsourcing their trade executions to high-frequency trading firms and receiving significant revenues in exchange—allowing them not to charge commissions to their clients. While brokers are subject to "best execution" requirements, and regulators have recently been focusing on compliance with conduct rules under this arrangement, questions remain about potential conflicts of interest and lack of appropriate disclosures (such as on trade execution quality).
- *Liquidity pressure on online brokers:* Margin requirements by clearinghouses triggered significant liquidity pressure on some brokers during the short squeeze. The required deposit increased more than 30 percent on January 28, 2021, owing to higher volatility. The significant liquidity pressure resulted in a temporary trading suspension by brokers of a group of stocks with high volatility until they recovered their liquidity through credit lines from banks and equity capital.

This box was prepared by Parma Bains, Yingyuan Chen, Cristina Cuervo, Dimitris Drakopoulos, and Nobuyasu Sugimoto.

Box 1.2 *(continued)*

Figure 1.2.1. Proxy of Retail Market Share and Call Option Activity



Sources: Bloomberg Finance L.P.; Chicago Board Options Exchange; Financial Industry Regulatory Authority; and IMF staff.
Note: Retail flows are typically routed off exchange to over-the-counter market venues. Off-exchange volumes include several other categories of trading that are not related to retail, such as alternative trading systems (ATS). The growth in the off-exchange market share in 2020 was driven largely by nonalternative trading systems.

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CHAPTER 2

NONFINANCIAL SECTOR

LOOSE FINANCIAL CONDITIONS, RISING LEVERAGE, AND RISKS TO MACRO-FINANCIAL STABILITY

Chapter 2 at a Glance

- Leverage in the nonfinancial private sector reached historical highs for many economies in the run-up to the COVID-19 crisis, reflecting easy financial conditions in the aftermath of the global financial crisis.
- Leverage has since increased even further as policymakers have stepped in to prevent disruption to the flow of credit to households and firms.
- While loose financial conditions are still needed to support a nascent recovery, they could exacerbate the buildup of leverage and increase downside risk to future economic activity.
- Policymakers thus face a trade-off between boosting growth in the short term by facilitating an easing of financial conditions and containing downside risk further down the road. This trade-off may be amplified by the existing high and rapidly building leverage, further increasing downside risks to future growth.
- Policymakers need to be mindful of the financial stability risks stemming from high leverage in the post–COVID-19 environment and should stand ready to tighten macroprudential policies as the recovery takes hold.
- Targeted macroprudential policies that "lean against the wind"—that is, mitigate the adverse effects of loose financial conditions—can help contain or even reverse leverage buildups and improve the intertemporal trade-off, thereby reducing risks to future financial stability.
- The appropriate timing for deployment of macroprudential tools should be country-specific, depending critically on the pace of recovery, postcrisis vulnerabilities, and the policy toolkit available to policymakers. However, given the possible lags between activation and full impact, policymakers should take early action to tighten selected macroprudential tools to address rising financial vulnerabilities.

Nonfinancial firms and households (the nonfinancial private sector) across many economies came into the coronavirus disease (COVID-19) crisis with historically high levels of leverage on the back of relatively loose financial conditions.[1] Those conditions were brought on in part by highly accommodative monetary policies that have been pursued by major central banks since the global financial crisis. While the extraordinary monetary and fiscal policy support in response to the COVID-19 shock has certainly helped to cushion its impact, leverage in the nonfinancial sector has increased further in both advanced and emerging market economies. To assess potential threats to the post-pandemic economic recovery, this chapter draws on data for major advanced and emerging market economies to examine the risks of high and rapidly rising leverage for macro-financial stability. The chapter's analysis shows that loosening financial conditions tend to accelerate buildups in leverage. This is relevant because high growth or high levels of leverage further complicate the challenging intertemporal trade-off faced by policymakers. That trade-off arises because loose financial conditions, while providing a short-term boost to growth, also contribute to heightening downside risks to growth in the medium term. By leaning against the wind, macroprudential policy has an important role to play to temper leverage buildups and strengthen resilience, thus mitigating future financial stability risks. In the current context, while policy support remains necessary in the near term to aid economic recovery, policymakers should be mindful of the increasing macro-financial stability risks resulting from high leverage levels. Considering the possible lags between implementation and full impact, policymakers should

The authors of this chapter are Adolfo Barajas (team lead), Woon Gyu Choi, Zhi Ken Gan, Pierre Guérin, Samuel Mann, Manchun Wang, and Yizhi Xu, under the guidance of Fabio Natalucci, Mahvash Qureshi, and Jérôme Vandenbussche. Simon Gilchrist served as an expert advisor.

[1]The nonfinancial private sector in the chapter comprises two major sectors: nonfinancial firms and households. That is, it excludes both the financial sector and the government sector. Throughout the chapter, the shorthand "nonfinancial sector" is used.

take early action to tighten selected macroprudential tools to address rising nonfinancial sector vulnerabilities. As the nonbank financial sector takes on an expanding role in providing financing to the nonfinancial sector, urgent efforts should be made to develop the toolkit for this sector. Finally, given the challenges to designing and operationalizing macroprudential tools within existing frameworks, policymakers should consider whether buffers need to be built elsewhere to protect the financial system.

Introduction

The nonfinancial sector came into the COVID-19 pandemic crisis with historically high levels of leverage, defined as the reliance on debt in relation to income. On the back of highly accommodative monetary policies pursued by major central banks that have eased financial conditions since the global financial crisis, nonfinancial sector debt worldwide increased from 138 percent to 152 percent of GDP over the decade leading up to the end of 2019 (Figure 2.1, panels 1 and 2).[2] Nonfinancial corporate sector debt increased in both advanced and emerging market economies, reaching a historical high of 91 percent of GDP at the end of 2019 (Figure 2.1, panel 1).[3,4] Household debt, by contrast, rose sharply among emerging market economies but fell in advanced economies as a group, reaching 60 percent worldwide at the end of 2019 (Figure 2.1, panel 2).

The COVID-19 shock has further increased nonfinancial sector leverage across economies, albeit for different reasons. The crisis has squeezed cash flows for the corporate sector and, through its impact on employment, increased the financing needs of households. The unprecedented and warranted monetary and fiscal policy support launched during the containment phase of the pandemic has eased market dysfunction, loosening financial conditions after a sharp tightening in the first quarter of 2020, and maintained the flow of credit to households and firms (October 2020 *Global Financial Stability Report* [GFSR], Chapter 3; October 2020 *Fiscal Monitor*). Policy support has also enhanced their ability to repay, thus allowing them to avoid having liquidity pressures morph into solvency issues. However, this has come at the expense of increased debt levels for most economies (Figure 2.1, panels 1 and 2). Global nonfinancial corporate and household debt increased by 11½ percentage points and 5 percentage points of GDP, respectively, between the end of 2019 and the third quarter of 2020.[5] While sharp declines in output, particularly in emerging markets, have undoubtedly contributed to the recent increase in debt-to-GDP ratios, there has also been a visible rise in debt levels during the COVID-19 crisis (Figure 2.1, panels 3 and 4).[6]

Historically, a rapid accumulation or high level of nonfinancial sector leverage has often preceded financial and economic downturns (see the literature review in Online Annex Box 2.1).[7] To the extent that buildups in leverage are facilitated by easy financial conditions, policymakers grappling with the adverse economic effects of the current crisis may soon face a trade-off associated with their choices. While an accommodative policy stance is appro-

[2]The global nonfinancial sector debt-to-GDP ratio is computed here as the sum of nonfinancial sector debt for 52 economies reporting to the Institute of International Finance divided by the sum of GDP for those economies, with both the numerator and denominator expressed in US dollars. The corresponding ratios for nonfinancial firms and households, as well as for advanced economies and emerging markets, are calculated in a similar fashion. While country-specific structural factors (such as continued financial liberalization and financial development, as well as demographic shifts) may have contributed to the rise in nonfinancial sector debt in some cases, studies note the predominant role of loose global financial conditions in driving nonfinancial sector leverage since the global financial crisis (for example, see Chapter 3 of the October 2015 GFSR; OECD 2017; Alter and Elekdag 2020).

[3]Nonfinancial corporate debt includes that of state-owned enterprises, defined as firms in which the state owns positive equity. For some emerging markets in the sample, the share of state-owned enterprises in nonfinancial corporate debt is quite substantial (exceeding 60 percent). The nonfinancial corporate data shown in Figure 2.1 are for nonconsolidated debt, as presented by the Institute of International Finance. Data on consolidated debt are less widely available. In countries for which both consolidated and unconsolidated data are available, the consolidated figures are often noticeably lower, but have followed trends similar to the unconsolidated figures over time.

[4]In many systemically important economies, the rise in nonfinancial corporate debt over the past decade was accompanied by weaker credit quality of borrowers, looser underwriting standards, and increased interconnectedness (April 2020 GFSR, Chapter 2).

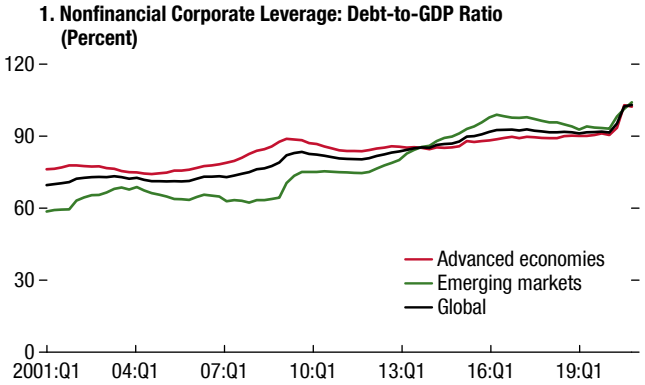
[5]As noted in Chapter 1, the increase in nonfinancial corporate leverage during the pandemic shock has been across the board, though firms in the sectors most affected by the pandemic crisis—such as energy, consumer services, and commercial real estate—have experienced the greatest increase. Across regions, the highest levels of leverage have been registered in the Asia-Pacific and European regions, and the largest increases in leverage during the COVID-19 crisis have been in the Middle East and Central Asia (see Online Annex Figure 2.1.1).

[6]By comparison, during the decade leading up to the COVID-19 pandemic, the contribution of GDP to the debt-to-GDP ratio was negative.

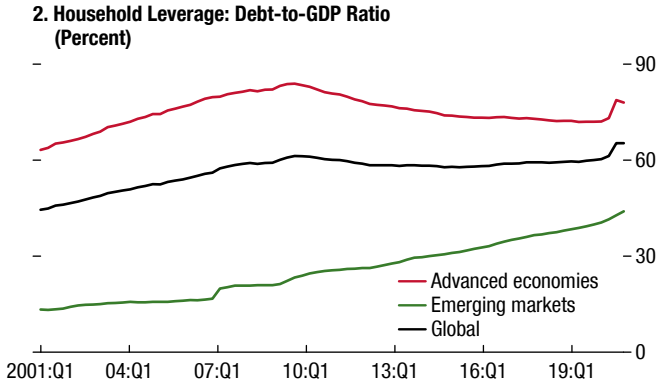
[7]All online annexes are available at www.imf.org/en/Publications/GFSR.

Figure 2.1. Nonfinancial Sector Leverage, by Country Group, 2001:Q1–20:Q3

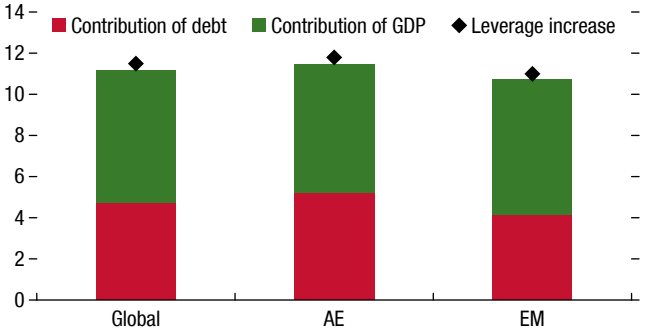
Nonfinancial corporate sector leverage increased in the decade preceding the COVID-19 crisis, and increased further during the crisis ...



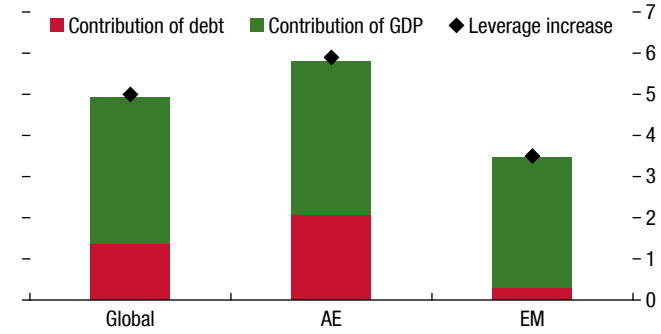
... while household sector leverage also rose strongly in emerging markets.



Output declines explain some, but not all, of the increase in nonfinancial corporate debt-to-GDP ratios during 2020 ...



... while explaining much of the increase in household debt-to-GDP ratios in emerging markets.



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

priate at this juncture to ease financial conditions and stimulate aggregate demand in economies facing recessions and large negative output gaps, continued extraordinary policy support once the recovery takes hold risks adding to the already elevated leverage vulnerabilities. Furthermore, such extraordinary support could induce excessive risk taking arising from moral hazard under an expectation of continued central bank interventions.[8]

[8]As noted by Borio and Zhu (2012), leverage and risk in the financial sector tend to increase with lower policy rates. Adrian and Liang (2018) discuss in detail how accommodative monetary policy can loosen current financial conditions, but at the cost of increasing future financial vulnerabilities. Hanson and others (2020) point out a potential moral hazard, in that the private sector may misperceive government support actions, believing that they will be repeated in the future under different situations.

Thus, an intertemporal trade-off arises, in the sense that the support to near-term economic activity may lead to increasing downside risks in the medium term. This trade-off may be amplified by high or increasing leverage, for example, if new credit is allocated to riskier borrowers.[9]

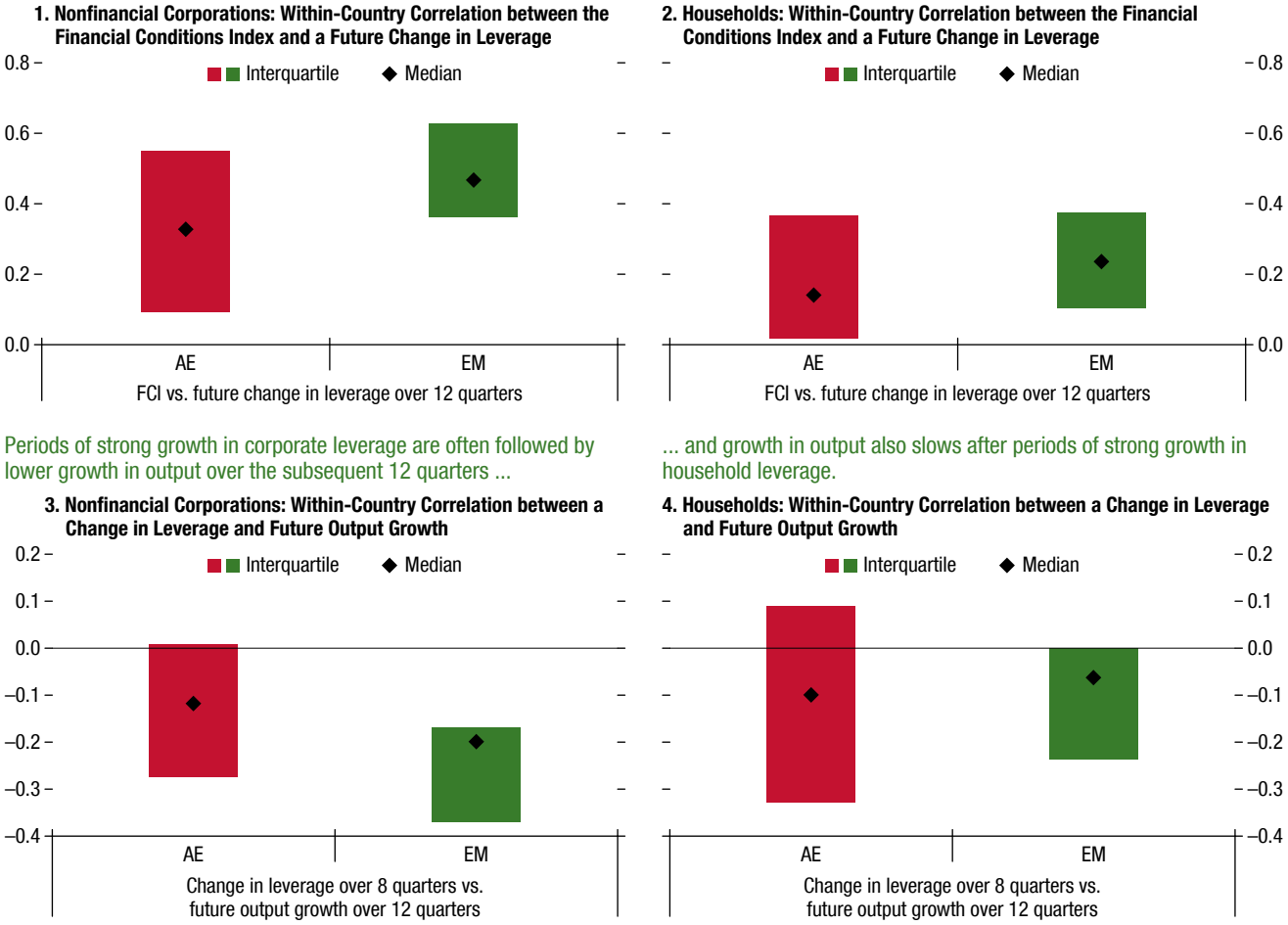
A simple look at the data supports the two relationships that are central to the intertemporal trade-off. First, loose financial conditions are associated with substantial buildups in leverage—for example, over the subsequent

[9]Brandao-Marques and others (2019), for instance, show that the riskiness of credit allocation increases downside risks to GDP growth.

Figure 2.2. Leverage, Financial Conditions, and Output Growth

Loose financial conditions tend to be associated with greater increases in corporate leverage over the following 12 quarters ...

... and with increases in household leverage.



Periods of strong growth in corporate leverage are often followed by lower growth in output over the subsequent 12 quarters ...

... and growth in output also slows after periods of strong growth in household leverage.

Sources: Institute of International Finance; and IMF staff calculations.
Note: The sample includes 19 advanced economies (AE) and 10 emerging markets (EM). Panels 1 and 2 show the correlation of the negative of the Financial Conditions Index (FCI) (that is, higher values indicate looser financial conditions) and changes in the debt-to-GDP ratio over the subsequent 12 quarters. Panels 3 and 4 show the correlation of a change in the nonfinancial corporate sector and household debt-to-GDP ratio, respectively, over 8 quarters and a change in output growth over the subsequent 12 quarters. The picture remains similar if correlation is computed over other horizons (such as using a change in debt-to-GDP ratio over 12 quarters).

12 months—in both advanced and emerging market economies (Figure 2.2, panels 1 and 2).[10] Second, there is a visible negative relationship between an increase in leverage and future economic activity. Stronger buildups in leverage tend to be followed by more subdued economic activity over the subsequent 12 quarters in both advanced and emerging market economies (Figure 2.2, panels 3 and 4). These observations suggest that the intertemporal trade-off posed by easy financial conditions may be highly relevant as the recovery gains momentum, with sharply increasing levels of leverage.

Against this backdrop, this chapter draws on data from the past three decades for a sample of 29 economies (19 advanced economies and 10 emerging markets) to investigate through more formal econometric analysis the implications of the current elevated levels of leverage, as well as the rapid leverage buildup, for

[10]Financial conditions are measured by the Financial Conditions Index (FCI) used in Chapter 1 of this issue of the GFSR. The country-specific FCIs are based on a principal component analysis of 11 variables—including real short-term interest rates, equity prices, sovereign and corporate debt spreads, the exchange rate, and real house prices—to capture the price of risk (see Online Annex 1.1 of the October 2018 GFSR). An increase (decline) in the index denotes tighter (looser) financial conditions; that is, an increase (decline) in the price of risk. For Figure 2.2, the negative of the FCI (that is, higher values indicate looser financial conditions) is used.

a post–COVID-19 recovery.[11] Fully acknowledging that for most countries continued policy support to the flow of credit and to economic activity will be needed in the foreseeable future, the chapter adopts a forward-looking view to flag the potential risks to macro-financial stability that may arise due to elevated leverage once the recovery is self-sustaining and broad policy support is no longer essential. A timely recognition of such risks may assist policymakers in planning a post-COVID exit from these policies and swiftly deploying tools to counter these risks when economic conditions permit.

The chapter's analysis centers on the interactions among financial conditions, nonfinancial sector leverage, and macro-financial stability. It focuses on the implications of loose financial conditions for leverage buildups and, in turn, on how high or rapidly increasing leverage interacts with relaxed financial conditions to affect financial stability risks. Based on the work of previous GFSRs and of Adrian and others (2019), the chapter adopts a growth-at-risk (GaR) approach, whereby risks to financial stability are reflected in the downside forecast of future economic activity—that is, financial distress is expected to ultimately translate into sharper economic downturns in the future.[12] In addition, it distinguishes between corporate and household leverage to better understand any differences in their dynamics, and also separates out advanced and emerging market economies to account for specificities in these economies.[13]

Thus, with the post–COVID-19 recovery in mind, the chapter investigates the following key questions:

- **How do financial conditions affect leverage?** What is the role of financial conditions in the buildup of nonfinancial corporate and household leverage? Does the recent growth in leverage matter?
- **What are the implications of leverage for financial stability?** What role, if any, does leverage play in the intertemporal trade-off faced by policymakers between boosting growth in the short term by easing financial conditions and containing downside risk further down the road?
- **Can macroprudential policies help mitigate the trade-off?** Can such policies be used to increase resilience and lean against the wind, limiting buildups in leverage and mitigating the medium-term downside risk to activity given the level of leverage? What are the lessons for policymakers at the current juncture?

Conceptual Framework

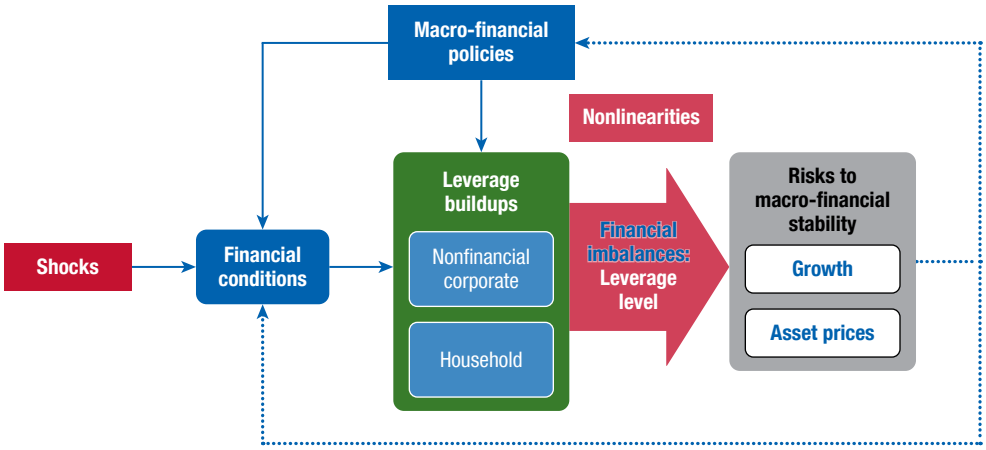
To better understand the challenges that may arise once a sustainable recovery is in place and unprecedented policy support is gradually withdrawn, it may be useful to briefly discuss the conceptual framework behind the analysis. As shown in Adrian and others (2019), leverage, financial conditions, and macro-financial stability are tightly intertwined. Financial conditions, which reflect the price of risk in an economy, constitute a key driver of leverage buildups (Figure 2.3). When financial conditions are loose, intermediaries and markets have a greater incentive to take on more risk and a greater capacity to lend. At the same time, borrowers (firms and households) have a greater incentive to take on debt and, through heightened net worth associated with higher asset values, a greater capacity to borrow. Macro-financial policies (monetary, macroprudential, and fiscal) also have an effect on leverage buildups, either through financial conditions and the availability of credit

[11]The economies in the sample are selected primarily for their globally systemic importance and availability of data—in particular, of disaggregated nonfinancial sector leverage and financial conditions indices. The 29 economies are Australia, Austria, Belgium, Brazil, Canada, Chile, China, Colombia, Denmark, Finland, France, Germany, Hong Kong SAR, India, Italy, Japan, Korea, Malaysia, Mexico, The Netherlands, Norway, Russia, South Africa, Spain, Sweden, Switzerland, Turkey, the United Kingdom, and the United States. The sample period is from 1996:Q1 to 2020:Q3. The analysis does not cover low-income countries, and it is not entirely obvious that its implications would apply to most low-income countries, where financial development is relatively low, and episodes of rapid credit growth may reflect financial deepening rather than disruptive credit expansion. For example, Eberhardt and Presbitero (2018) show that commodity price shocks, rather than surges in credit or capital flows, tend to predict banking crises in low-income countries. However, as financial sectors in these economies continue to develop, the potential for loose financial conditions and nonfinancial sector leverage to have financial stability implications will increase as well.

[12]The GaR approach in this chapter focuses on the lower tail (10th percentile) of the distribution of future economic growth. For a description of the GaR framework, see Adrian and others (forthcoming) and Prasad and others (2019).

[13]Recent relevant studies include Mian, Sufi, and Verner (2017), which show that shocks to household leverage provide a short-term boost to output followed by a longer-term negative effect, but shocks to nonfinancial corporate leverage do not produce a short-term boost because the corporate debt overhang limits firm investment and future growth. In a similar vein, Jordà and others (2020) find a depressive effect of nonfinancial corporate leverage on future growth in economies with inefficient firm resolution processes, which facilitate the survival of "zombie" firms.

Figure 2.3. Leverage as an Amplifier of Shocks



Source: IMF staff, based on Adrian and others 2019.
Note: "Nonlinearities" indicates that the impact of financial conditions on macro-financial stability may be amplified in the presence of elevated financial vulnerabilities, such as a high level of leverage.

or through the effects of policies on factors such as income, unemployment, inflation, and debt service costs.[14] Macroprudential policies in particular can help to lean against the wind—that is, tighten to lessen risks to future financial stability. These policies can accomplish this objective by taming leverage buildups or by strengthening borrower and lender resilience.

Leverage buildups can represent a financial vulnerability, as high levels of indebtedness cause households and firms to become more susceptible to adverse shocks. When these shocks arise and financial conditions tighten, financial stability risks may arise from an abrupt correction of asset prices and rapid deleveraging by firms and households. The combination of a repricing of risk and elevated leverage can generate pernicious nonlinearities, whereby tighter financial conditions interact with deleveraging, which in turn causes additional repricing of risk. The higher the level of indebtedness before the shock, the greater the likelihood of such deleveraging becoming highly disruptive. Thus, leverage can act as an amplifier of adverse shocks, as shown by Kiyotaki and Moore (1997); Bernanke, Gertler, and Gilchrist (1999); and Brunnermeier and Sannikov (2014). In addition to the level of leverage, the growth of leverage may matter as well—possibly magnifying the effect of a shock if, for example, new lending is extended to riskier borrowers.[15]

Financial Conditions and Nonfinancial Sector Leverage

Empirical analysis shows that, controlling for other drivers, looser financial conditions are indeed associated with an increase in nonfinancial sector leverage in the near and medium term.[16] Across all economies

[14]While monetary policy is generally considered to be the main policy-related driver of financial conditions, thereby affecting nonfinancial sector leverage, fiscal policy can also influence leverage through several channels. Fiscal measures such as grants to households or subsidies to nonfinancial firms, by reducing their financing needs, can help dampen leverage buildups. At the same time, measures such as loan guarantee programs for nonfinancial firms, favorable tax treatment of interest expenses, and accelerated depreciation for tax purposes could all incentivize nonfinancial sector borrowing. More broadly, public spending can "crowd out" private borrowing by raising interest rates (see, for example, Furceri and Sousa 2011), though a "crowding-in" effect is also possible if public spending stimulates aggregate demand, particularly during recessions (Auerbach and Gorodnichenko 2012).

[15]For instance, Brandao-Marques and others (2019) find that credit expansion under loose financial conditions is more likely to involve increased riskiness of credit allocation, which is associated with greater downside risks to future growth. While the debt-to-GDP ratio has limitations, in that it may not fully reflect the stability consequences of debt, it is the preferred measure here due to greater data availability. Other dimensions of debt—such as its currency composition and maturity, as well as the borrowers' debt servicing capacity—may also be relevant (Drehmann and Juselius 2014; Du and Schreger 2016). Available data suggest that despite loose financial conditions, debt servicing capacity has declined for many countries since the global financial crisis, while the share of foreign currency debt in total nonfinancial corporate debt has increased for many emerging markets. The macro-financial stability implications of these dimensions, as well as that of debt net of cash holdings and other highly liquid assets, are explored in Barajas and others (forthcoming).

[16]The results presented in this section are obtained from local projection regressions of changes in leverage (debt-to-GDP ratio) at various horizons on the FCI, control variables, and time fixed effects. See Online Annex 2.2 for further details. These estimates may not

in the sample, an easing in financial conditions by one unit is followed by an increase in nonfinancial corporate debt by 4 percentage points of GDP over three years (Figure 2.4, panel 1).[17] A loosening of financial conditions also boosts household leverage, although the association is smaller than for nonfinancial firms, with a one-unit loosening of financial conditions implying an increase in household leverage by 1½ percentage points of GDP over a three-year horizon (Figure 2.4, panel 2).[18]

One important question is whether an easing of financial conditions has different implications for leverage buildup depending on the pace of debt accumulation or the level of leverage. The analysis shows that the increase in leverage in response to financial conditions is indeed nonlinear. That is, an easing of financial conditions during a credit boom—defined as sharp growth in the credit-to-GDP ratio in the context of already easy financial conditions—is followed by a larger increase in leverage than in periods without a boom (Figure 2.4, panels 3 and 4).[19] In addition, there is evidence of a stronger association with easing financial conditions when the initial level of leverage is high (that is, in the top three deciles of the debt-to-GDP distribution), particularly for household leverage.

Overall, these results suggest that the loosening of financial conditions is associated with faster leverage buildup, and that this association becomes stronger in times of high credit growth and already loose financial conditions.[20] These findings have important implications in the current environment, when credit growth has been elevated and financial conditions are anticipated to remain loose for some time in several economies (as noted in Chapter 1). These implications are explored next.

Macro-Financial Stability Implications of Leverage

This section assesses implications of the easing financial conditions and associated buildup of leverage for financial stability, and thus future economic activity. The analysis looks at the distribution of future economic growth and pays particular attention to the left tail—the 10th percentile—because it represents the most adverse outcomes (that is, downside risk).[21] A one-unit loosening of financial

necessarily imply causation because prospects of future changes in leverage could affect current financial conditions. However, several additional model specifications were estimated to mitigate these endogeneity concerns, with broadly similar results. These specifications included (1) purging macroeconomic factors from the FCI; (2) using a global FCI or the Chicago Board Options Exchange Volatility Index (VIX) (both of which are unlikely to be driven by domestic leverage for most countries in the sample); (3) undertaking a panel vector autoregression (PVAR), which is a system estimation of leverage, financial conditions, and output; and (4) removing cyclical components over the duration of the business cycle (6 to 32 quarters) from real GDP (in log), leverage, and the FCI. See Online Annex 2.2 and Online Annex Box 2.2 for further details.

[17]A one-unit decline in the FCI is comparable to the average loosening in financial conditions observed across the economies in the sample between the end of 2020:Q1 and the end of 2020:Q4. The effects reported here are broadly similar across advanced and emerging market economies, though in the latter case, nonfinancial corporate leverage appears to react more strongly to financial conditions. Changes in nonfinancial sector debt-to-GDP ratios may not be driven entirely by changes in debt but could also be affected by fluctuations in GDP. Using growth in inflation-adjusted debt as an alternative variable yields qualitatively similar results.

[18]When including measures of global financial conditions—the VIX or a global FCI—along with country-specific financial conditions in the regressions, the coefficients on these measures are not significantly different from zero, thus suggesting the dominant role of domestic financial conditions. This result holds for the full sample, as well as for the samples for both advanced and emerging market economies separately. Furthermore, the main results are robust to controlling for fiscal variables, such as the government-balance-to-GDP ratio, to take account of the possible impact of fiscal measures on nonfinancial sector leverage, as discussed earlier in this chapter. See Online Annex 2.2 for a discussion of this empirical exercise.

[19]"Credit boom" is defined as a binary variable that takes a value of one if the country-specific FCI is in the bottom half of its distribution (a lower FCI represents looser financial conditions) and the eight-quarter change in the nonfinancial private sector credit-to-GDP ratio is in the top three deciles of its distribution. The choice of the specific thresholds draws on the literature (see, for example, Adrian and others, forthcoming) but also reflects data specificities such as including a sufficient number of credit boom cases in the estimations for meaningful analysis. Notably, with this definition, about 25 percent of the economies in the sample are in the credit boom regime in 2020:Q3. These results are robust to alternative definitions of credit booms (such as using the bottom three deciles for the FCI and the upper three deciles for the change in leverage).

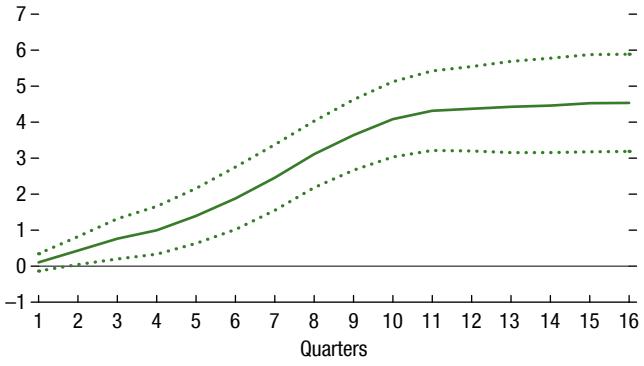
[20]The greater sensitivity of leverage buildups to financial conditions when debt is already increasing rapidly is in line with the standard financial accelerator mechanism, according to which financial frictions can amplify the effects of shocks through their effect on net worth (Bernanke, Gertler, and Gilchrist 1999). Moreover, this stronger reaction is also suggestive of a risk-taking channel through which the effects of shocks on macro-financial outcomes are amplified in times of high credit growth.

[21]An increase (decrease) in the 10th percentile of future growth of output corresponds to a reduction (increase) in downside risk. The results presented in this section are derived from a quantile local projection model with real GDP growth (year over year) at various future horizons as the dependent variable and with the FCI, changes in household and nonfinancial corporate leverage (over eight quarters), and other controls as explanatory variables. As with the regressions for leverage growth in the previous section, the results are robust to alternative specifications aimed at addressing potential endogeneity concerns and to the inclusion of fiscal variables. See Online Annex 2.3 for further details.

Figure 2.4. Association between Easing Financial Conditions and Nonfinancial Sector Leverage

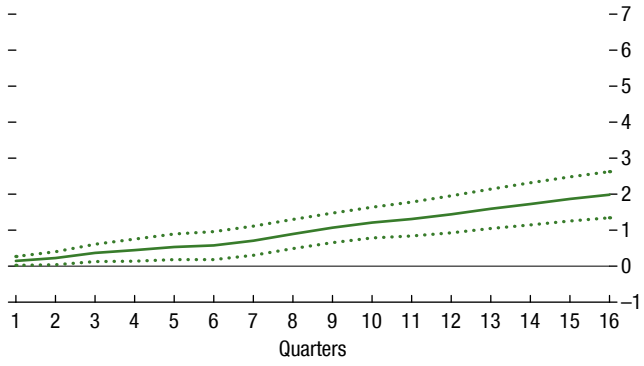
Looser financial conditions are associated with a larger increase in corporate leverage ...

1. Impact of the Loosening of Financial Conditions on the Change in Nonfinancial Corporate Leverage, All Economies (Percentage points of GDP)



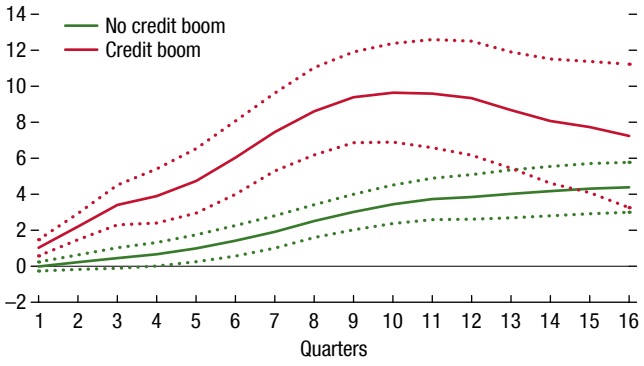
... as well as household leverage.

2. Impact of the Loosening of Financial Conditions on the Change in Household Leverage, All Economies (Percentage points of GDP)



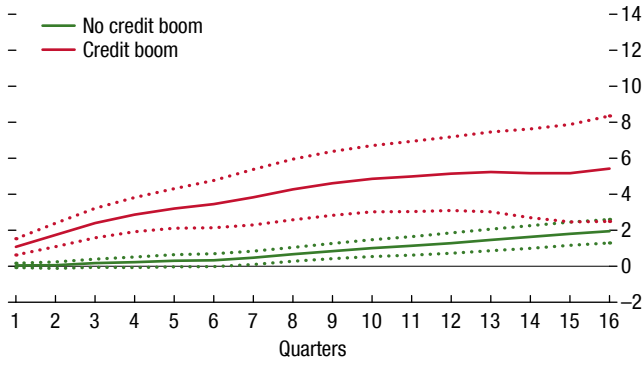
This relationship intensifies during credit booms both for firms ...

3. Impact of Financial Conditions on the Change in Nonfinancial Corporate Leverage in Credit Booms, All Economies (Percentage points of GDP)



... and households.

4. Impact of Financial Conditions on the Change in Household Leverage in Credit Booms, All Economies (Percentage points of GDP)



Sources: Institute of International Finance; and IMF staff calculations.
Note: The shock is scaled as a one-unit decrease in the Financial Conditions Index (FCI) to reflect the effect of loosening financial conditions. The dependent variable is the change in nonfinancial corporate or household debt-to-GDP ratios over horizons of 1–16 quarters. The control variables in all regressions are lagged one-quarter changes in the sector-specific debt-to-GDP ratios, lagged GDP growth, the lagged short-term interest rate, lagged inflation, and a global financial crisis dummy. Panels 1 and 2 show linear responses. Panels 3 and 4 show regime-dependent responses in which regimes are based on a credit boom dummy, which takes a value of one when the country-specific FCI is in the bottom half of its distribution (a lower FCI represents looser financial conditions) and the eight-quarter change in the nonfinancial private sector credit-to-GDP ratio is in the top three deciles of its distribution. The dashed lines denote 90 percent confidence intervals. See Online Annex 2.2 for additional details.

conditions is associated with an increase in the 10th percentile of real GDP growth in the near term—amounting to a reduction in downside risk—by 1½ percentage points (Figure 2.5, panel 1).[22] After the seventh quarter, however, the boost-to-output effect vanishes and the downside risk increases by about 1 percentage point.[23]

Not only do easy financial conditions imply an intertemporal trade-off in terms of future growth, but the downside risks are also amplified during

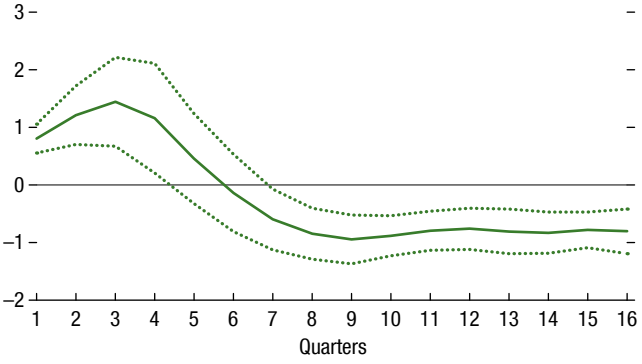
[22]While the analysis here focuses on the 10th percentile of the distribution of future output growth, the results are similar for median future output growth, suggesting that on average loose financial conditions boost short-term output growth, but the association reverses in the medium term.

[23]Comparing across advanced and emerging market economies, the latter in general appear to experience faster and sharper economic downturns in the medium term. This is consistent with the estimated greater short-term response of nonfinancial sector leverage in emerging markets to loosening financial conditions, thus making these economies more prone to generating financial imbalances that magnify future downside risks.

Figure 2.5. Association between Easing Financial Conditions and Downside Risks to Growth

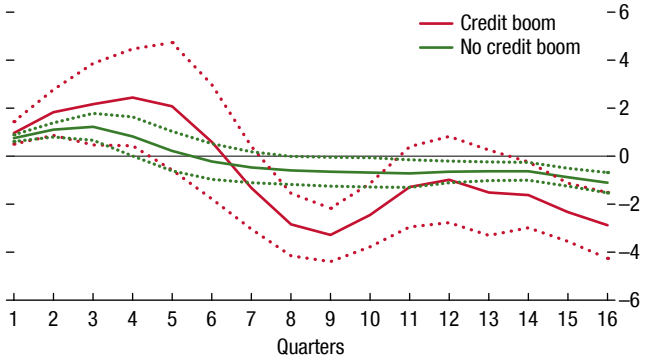
A loosening of financial conditions is followed by a boost to near-term output but an increase in medium-term downside risk.

1. Effect of Easing Financial Conditions on GDP Growth at the 10th Percentile
(Percentage points)



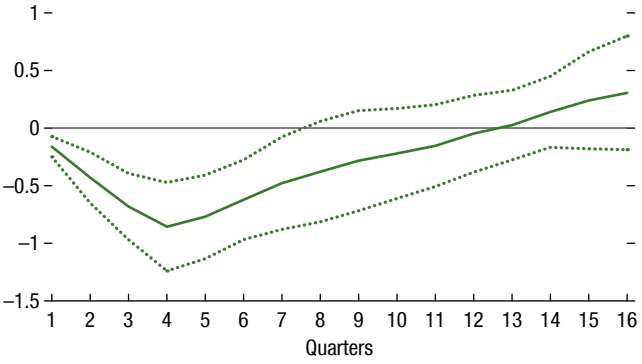
This intertemporal trade-off is amplified during credit booms.

2. Effect of Easing Financial Conditions on GDP Growth at the 10th Percentile, Two Regimes
(Percentage points)



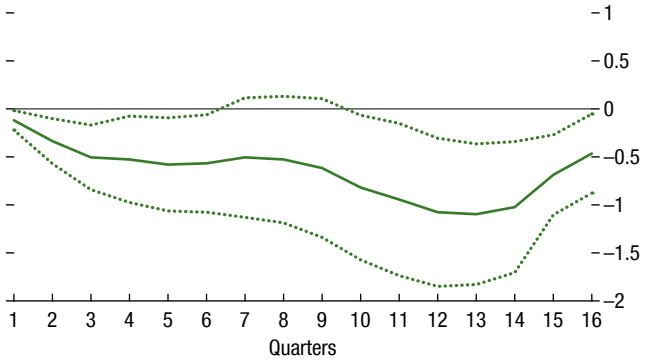
Downside risk increases following a buildup of nonfinancial corporate leverage ...

3. Effect of an Increase in Nonfinancial Corporate Leverage on GDP Growth at the 10th Percentile
(Percentage points)



... and following a buildup in household leverage as well.

4. Effect of an Increase in Household Leverage on GDP Growth at the 10th Percentile
(Percentage points)



Sources: Institute of International Finance; and IMF staff calculations.
Note: The shock is defined as a one-unit loosening in the Financial Conditions Index (FCI). The dependent variable is the year-over-year growth in real GDP over horizons of 1–16 quarters ahead. The control variables in all regressions are the year-over-year GDP growth rate, inflation rate, country-fixed effects, and a time trend. All of the impulse response functions are estimated with a quantile local projections model at the 10th percentile of the growth distributions. In panel 2, the regime variable (credit boom) is defined as episodes when the subsequent eight-quarter change in the nonfinancial sector debt-to-GDP ratio is in the within-country top-three deciles, and financial conditions are below the within-country median. In panels 3 and 4, the shock is defined as a 10 percentage point increase in nonfinancial corporate leverage and household leverage. Dashed lines indicate 90 percent confidence intervals.

credit booms.[24] During these episodes, a one-unit loosening in financial conditions is associated with a reduction in near-term downside risk by 2.5 percentage points, but an increase in downside risk by 3.3 percentage points after two years (Figure 2.5, panel 2). As mentioned, this result may, at least partly, reflect the fact that the riskiness of the borrower pool tends to rise when easy financial conditions are accompanied by rapid credit expansion, which magnifies downside risks to future growth.[25]

[24]This finding is consistent with the findings of Adrian and others (forthcoming).

[25]Barajas and others (forthcoming) further differentiate between credit booms that occur when the economy is booming (proxied by the positive output gap) versus those that occur when the economy is underperforming (proxied by the negative output gap). They find

The analysis also shows that increases in nonfinancial corporate or household leverage are directly associated with downside risks to output, above and beyond the effect of loosening financial conditions (Figure 2.5, panels 3 and 4). A 10 percentage point acceleration in nonfinancial corporate leverage buildup, for example, is associated with an increase in downside risks of about 1 percentage point in the near term. Acceleration in household leverage has a similar association with downside risk, but one that is statistically significant either in the near term or after 10 quarters out.[26]

Overall, the results show that financial stability risks—reflected in medium-term downside risks to economic activity—tend to be amplified by loose financial conditions and high and rapidly growing leverage of both nonfinancial firms and households—circumstances pertinent at this time for many economies. Policymakers, therefore, need to stay attuned to the emerging financial stability risks as the post-pandemic recovery takes hold.

Macroprudential Policy and the Intertemporal Trade-off between a Short-Term Boost and Medium-Term Risks

In the context of the post–COVID-19 recovery, policymakers will soon face two crucial objectives: continuing to limit scarring resulting from the pandemic and guarding against a flare-up in financial stability risks down the road. As discussed in Chapter 1, monetary policy has been and will continue to be essential to providing liquidity and ensuring the continuity of credit availability, thereby working in tandem with fiscal policy to support economic activity. Macroprudential policy will play the key role in pursuing the second objective: safeguarding financial stability in the future.[27]

To address the intertemporal trade-off described earlier, macroprudential tools can be used to lean against the wind, as well as to strengthen resilience, by targeting borrowers or lenders.[28] For example, Cerutti, Claessens, and Laeven (2017) provide evidence that the tightening of macroprudential policies is associated with lower future growth in domestic credit, particularly household credit. Alam and others (2019) find that two types of measures targeting households—loan-to-value (LTV) and debt-service-to-income (DSTI) ceilings—slow down their debt accumulation. Peydró and others (2020) find that limits on the proportion of high loan-to-income ratios in mortgage lending can lead to less severe house price declines and mortgage defaults during an episode of price correction.

To assess the effectiveness of macroprudential measures in containing the buildup of sector-specific leverage and mitigating downside risks to growth, a range of measures are considered here, including various borrower-based measures as well as measures aimed at bank lenders, such as capital adequacy measures, liquidity measures, and foreign currency exposure.[29] Looking across types of financial institutions, it must

that the trade-off holds in both cases. In the latter case, however, the boost to output lasts longer, whereas the increased downside risk emerges when the credit boom is accompanied by a positive output gap. Furthermore, recognizing that the ratio of the stock of debt to GDP is not the only relevant dimension of leverage, the analysis finds that episodes with particularly high ratios of debt service to income also exhibit an accentuated downside risk in the medium term.

[26]Looking across economies, it is apparent that the effect of nonfinancial corporate leverage on downside risks to growth stems mainly from emerging markets, with downside risks increasing significantly by about 2 percentage points in the medium term following a 10 percentage point buildup in leverage. As suggested by Jordà and others (2020), this result may reflect the impact of relatively weaker debt resolution frameworks for firms in emerging markets relative to advanced economies. By contrast, the adverse impact of household leverage on longer-term growth is more robust for advanced economies. These findings support Mian, Sufi, and Verner (2017), who show the negative effect of increasing household and nonfinancial corporate leverage on median future growth. This chapter's results also show that these effects are more pronounced on the left tail of the GDP growth distribution.

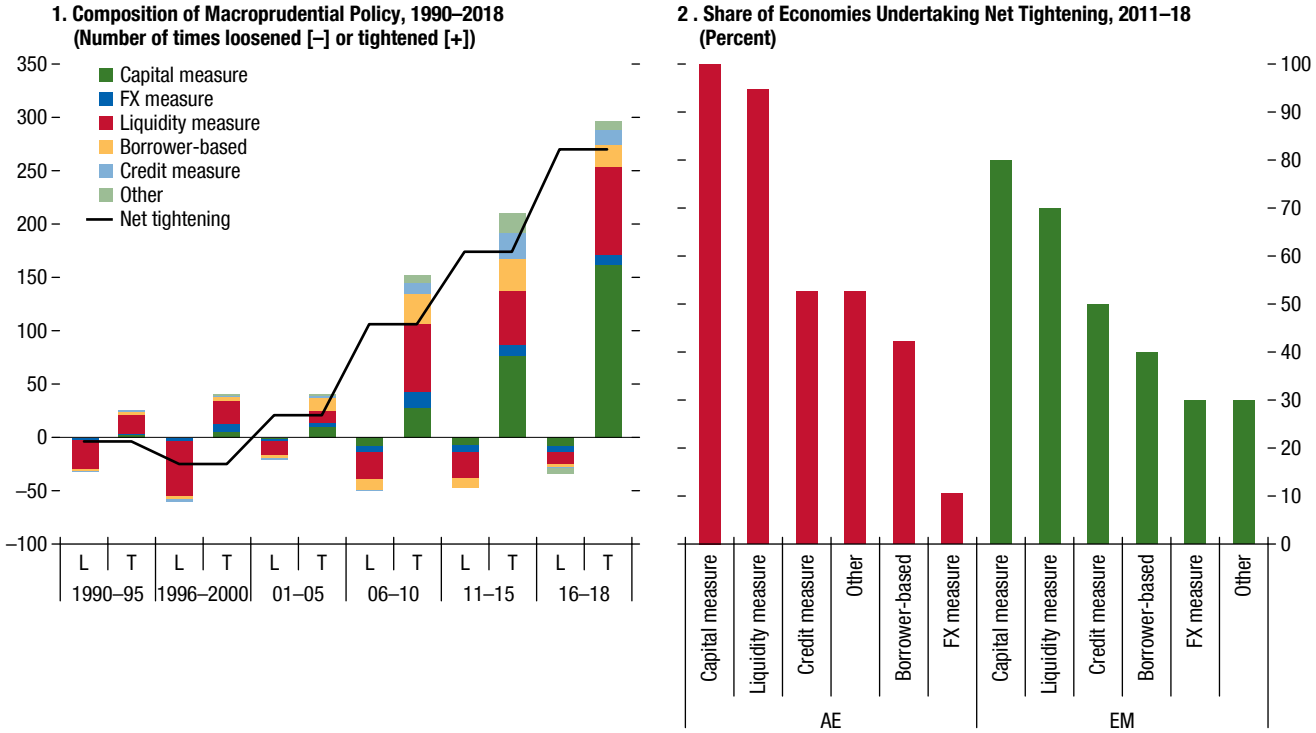
[27]Recent analysis of the policy mix during the COVID-19 crisis notes that there are important complementarities between monetary and fiscal support and some degree of macroprudential loosening to confront the adverse shock. However, implementation should also bear in mind trade-offs that arise, particularly as the recovery proceeds and it becomes necessary to begin to build sufficient buffers to protect against future shocks (Nier and Olafsson 2020).

[28]On the borrower side, measures include loan-to-value or debt-service-to-income limits that aim to reduce borrower indebtedness. On the lender side, measures encompass capital or liquidity requirements, limits to credit growth, and foreign currency exposure limits. See Online Annex Box 2.3 for a detailed discussion of the channels through which different macroprudential tools may affect macro-financial stability.

[29]Information on macroprudential measures is taken from the IMF's Integrated Macroprudential Policy database over the 1990–2018 period (for details, see Alam and others 2019). These measures are grouped into six broad categories: (1) borrower-based measures (LTV and DSTI limits); (2) bank capital measures (capital requirements, leverage limits, loan-loss provision requirements, countercyclical capital buffers, capital conservation buffer requirements, measures targeting systemically important banks); (3) banks' foreign currency exposure measures (limits on foreign currency lending, limits on gross open foreign currency positions, reserve requirements on foreign currency assets); (4) bank liquidity measures (reserve requirements, liquidity requirements, limits to the loan-deposit ratio); (5) credit measures (limits on credit growth, loan restrictions); and (6) other measures (stress testing, restrictions on profit distribution, limits on exposures between financial institutions).

Figure 2.6. Macroprudential Policy Actions, by Category

Macroprudential policy tightening became more frequent following the global financial crisis and has focused primarily on tools related to the capital and liquidity regulations of banks.



Source: IMF, Integrated Macroprudential Policy database.
Note: The sample includes 19 advanced economies (AE) and 10 emerging markets (EM). Panel 1 shows the number of times during which a given category of macroprudential measures was either tightened (positive) or loosened (negative) during each five-year subperiod during 1990–2018. The solid line indicates net tightening; that is, the difference between the number of measures tightened and loosened. Panel 2 shows the share of countries undertaking net tightening over the 2011–18 period for each category and by country group. AE = advanced economy; EM = emerging market economy; FX = foreign exchange; L = loosened; T = tightened.

be noted that the bulk of macroprudential policy tools apply to banks, with almost no tools directed specifically at nonbank financial institutions (NBFIs), which have become increasingly important actors in financial markets and pose additional challenges for financial stability.[30]

A snapshot of these measures shows that they were tightened more frequently after the global financial crisis and leading up to the COVID-19 crisis (Figure 2.6, panel 1). Measures related to bank capital and liquidity were tightened most often owing to banking sector regulatory reforms across economies in the aftermath of the global financial crisis. Looking across country groups, it is also apparent that measures related to the foreign currency exposure of banks are more prevalent in emerging markets than in advanced economies (Figure 2.6, panel 2).

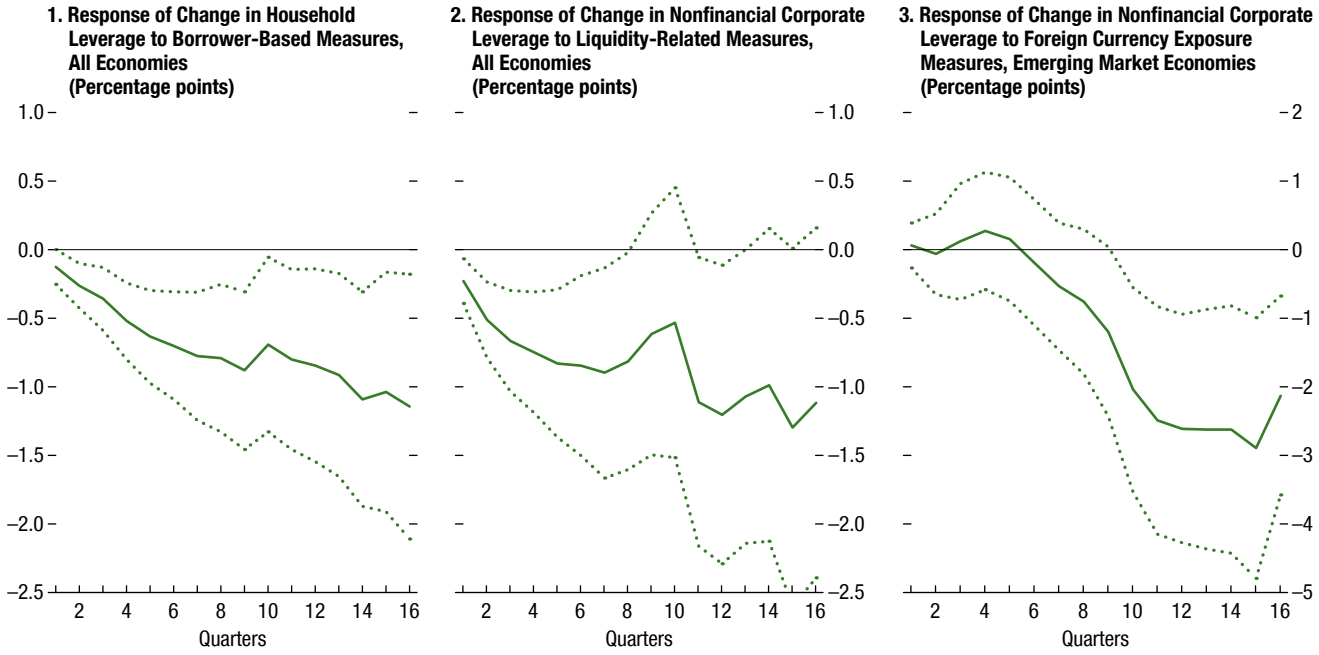
Empirical findings confirm that a tightening of macroprudential measures has a measurable impact on leverage buildups. Taking the net number of tightening actions during a quarter and within a category—that is, the difference between the total number of tightening actions and loosening actions, without distinguishing across the specific measures or considering their intensity[31]—the analysis shows that tightening a borrower-based measure (the household LTV or DSTI, for instance) is followed by a

[30]See FSB (2020) and Chapter 3 of the April 2015 GFSR on the growth of the nonbank financial intermediation and the asset management sector, respectively, since the global financial crisis. One plausible reason for the increase in nonfinancial corporate sector leverage over the past decade despite a tightening of macroprudential measures, as discussed below, could be the shift from bank-based to nonbank finance.

[31]The analysis focuses on the number of tightening episodes, rather than the intensity of applied measures, as the latter is difficult to quantify consistently across different measures and economies.

Figure 2.7. Association between Macroprudential Tightening and Change in Leverage

Tightening of macroprudential policies is associated with slower subsequent buildups of leverage.



Sources: Institute of International Finance; and IMF staff calculations.
Note: The panels show the association between a one-unit net tightening in the respective category of macroprudential measures and the subsequent change in the household or nonfinancial corporate-debt-to-GDP ratios over horizons of 1–16 quarters. The control variables in all regressions include a one-quarter change in the sector-specific debt-to-GDP ratio, GDP growth, Financial Conditions Index, inflation, short-term interest rate (all one-period lagged), and a dummy variable for the global financial crisis. Dashed lines indicate 90 percent confidence intervals. See Online Annex 2.4 for additional details.

reduction in the household debt-to-GDP ratio by up to 1 percentage point over a two-year horizon (Figure 2.7, panel 1).[32] Similarly, a net tightening of banks' liquidity requirements is also associated with a reduction in corporate leverage by up to 1 percentage point of GDP over a two-year horizon (Figure 2.7, panel 2).[33] Notably, for emerging markets, where both domestic and external borrowing by firms is often denominated in foreign currency, a tightening of foreign-exchange-related measures for banks is significantly associated with lower future nonfinancial corporate leverage. Specifically, a net tightening of such measures is followed by a decline in nonfinancial corporate leverage of about 2½ percentage points over three years (Figure 2.7, panel 3).

Considering all macroprudential measures together to assess their collective impact, a net tightening also appears to be effective in containing downside risks to future growth. That is, a net tightening across all categories of macroprudential policies is associated with a significantly lower downside risk to future growth by about half a percentage point (see Figure 2.8, panel 1, where, again, a higher value is to be interpreted as lower downside risk).[34]

[32]For a given category of measures, net tightening is computed as the difference between the total number of tightening and loosening of measures in a country in a given quarter, and assigned a value of 1 if the difference is positive, 0 if there is no difference, and –1 if the difference is negative.

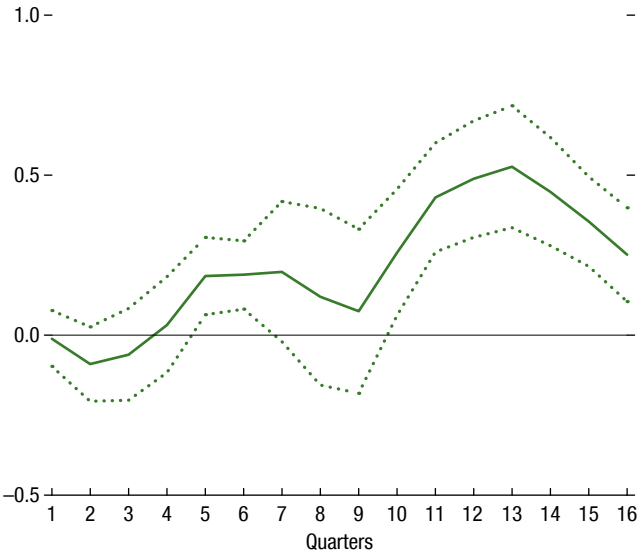
[33]While all six categories of macroprudential policies were tested, Figure 2.7 reports those categories that yielded the most robust estimated responses of leverage growth. In some specifications, capital measures were also associated with slowing leverage buildups for nonfinancial firms, but not for households. Furthermore, conducting these tests using a measure of macroprudential shocks based on estimates from an ordered probit model, as in Brandao-Marques and others (2020), leads to qualitatively similar results. Overall, the findings reported are similar to those reported in earlier literature (Araújo and others 2020). The results regarding measures on foreign currency exposure are in line with Ostry and others (2012) and Cerutti, Claessens, and Laeven (2017), who find that foreign-exchange-related macroprudential regulations (for example, limits on foreign currency lending) reduce nonfinancial sector credit growth in emerging markets.

[34]Net tightening is defined in a way similar to individual categories, with the difference between the total number of tightening and loosening of measures in a country in a given quarter considered as 1 if the difference is positive, 0 if there is no difference, and –1 if the difference is negative.

Figure 2.8. Macroprudential Measures and Downside Risks to Future Growth

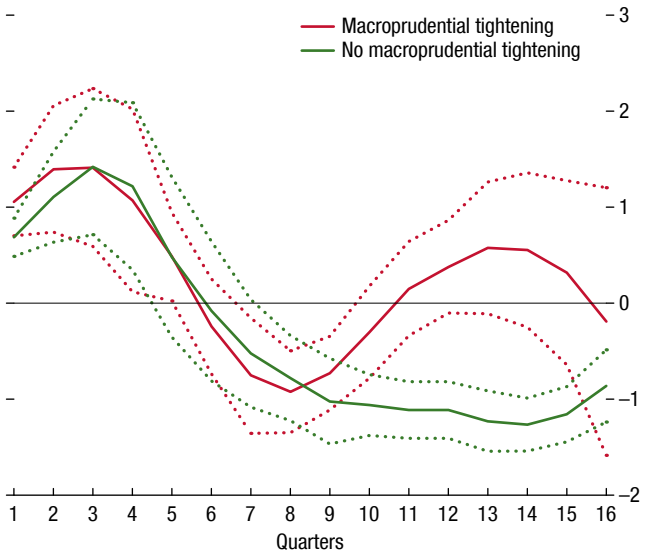
Macroprudential tightening is associated with lower downside risk to future economic activity ...

1. Impact of Macroprudential Tightening on the 10th Percentile of GDP Growth
(Percentage points)



... and can mitigate the intertemporal policy trade-off that arises from loose financial conditions.

2. Impact of Loosening Financial Conditions on 10th Percentile of GDP Growth (with Macroprudential Tightening vs. without Macroprudential Tightening)
(Percentage points)



Sources: Institute of International Finance; and IMF staff calculations.
Note: Panel 1 shows the effects of a net tightening event across the 17 types of macroprudential measures found in the IMF Integrated Macroprudential Policy database. Panel 2 shows the effect of a one-unit loosening in the Financial Conditions Index. The "macroprudential tightening" regime contains all quarters with net macroprudential tightening in the past year. The dependent variable is the year-over-year growth in real GDP over horizons of 1–16 quarters ahead. The control variables in all regressions are the change in nonfinancial corporate and household leverage over the past eight quarters, year-over-year GDP growth, and the inflation rate. All the responses are estimated with panel fixed-effects quantile local projections at the 10th percentile of the growth distributions. Dashed lines indicate 90 percent confidence intervals.

These findings imply that macroprudential tightening can help offset the increase in medium-term downside risks associated with easing financial conditions. When a loosening of financial conditions coincides with macroprudential tightening, the intertemporal trade-off is almost entirely mitigated (Figure 2.8, panel 2), consistent with the findings of Brandao-Marques and others (2020).

In sum, the analysis shows that macroprudential policies play two important roles regarding financial stability risks. First, the tightening of targeted measures helps to lean against the wind, tempering or even reversing leverage buildups, particularly during credit booms. Second, overall tightening contributes to mitigating the intertemporal trade-off, either reducing downside risk directly or counteracting the risk inherent in loose financial conditions when leverage has been growing rapidly.[35]

[35]From a growth-at-risk perspective, the role of macroprudential policy in mitigating downside risks to future growth is consistent with its objective of limiting systemic risk.

Conclusions and Policy Recommendations

In the decade or so following the global financial crisis, leverage increased steadily in the nonfinancial corporate and household sectors across many economies in the world, largely buoyed by relaxed financial conditions. Global nonfinancial sector leverage reached a historically high level by the end of 2019, just before the onset of the COVID-19 pandemic.

As a result of the pandemic, central banks around the world have pursued highly expansionary monetary policy to ease financial conditions in order to maintain the flow of credit to households and firms and thus support aggregate demand. Liquidity needs by firms and households have been met by additional debt, which has for the time being cushioned the devastating effects of the pandemic crisis.

However, as shown by the analysis in this chapter, rising leverage could increase risks to financial stability

and pose a challenge to policymakers once the post–COVID-19 recovery takes root. Specifically, authorities will likely face a policy trade-off, given that accommodative policy boosts short-term activity but at the cost of a potentially greater downside risk to growth in the medium term as a result of increased nonfinancial sector leverage.

This trade-off can be mitigated by the use of macroprudential tools. Tightening measures targeted at the eligibility of borrowers or at liquidity-related limits on banks are associated with slower buildups in leverage of either households or nonfinancial firms. Measures aimed at curbing foreign currency exposures of banks are effective at reining in buildups of nonfinancial corporate leverage in emerging markets. Tightening macroprudential measures can also improve the intertemporal trade-off, reducing downside risk in the medium term and mitigating the effects of loosening financial conditions.

The analysis in this chapter provides a useful framework for policymakers to assess the policy choices they face in the post–COVID-19 future. As discussed in Chapter 1 and in the April 2021 *Fiscal Monitor*, maintaining adequate policy support to firms and households in the near term is crucial for economies where recovery has not yet taken hold, or remains fragile. Nonetheless, policymakers need to remain vigilant to the risks of high leverage and be well aware of the need to reduce those risks, including through well-designed policies to deal with highly indebted firms, greater supervisory attention to risk taking, and the swift implementation of macroprudential tightening as soon as macroeconomic conditions permit. Furthermore, an increased reliance on macroprudential policy to mitigate financial stability risks underscores the need to limit potential leakages, which weaken the effectiveness of these tools as finance increasingly migrates away from banks to NBFIs.[36] Thus, efforts should be made urgently to further develop the toolkit for nonbank financial intermediaries. Given the challenges to designing and operationalizing macroprudential tools within existing frameworks, policymakers should also consider the need to build buffers elsewhere to protect the financial system.

Adequate timing for deployment of macroprudential tools must be economy-specific, depending critically on the pace of recovery, postcrisis vulnerabilities, and the policy toolkit available to policymakers. Given the expected divergence in the pace of recovery across economies, but also within economies and sectors (see Chapter 1 and the April 2021 *World Economic Outlook)*, policy actions will need to be well calibrated and designed according to the specific circumstances facing economies.[37] Policymakers should also be mindful of the lags in implementation for the macroprudential measures to take full effect, and thus should take early action to tighten selected tools to address rising vulnerabilities in the nonfinancial sector.[38]

[36]Claessens and others (2021) provide cross-country evidence that macroprudential tightening increases NBFI activities and spills over across borders. A recent example of the application of macroprudential tools to NBFIs is Korea, which extended limits on household lending at high debt service ratios to some NBFIs. In addition, policy measures to contain foreign exchange risks also apply to some NBFIs in Korea (IMF 2020).

[37]In a few economies where recovery has gained momentum (such as China and New Zealand), macroprudential measures pertaining to the real estate sector have been tightened in recent months.

[38]Further consideration on how and when to tighten macroprudential tools can draw on principles developed to guide IMF bilateral advice to member countries (IMF 2014).

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CHAPTER 3

COMMERCIAL REAL ESTATE

FINANCIAL STABILITY RISKS DURING THE COVID-19 CRISIS AND BEYOND

Chapter 3 at a Glance

- The COVID-19 crisis has hit the commercial real estate sector hard and increased uncertainty about the outlook for some of its segments due to possible structural shifts in demand, warranting enhanced supervisory attention.
- While there is little evidence of large price misalignments at the onset of the pandemic, signs of overvaluation have now emerged in some economies as actual prices have not fallen as much as prices implied by fundamentals.
- Misalignments in commercial real estate prices, especially if they interact with other vulnerabilities, increase downside risks to future growth due to the possibility of sharp price corrections. Such corrections could threaten financial stability and hurt corporate investment, hampering the economic recovery.
- In the near term, policy support to maintain the flow of credit to the nonfinancial corporate sector and to stimulate aggregate demand will help facilitate the recovery in the commercial real estate sector.
- To the extent that large price misalignments persist, policymakers should swiftly deploy targeted macroprudential measures to contain vulnerabilities in the sector as warranted. Capital flow management measures could be considered under specific circumstances to limit potential risks from excessive cross-border inflows.

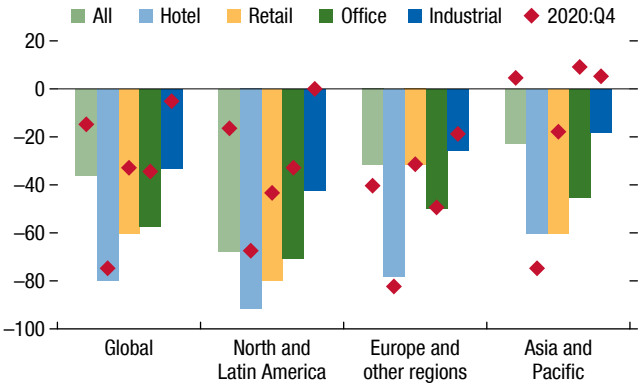
The coronavirus disease (COVID-19) crisis has hit the commercial real estate (CRE) sector hard. Global commercial property transactions and prices slumped in 2020 as containment measures implemented in response to the pandemic severely affected economic activity. Part of the adverse impact on the retail, office, and hotel segments could be permanent, as some activities may continue to take place virtually in the future and others may relocate outside of large cities. The large size of the commercial real estate sector and its heavy reliance on debt funding—with a significant role both for banks and for nonbank financial institutions, as well as for cross-border investors in some jurisdictions—suggests that these developments may have potentially significant implications for financial stability. Against this backdrop, this chapter attempts to identify and quantify financial stability risks arising from the commercial real estate market and discusses policy tools available to mitigate such risks. The chapter finds that price misalignments in this market have increased during the pandemic and that such misalignments could exacerbate downside risk to future GDP growth through potentially sharp price corrections. Adverse shocks to commercial real estate prices hurt the creditworthiness of borrowers in this market, damage the solvency of lenders, and reduce investment by the nonfinancial corporate sector. While the path of the recovery in the sector will depend inherently on the structural shifts induced by the pandemic, continued policy support remains warranted at the current juncture to keep financial conditions easy, maintain the flow of credit to the nonfinancial corporate sector, and stimulate aggregate demand to aid the recovery of the sector. However, easy financial conditions may contribute to an increase in vulnerabilities and persistent price misalignment. Targeted macroprudential policy tools (such as limits on the loan-to-value and debt-service-coverage ratios) should be swiftly deployed to address such vulnerabilities. Where large capital inflows to the sector pose financial stability risks, capital flow management measures could be under specific circumstances. Efforts should also focus on broadening the reach of macroprudential policy to cover nonbank financial institutions, which are important players in commercial real estate funding markets. Finally, stress testing exercises should be considered to inform decisions regarding the adequacy of capital buffers for exposures to commercial real estate.

The authors of this chapter are Andrea Deghi (team lead), Salih Fendoglu, Zhi Ken Gan, Oksana Khadarina, Junghwan Mok, and Tomohiro Tsuruga, under the guidance of Fabio Natalucci, Mahvash Qureshi, and Jérôme Vandenbussche.

Figure 3.1. Developments in Global Corporate Real Estate Markets during the COVID-19 Crisis

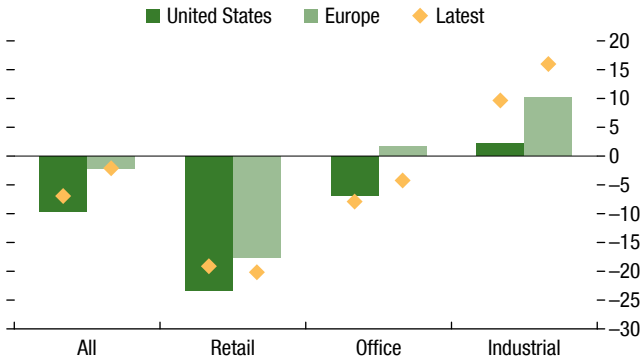
Transaction volumes decreased across market segments.

1. Change in Commercial Real Estate Transaction Volumes (Percent, 2020:Q2 and 2020:Q4, year over year)



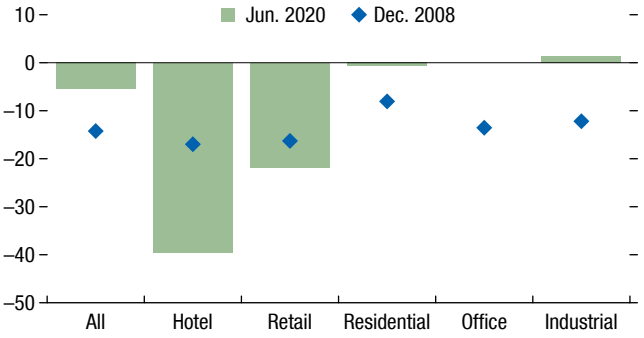
Prices in the retail and office segments were hit hard ...

2. Commercial Real Estate Price Growth Rate (Percent, 2020:Q2 and latest, year over year)



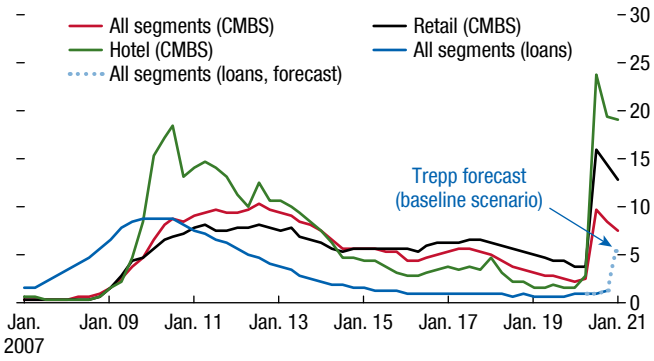
... while net operating income dropped in the hotel and retail segments.

3. Global Net Operating Income Growth Rate (Percent, six-month growth rate)



CMBS delinquency rates increased sharply during the crisis, with rates for the retail and hotel segments reaching all-time highs.

4. United States: Delinquency Rates for Commercial Real Estate Loans and Commercial Mortgage-Backed Securities (Percent)



Sources: Green Street Advisors; MSCI Real Estate; Oxford Economics; Real Capital Analytics; Trepp; and IMF staff calculations.
Note: In panel 2, the latest data available are for January 2021 in Europe and February 2021 in the United States. In panel 3, core commercial real estate segments for the overall market ("All") include hotel, industrial, office, residential, and retail. Residential refers to multifamily properties. Panel 4 shows the historical and forecast delinquency rates for the core commercial real estate segments. The forecasts correspond to delinquency rates projected by Trepp, a commercial real estate data collection firm, under the baseline scenario matching the price declines by property sector in the publicly traded real estate investment trust during the first three quarters of 2020. Default rates are projected over a five-year forecast horizon. CMBS = commercial mortgage-backed securities.

Introduction

The commercial real estate sector has been severely affected by the COVID-19 crisis.[1] Commercial property transaction volumes and prices plummeted globally in the second quarter of 2020 as containment measures in response to the pandemic eroded economic activity and reduced the demand for commercial property (Figure 3.1, panels 1 and 2). The sector has recovered somewhat since then, especially in Asia, but generally remains depressed.[2]

Among the major commercial real estate segments, retail, hotels, and offices have been the most affected,

[1]For data availability reasons, the chapter generally considers the commercial real estate sector to include property owned for the primary purpose of investment returns (which includes the multifamily segment), as distinct from owner-occupied and noninvestment leased real estate. The size of the latter can be significant in some economies (ESRB 2018).

[2]While indicators of overall market performance continue to point to stress in the sector as of early 2021, prices of publicly listed mortgage and equity real estate investment trusts showed signs of recovery, in line with prices of other listed securities—a reflection of the unprecedented policy support since March 2020.

while the industrial segment has fared relatively better. Compared with the circumstances surrounding the global financial crisis, weaknesses in the hotel and retail segments are more pronounced, reflecting the impact of mandatory restrictions and voluntary social distancing on contact-intensive retail, restaurants, and travel and tourism (Figure 3.1, panel 3).[3] The impact of the containment measures and social distancing on the sector is apparent in the more disaggregated city-level price data, which show a strong association between the stringency of lockdown measures (or a reduction in social mobility) and a decline in commercial real estate prices (Box 3.1).

Because lower revenues translate into reduced debt servicing capacity and expectations of higher delinquency rates on commercial real estate loans, strains have quickly emerged in credit markets. This is evident in a surge in delinquencies on commercial mortgage-backed securities—a type of fixed-income investment product backed by mortgages on commercial properties. While overall delinquency rates for the sector are comparable to those during the global financial crisis, delinquencies in the retail and hotel sectors reached an all-time high in the second quarter of 2020 (Figure 3.1, panel 4).

Beyond the near-term impact, the pandemic has also exacerbated preexisting structural trends in some segments of the market. This is particularly true for the retail segment, where the demand for traditional brick-and-mortar retail had been gradually eroding even before the pandemic as consumers shifted increasingly toward e-commerce. The COVID-19 shock may also lead to persistent adverse effects on the demand for offices and hotels, as businesses adopt more liberal work-from-home policies and substitute online meetings for large in-person gatherings. These trends suggest that the commercial real estate sector confronts challenges in the near term and faces a highly uncertain outlook—especially for some segments—in the longer term.

Against this backdrop, this chapter evaluates the potential risks to financial stability emanating from the commercial real estate sector in the current context by addressing the following questions:

- How relevant is the commercial real estate sector to financial stability, and through which channels?
- How vulnerable was the commercial real estate market before the COVID-19 crisis? How have such vulnerabilities, including misalignments (relative to fundamentals) in commercial real estate prices, evolved since the pandemic?
- How could possible post-pandemic structural changes affect future commercial real estate valuations?
- Do misalignments and sudden drops in commercial real estate prices affect financial stability?
- Is there a role for macroprudential and other policies to mitigate commercial real estate market vulnerabilities in the post-pandemic environment?

The chapter investigates these questions with quarterly data for a sample of 30 major advanced and emerging market economies over a 20-year period, from the first quarter of 2000 to the second quarter of 2020.[4,5] To the extent possible, the analysis distinguishes across the various commercial real estate segments and uses granular data (for example, at the city, bank, and firm levels) to enrich the findings.

Commercial Real Estate and Financial Stability

Conceptual Framework

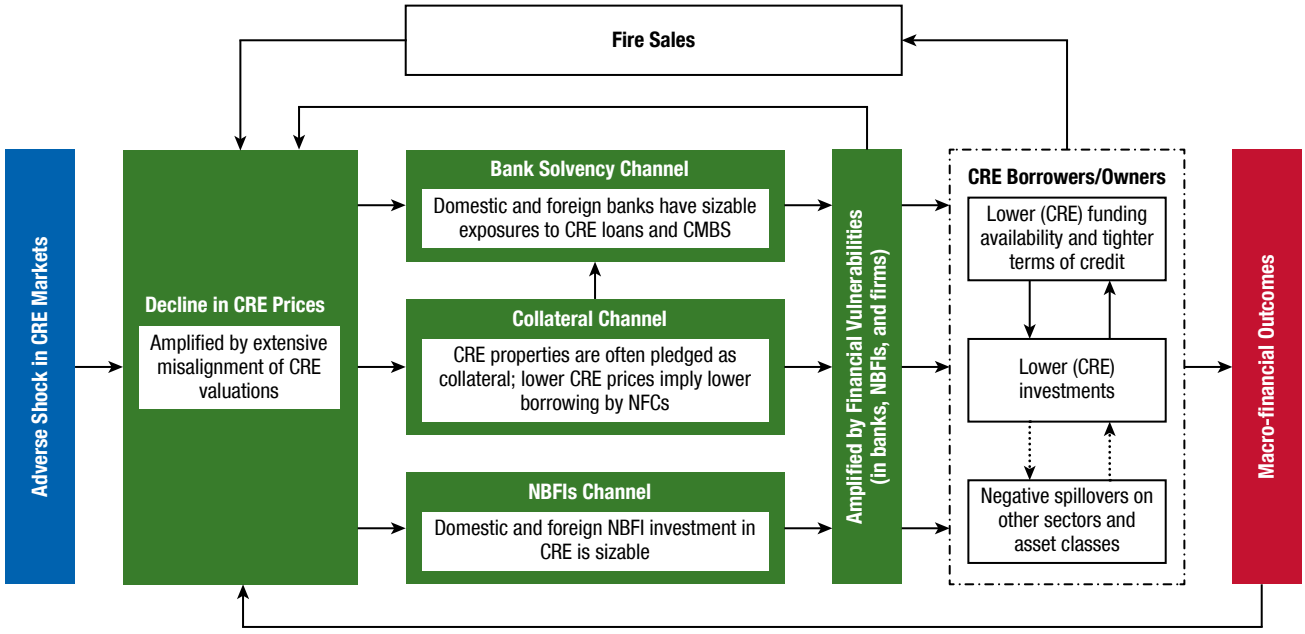
The commercial real estate sector is subject to sector-specific shocks, as well as to economy-wide shocks, with the COVID-19 crisis representing a combination of both. An adverse shock—whether sectoral (such as a decline in demand for specific commercial real estate segments), macroeconomic (such as a collapse in aggregate demand), or financial (such as an increase in risk aversion)—could exert downward pressure on this sector's prices. Such pressure is more intense in the presence of underlying vulnerabilities in the commercial real estate market (Figure 3.2). A first relevant vulnerability is the extent of overvaluation in

[3]Although net operating income in the retail and hotel segments has fallen more during the COVID-19 pandemic than during the global financial crisis, the price decline in these segments was, on average, larger during the global financial crisis.

[4]The core sample of economies is selected based on data availability and comprises 30 economies: Australia, Austria, Belgium, Canada, China, the Czech Republic, Denmark, France, Germany, Hong Kong SAR, Hungary, Indonesia, Ireland, Italy, Japan, Korea, Malaysia, The Netherlands, New Zealand, Norway, Poland, Portugal, Singapore, South Africa, Spain, Sweden, Switzerland, Thailand, the United Kingdom, and the United States. The exact sample composition varies across the analyses depending on data availability for other variables considered in the empirical framework (see Online Annex 3.1 for details).

[5]All online annexes are available at www.imf.org/en/Publications/GFSR.

Figure 3.2. Commercial Real Estate Markets and Financial Stability: Channels of Transmission



Source: IMF staff.
Note: CMBS = commercial mortgage-backed securities; CRE = commercial real estate; NBFIs = nonbank financial institutions; NFCs = nonfinancial corporations.

prices (that is, how high prices are relative to those implied by economic fundamentals) before the shock, with a higher overvaluation likely to imply a sharper fall in prices after the shock. The other sources of vulnerability stem from the financial (or balance sheet) strength of the borrowers and lenders in the commercial real estate market (such as the extent of their leverage or the maturity mismatch of their assets and liabilities), which can create a feedback loop between credit growth and asset prices.[6]

Conceptually, there are three key channels through which a decline in commercial real estate prices interacts with other financial vulnerabilities to affect financial stability. The first is a *bank solvency channel,* which sets in as banks are exposed to credit risk through their commercial real estate loans, as well as to credit and market risks through their commercial mortgage-backed security holdings. A downturn in the commercial real estate market worsens the credit quality of borrowers by affecting the strength of their income streams and balance sheets.[7] In the event of borrower default or a large drop in commercial mortgage-backed security prices, banks incur losses and their capital positions are weakened, which may in turn lead them to reduce the credit supply to the economy.

The *collateral channel* results from the use of commercial property as collateral by nonfinancial corporations to obtain credit from financial institutions. A decline in the value of this collateral during a commercial real estate market downturn is likely to limit borrowing by such corporations, curtail their investment, and dampen general economic activity. The collateral channel could also reinforce the bank solvency channel, because a drop in collateral values increases the loan-to-value ratios of existing commercial real estate loans, which in turn raises the value of banks' risk-weighted assets (because of an upward revision of commercial real estate loans' loss, given default parameters) and reduces their regulatory capital ratio.

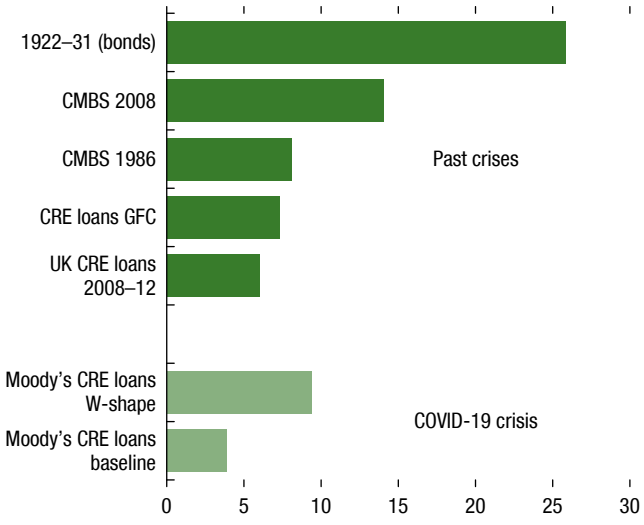
[6]For example, Dell'Ariccia and others (2016) and Biljanovska, Gornicka, and Vardoulakis (2019) show that elevated asset prices are detrimental to financial stability when accompanied by high levels of indebtedness.

[7]Real estate firms (including real estate investment trusts) are typically more leveraged than other types of firms due to the nature of their activity. In the core sample of economies considered in the chapter, the median debt-to-total-assets ratio is 35 percent for listed real estate firms, versus 20 percent for other firms as of the end of the fourth quarter of 2019.

Figure 3.3. Corporate Real Estate Losses in Past Crises

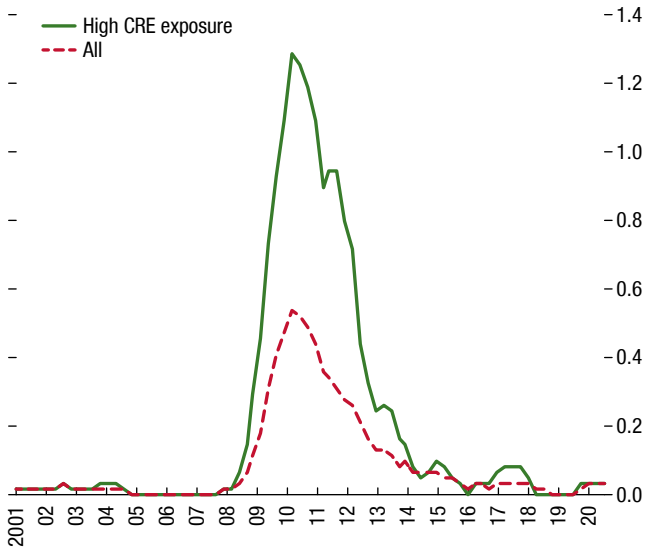
Commercial real estate debt losses have been substantial in past crises.

1. Commercial Property Loss Rate Estimates (Percent, cumulative loss rate, for the United States unless stated otherwise)



High commercial real estate exposures were positively correlated with bank failures during the global financial crisis.

2. United States: Commercial Bank Failure Rate by Quarter, 2001:Q1–2020:Q2 (Percent)



Sources: Federal Financial Institutions Examination Council (FFIEC) Call Reports; Federal Deposit Insurance Corporation (FDIC); Moody's; Oxford Economics; and IMF staff calculations.

Note: In panel 1, commercial real estate (CRE) loan-loss rate projections are sourced from Moody's. Their baseline scenario assumes that the economy strongly rebounds after the initial shock from the pandemic. The bar labeled "Moody's CRE loans W-shape" refers to a scenario in which a short economic recovery is followed by another severe downturn. Panel 2 plots the frequency of failures for commercial banks with high CRE exposure versus failures for all banks in the United States. Banks with high CRE exposure are defined according to the Federal Reserve guideline "Concentrations in Commercial Real Estate Lending, Sound Risk Management Practices" and meet the following criteria: CRE loans of the institution increased by at least 50 percent in the past three years, and outstanding CRE loans represent at least 300 percent of the institution's total risk-based capital. CMBS = commercial mortgage-backed securities; GFC = global financial crisis.

Third, commercial real estate debt and equity investments by *nonbank financial institutions* such as insurers, pension funds, and investment funds constitute another channel that affects financial stability. If commercial real estate prices decline, the value of assets held by these investors falls, and they are less willing or able to provide new financing (insurers, for example, are subject to regulatory solvency constraints). In addition, investment funds may face redemption pressure from end investors following a drop in performance, which may lead to fire sales of commercial real estate assets. Given the high illiquidity of commercial real estate and the large maturity mismatch of property investment funds, the impact on prices, in turn, could be significant.[8] This channel can also amplify the bank solvency channel, as some nonbank financial institutions (such as property investment funds) are leveraged and rely on debt financing from banks.

[8]For example, 70 percent of the total assets of real estate investment funds in the European Union were estimated to be illiquid in 2018 (ESRB 2018). See Chapter 3 of the October 2019 *Global Financial Stability Report* for a discussion of the rise in institutional investors' illiquid investments before the COVID-19 crisis.

Historical Experience and Current Context

Historically, the commercial real estate sector has often been a source or amplifier of adverse macro-financial shocks as a result of a confluence of the factors described earlier. Notable examples include the Swedish financial crisis of the early 1990s, the US savings and loan crisis of the late 1980s and early 1990s, the Irish banking crisis of 2008–11, and the US financial crisis of 2007–09. In the latter case, for instance, the cumulative loss rate for commercial mortgage-backed securities and commercial real estate loans was about 14 percent and 8 percent, respectively, which translated into a much higher likelihood of bank failure for US commercial banks with high commercial real estate exposures (Figure 3.3, panels 1 and 2).

Although the commercial real estate market was not at the epicenter of the current pandemic crisis, as it was in some past crises, it poses significant risks to financial stability because of its large size and challenging outlook. The commercial real estate sector had total assets of about 20 percent of GDP as of the end of 2019, on average, across major advanced and emerging market economies, up from 17 percent a decade ago (Figure 3.4, panel 1), and as high as 50 percent or more in economies such as Singapore, Sweden, and Switzerland.[9] Banks are significantly exposed to the sector. For example, in the United States and some European economies, such as Estonia and Poland, direct lending related to commercial real estate constituted more than 50 percent of total bank lending to nonfinancial corporations in 2019 (Figure 3.4, panel 2). In the United States, commercial real estate lending is also highly concentrated among smaller banks (defined here as those with total assets of less than $100 billion), with over 165 percent of their regulatory capital committed to commercial real estate and construction lending in 2019, compared with only 50 percent for large banks (Figure 3.4, panel 3).[10] This suggests that in some cases risks at the local (or regional) level may be quite significant, which could have systemic implications.

While banks are the largest providers of debt funding for commercial real estate globally, nonbank financial institutions also play an important role in some jurisdictions (Figure 3.4, panel 4). For instance, in economies such as The Netherlands and Norway, insurance companies have significant debt and equity exposures to the commercial real estate sector (Figure 3.4, panel 5). In Asia-Pacific economies, nonbank financial institutions also constitute a major source of funding, especially through cross-border activity, which exposes these economies to the risk of a sudden shift in global investor sentiment and reversal of capital flows (Box 3.2).

In the United States, the commercial mortgage-backed securities market is also highly relevant. In the run-up to the global financial crisis, annual issuance in the United States reached about $230 billion, but fell to just a few billion dollars in 2008–09. Commercial mortgage-backed securities issuance gradually recovered thereafter but dropped again during the COVID-19 crisis (Figure 3.4, panel 6).

Overall, the sizable exposures of banks to commercial real estate, particularly in some jurisdictions, and the complex funding structure of the commercial real estate market—with a diverse but interconnected set of investors—suggest that a continuous deterioration in the market could seriously affect financial stability through the channels outlined earlier in this chapter. The ultimate effect is likely to depend on the balance sheet vulnerabilities of market participants, but also on the extent of price misalignments in the sector, which affects the susceptibility to a sharp price correction. The chapter turns next to this source of vulnerability.

Vulnerability Related to Commercial Real Estate Market Valuations

Misalignments in Market Valuations and Commercial Real Estate Prices

In the run-up to the COVID-19 pandemic crisis, the median commercial real estate price across many economies steadily increased. In Sweden and the United States, real commercial real estate prices almost doubled between 2009 and 2019 (Figure 3.5, panel 1). This increase occurred on the back of a prolonged period of low interest rates, which incentivized investors' search for yield and boosted demand for commercial real estate assets.[11]

Some segments of the commercial real estate market, however—such as retail—have faced increasing headwinds in recent years due to a structural shift in consumer preferences away from brick-and-mortar retail toward e-commerce. This has put downward pressure on revenues and led to a general decline in the prices—reflected in the capital growth—of these properties (Figure 3.5, panel 2). Other segments such as office buildings and multifamily dwellings have

[9]As noted, these values pertain to professionally managed commercial real estate because of data availability. A broader definition of the commercial real estate sector would lead to a significantly higher market size (see Nareit 2019).

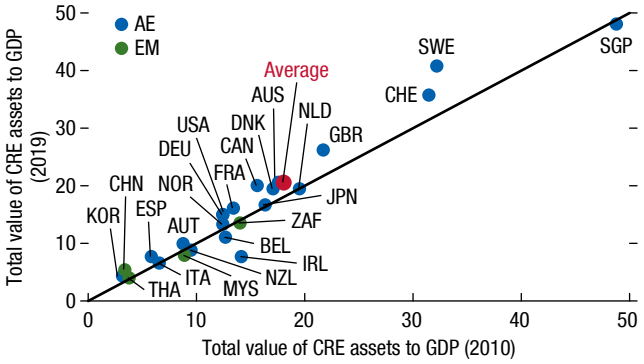
[10]While commercial real estate lending activity has been robust across economies, loan-to-value ratios have generally been lower in recent years than before the global financial crisis. For example, in the United States and the European Union, loan-to-value ratios on new commercial real estate loans averaged about 60 percent in 2019 compared with 82 percent in 2007, according to market contacts. In the United States, banks have also become constrained in commercial real estate lending because of regulatory costs. For instance, according to the soft guidance implemented in 2006, banks whose total commercial real estate loans relative to total risk-based capital exceeded 300 percent were subject to enhanced oversight and to potential increases in capital requirements.

[11]Commercial real estate price growth tends to be highly correlated with changes in measures of global liquidity (proxied by the total volume of international bank lending and international bond issuance). Across the sample, the country-specific correlation ranges from 0.1 to 0.4, with a median of 0.3.

Figure 3.4. Commercial Real Estate Market Funding Structure

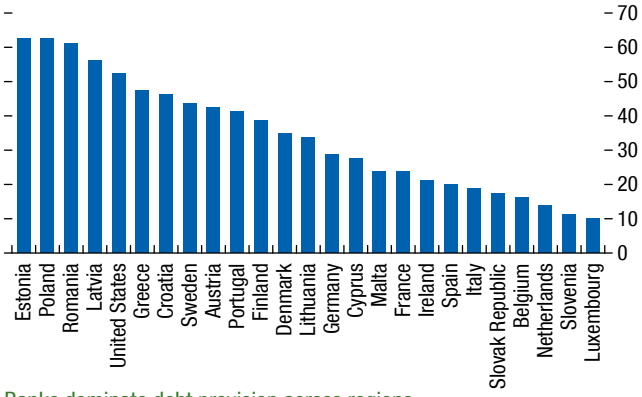
Commercial property markets have grown faster than GDP in many economies since the global financial crisis.

1. Size of the CRE Market in Selected Economies, 2019 vs. 2010 (Percent)



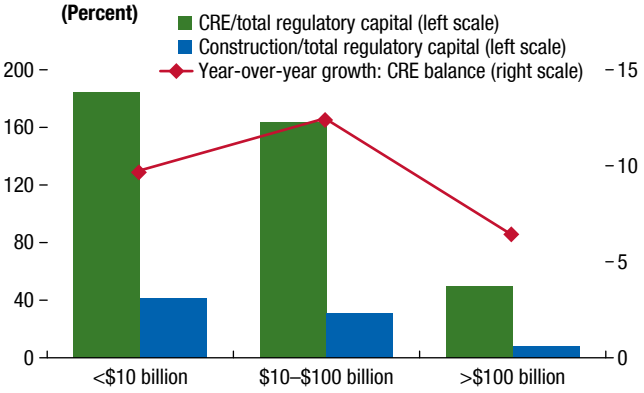
The CRE sector represents a sizable share of banks' exposures to firms.

2. CRE Loans to Total Loans to Nonfinancial Corporations, 2019 (Percent)



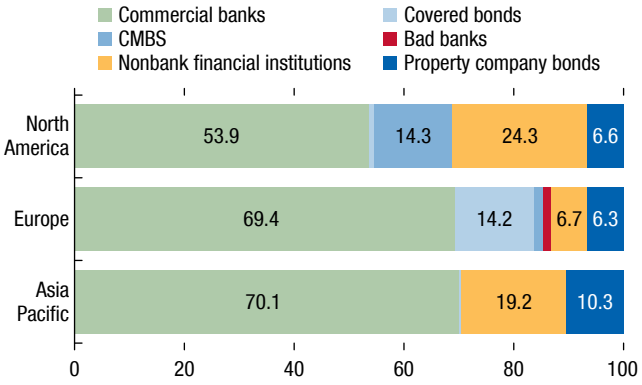
Smaller banks tend to have a higher share of CRE exposures.

3. US Banks' Ratio of CRE Exposure to Regulatory Capital by Bank Size, 2019 (Percent)



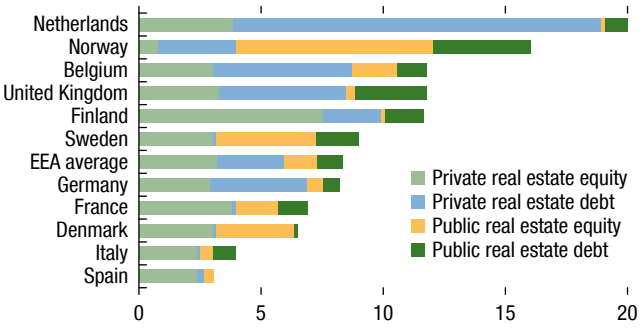
Banks dominate debt provision across regions.

4. Debt Outstanding by Lender Type, 2018 (Percent share of total CRE debt)



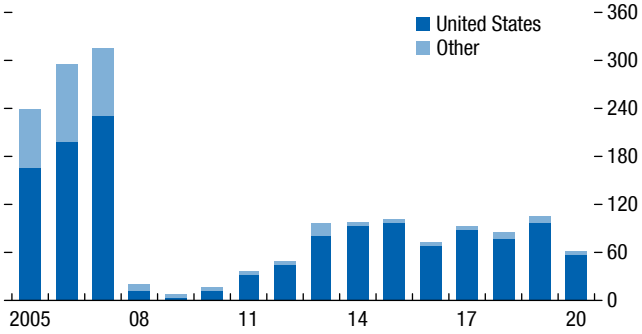
The insurance sector is also highly exposed to the CRE sector.

5. CRE Exposures of European Insurers, 2019:Q2 (Percent of total assets)



The US CMBS market grew rapidly after 2008, but has dried up during the recent crisis.

6. Global CMBS Issuance (Billions of US dollars)



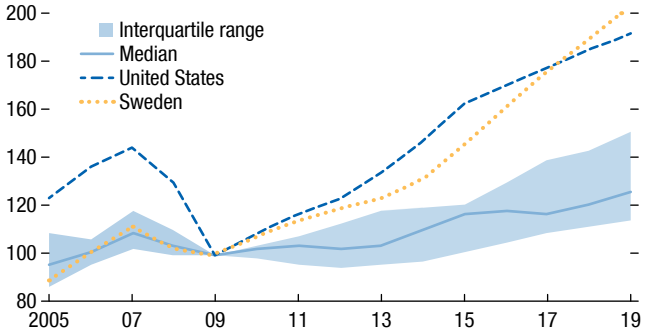
Sources: Commercial Mortgage Alert; Cushman & Wakefield; European Central Bank, Statistical Data Warehouse; DWS; MSCI Real Estate; S&P Global; Trepp; and IMF staff calculations.

Note: In panel 1, total commercial real estate (CRE) asset value refers to the size of professionally managed real estate investment estimated by MSCI. In panel 2, due to data availability limitations, CRE exposures correspond to loans to (domestic and foreign) nonfinancial corporations extended for construction and real estate activities by domestic banking groups and foreign-controlled subsidiaries for construction and real estate activities. In panel 4, no label is shown for amounts less than 2 percent. Panel 5 shows CRE exposures for European insurers as of 2019:Q2. In panel 6, nonagency CMBS deals are included. "Other" includes the European Union and the United Kingdom. Country labels in panel 1 use International Organization for Standardization (ISO) country codes. AE = advanced economy; CMBS = commercial mortgage-backed securities; EEA = European Economic Area; EM = emerging market economy.

Figure 3.5. Dynamics in Commercial Real Estate Financial Metrics over the Past Two Decades

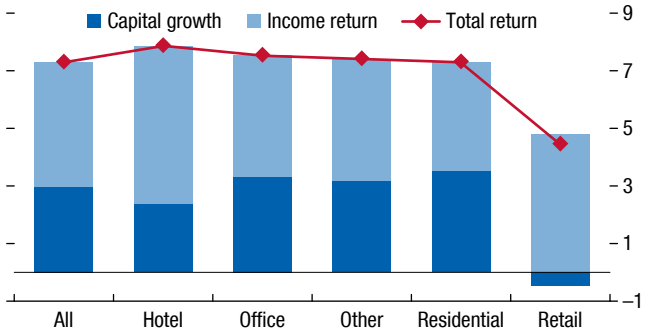
In most economies, real commercial property prices have risen above their levels before the global financial crisis.

1. Real Commercial Real Estate Prices in Selected Economies (Index, 2009 = 100)



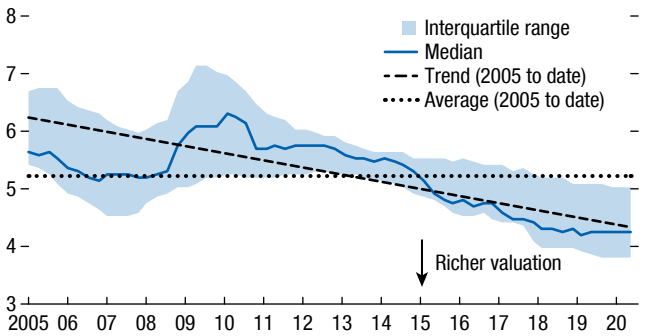
Retail performance was weak even before the pandemic.

2. Average Annual Total Return Decomposition, 2016–19 (Global Commercial Real Estate Index, percent)



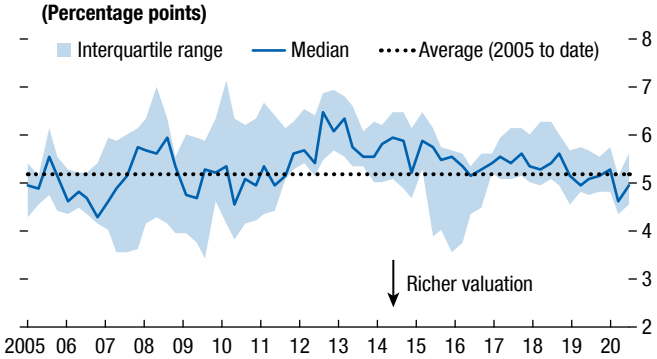
The net operating income to price ratio has declined steadily since the global financial crisis to historically low levels ...

3. Capitalization Rate (Ratio of net operating income to price, percent)



... but the decline has been broadly in line with the reduction in real long-term government bond yields.

4. Spread between Capitalization Rate and Real Long-Term Government Bond Yield, 2005–20 (Percentage points)



Sources: Bank for International Settlements; Haver Analytics; MSCI Real Estate; and IMF staff calculations.
Note: Panel 1 shows commercial real estate (CRE) prices for economies in the core sample listed in Online Annex 3.1. Panel 2 shows the global total return decomposition for CRE segments over 2016–19. Capital growth measures the change in property valuations, net of any capital expenditure and receipts, relative to the capital employed. Income return measures the net income receivable in relation to the capital employed. In panel 4, the long-term real interest rate is based on the 10-year government bond yield minus the 10-year break-even inflation rate. Where the latter is unavailable, the cap rate spread is based on the 10-year real government bond yield index.

fared well, with nominal annual capital appreciation averaging about 3 percent globally.

The upward trend in commercial real estate prices has been accompanied by a fall in the capitalization rate—a traditional valuation metric defined as the ratio of net operating income to commercial real estate prices—to its lowest level since the global financial crisis (Figure 3.5, panel 3). While this decline could be interpreted as a sign of overvaluation in commercial real estate prices, it has been in line with the reduction in long-term real government bond yields. In fact, the spread between the two series has remained within a narrow range over the past 15 years or so and thus does not provide much evidence of stretched valuations, at least from a historical perspective (Figure 3.5, panel 4).

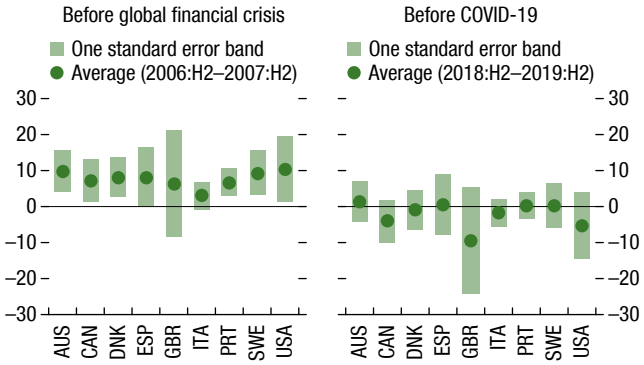
A more formal analysis of valuations through a novel fair-value model of commercial real estate prices supports this observation, suggesting that most economies in the sample did not enter the pandemic crisis with large price misalignments (Figure 3.6, panel 1).[12] Across

[12]The fair-value model estimated here to assess the extent of potential misalignment in commercial real estate prices from their long-term equilibrium level draws on Campbell and Shiller (1989). This approach models price as the present value of future cash flows (proxied by the expected net operating income) discounted by the expected return of holding commercial real estate assets. The model considers the impact of economic fundamentals such as the output gap, inflation, the credit-to-output ratio, the short-term interest rate, the broad-money-to-output ratio, and the capital-flow-to-output ratio. The model is estimated for

Figure 3.6. Commercial Real Estate Price Misalignment

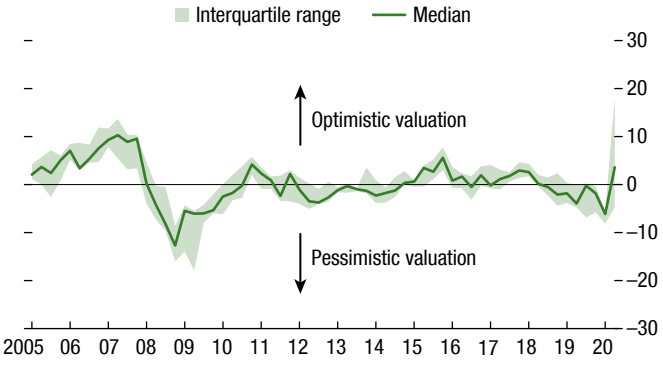
There is little evidence of large pre-pandemic misalignments in overall CRE prices.

1. Estimated Misalignment: Pre–Global Financial Crisis and Pre–COVID-19 Snapshot (Deviation from fair price, percent)



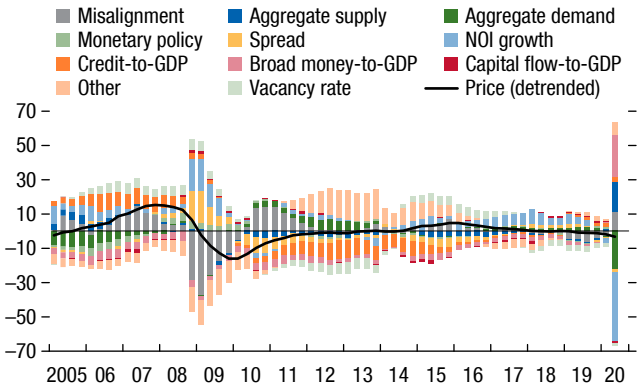
However, misalignments increased sharply in some economies in 2020.

2. Estimated Misalignment across Economies: Historical Perspective (Deviation from fair price, percent)



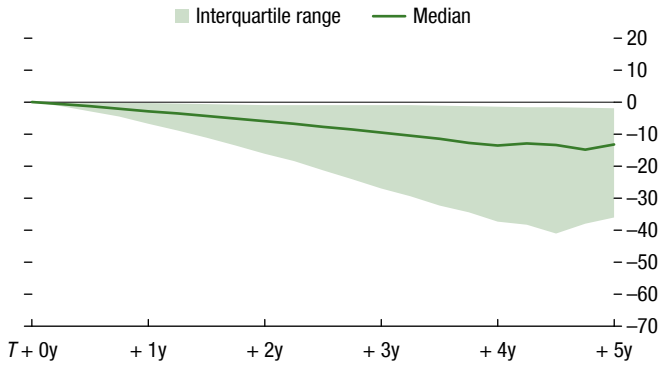
In the United States, the sharp decline in aggregate demand and net operating income during 2020 put downward pressure on fair values, implying an overvaluation.

3. United States: Decomposition of Estimated Misalignment (Deviation from trend, percent)



Potential structural shifts in CRE demand could lower CRE fair values significantly going forward.

4. Response of CRE Prices across Economies to a Permanent Shock to the Vacancy Rate (Percent)



Sources: Bloomberg Finance L.P.; Haver Analytics; MSCI Real Estate; and IMF staff calculations.
Note: The misalignments are based on the estimated residuals of the fair-price model that is applied to the real commercial real estate (CRE) price deviations from trend. Panel 3 plots the cumulative contribution of the identified historical shocks to the detrended price deviation for the United States. For details of the identification method, see Online Annex 3.2. Broad money includes currency, deposits with an agreed maturity of up to two years, deposits redeemable at notice of up to three months and repurchase agreements, money market fund shares/units, and debt securities up to two years. Panel 4 shows the impulse response of CRE prices to a permanent shock on CRE-specific demand expressed as a sustained increase in the vacancy rate. The size of the shock is calibrated so that the vacancy rate gradually increases on average by 5 percentage points in the next 10 years. The country labels in panel 1 use International Organization for Standardization (ISO) country codes. NOI = net operating income.

economies in the sample, the average deviation of commercial real estate prices from fair values before the pandemic is estimated at about minus 2 percent—in contrast to the 8 percent overvaluation before the global financial crisis. For specific commercial real estate segments, such as offices and retail, price misalignments also appear to have been limited before the pandemic (Online Annex 3.2).[13]

Commercial real estate price misalignments, however, seem to have generally increased in 2020 despite a decline in commercial real estate prices, with

11 economies for which data on all variables are available over the period 2001–19. For further details on the methodology and additional country-level results, see Online Annex 3.2, as well as Deghi and others (forthcoming).

[13]Lack of data for some variables precluded reliable estimation of fair values for other commercial real estate segments such as hotels and industrial properties.

the median value across economies reaching about 3.6 percent (Figure 3.6, panel 2). This largely reflects a deterioration in underlying fundamentals, such as a drop in aggregate demand and net operating income. In the United States, for example, the sharp worsening in these two factors during the pandemic has not been fully offset by the large monetary easing, leaving commercial real estate prices still overvalued despite their recent decline (Figure 3.6. panel 3, green, light blue, and pink bars). The magnitude of commercial real estate price misalignments in late 2020 varied across market segments. In general, the extent of misalignment is smaller in the office sector than in retail, though in some economies, large overvaluations have emerged in both segments (Online Annex 3.2).[14]

By and large, these findings suggest that the COVID-19 pandemic has resulted in a large shock to commercial real estate market fundamentals, affecting both supply and demand. While some of the factors are conjunctural, related to the recession and the pandemic, others may be reflective of underlying structural changes to come in the commercial real estate market and the economy at large. In this environment, commercial real estate prices may not yet fully reflect these changes, especially in light of the huge uncertainty about the economic outlook, making an assessment of price misalignments more challenging.

A Scenario Analysis to Track COVID-19–Induced Structural Shifts in Demand

While the preceding estimates of misalignment are derived from a rigorous empirical approach that considers the fundamental economic determinants of commercial real estate prices, these factors do not take into account possible future structural changes in demand, such as the shift toward e-commerce and teleworking. Since the pandemic is ongoing in many economies, accurately forecasting the magnitude of these shifts in consumer preferences and corporate policies and their impact on commercial real estate valuations is extremely challenging. Acknowledging such difficulties, the analysis attempts next to examine the effect of a shift in structural demand for commercial real estate on fair prices through a scenario analysis. Specifically, model-based commercial real estate fair prices are estimated assuming that demand declines continuously for the next five years—proxied by a persistent increase in vacancy rates.[15] Intuitively, if commercial spaces remain unoccupied because of a change in preferences, commercial real estate cash flow will decline, leading to lower commercial real estate fair prices as underlying fundamentals deteriorate.[16]

The results suggest that fair values could drop sharply if demand for commercial real estate declines permanently. While the size of the impact varies across economies, a permanent increase in the vacancy rate of 5 percentage points would result in a median drop in fair values of about 15 percent after five years (Figure 3.6, panel 4).[17]

These results point to a considerable degree of uncertainty surrounding commercial real estate valuations both in the near and medium term, which could lead to continued price misalignments in the post-COVID environment of easy financial conditions. In the discussion that follows, the chapter investigates the potential implications of such price misalignments in the commercial real estate sector and adverse price shocks for macro-financial stability.[18]

Commercial Real Estate Prices and Macro-Financial Stability

As outlined in the conceptual framework, the commercial real estate sector is intricately connected with macro-financial stability. Prices in this sector thus turn out to be highly procyclical: the short-term cross-correlation between changes in real commercial real estate prices and real GDP growth is strongly positive across economies (Figure 3.7, panel 1).

[14]Given the nature of the current crisis, considerable uncertainty remains about the survival rate of businesses, which could bias the estimates of net operating income and property valuations. Accounting for this source of bias in aggregate price indices is difficult, given that granular data on commercial real estate properties are not available. However, any larger-than-expected decline in net operating income would imply an even larger drop in fair values and a greater misalignment in 2020.

[15]Since shocks to the vacancy rates are exogenous in the model, the shift in demand due to the structural change in preferences is assumed to be unexpected.

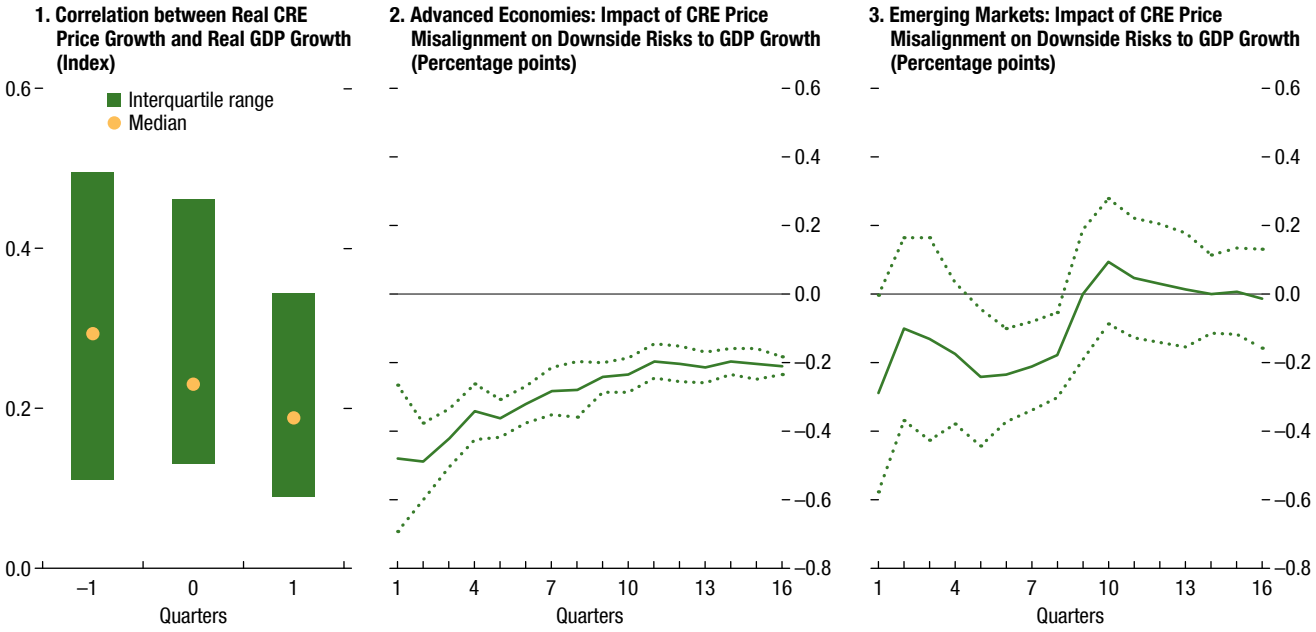
[16]If actual prices do not follow suit, perhaps because of valuation uncertainty, prices may become overvalued, which could increase the risk of a sharp price correction down the road.

[17]A 5 percentage point decline in the vacancy rate is equivalent to what was experienced by the United States during the global financial crisis. The scenario further abstracts from a potential repurposing of properties in individual commercial real estate sectors for use in other sectors.

[18]Possible triggers for a sharp downward price adjustment include negative shocks related to income growth, vacancy rate, commercial real estate capital inflows (especially in emerging market economies), and a premature withdrawal of policy support or lender support (such as loan extensions and deferred payment options).

Figure 3.7. Commercial Real Estate Prices and Real GDP Growth

CRE is highly procyclical, and higher CRE price misalignment increases downside risks to GDP growth in the short and medium terms.



Sources: Haver Analytics; MSCI Real Estate; Refinitiv Datastream; and IMF staff calculations.
Note: Panel 1 shows the median and interquartile range of the correlation between commercial real estate (CRE) prices and real GDP growth at time $t-1$, t, and $t+1$, computed country by country. Panels 2 and 3 show the association between a one standard deviation increase in CRE price misalignment (corresponding to a negative deviation of the logarithm of the capitalization rate from its long-term trend by 10 basis points in advanced economies and 0.08 percent in emerging markets) and downside risk to GDP growth (defined as the 5th percentile of the GDP growth distribution) at various horizons. Dotted lines indicate 90 percent confidence intervals.

To identify the potential impact of shocks to commercial real estate prices on macro-financial stability, this chapter looks at (1) the effect of commercial real estate price misalignment—as an indicator of risk of future price corrections—on the downside risk to GDP growth;[19] (2) the impact of an adverse commercial real estate price shock on bank losses and solvency; and (3) the impact of a drop in commercial real estate prices on investment by the nonfinancial corporate sector.

Downside Risks to GDP Growth

A misalignment in commercial real estate prices could amplify adverse shocks to the economy, especially if it interacts with other vulnerabilities in the sector and increases downside risks to future GDP growth. Empirical analysis finds this to be the case.[20] In both advanced and emerging market economies, a one standard deviation increase in commercial real estate price misalignment is associated with an increase in GDP downside risk—defined as the range of most severe GDP growth outcomes—in the near term, though the impact is smaller and statistically weaker for emerging market economies (Figure 3.7, panels 2 and 3).[21]

[19]GDP downside risks are defined here as the 5th percentile of the cross-country distribution of future (average) real GDP growth. To broaden the sample for this exercise and include both advanced and emerging market economies, the misalignment measure considered here is the deviation of the capitalization rate from its historical trend (instead of the misalignments derived from the fair-value model in the previous section, which can be computed for very few countries because of data limitations).

[20]To capture the effect of commercial real estate price misalignment on economic growth, this section estimates a growth-at-risk model, building on Adrian, Boyarchenko, and Giannone (2019), that includes a commercial real estate price misalignment measure while controlling for other relevant factors such as domestic financial conditions, credit growth, and changes in house prices. For further details, see Online Annex 3.3.

[21]In advanced economies, a one standard deviation increase in commercial real estate price misalignment—corresponding to a negative deviation of the capitalization rate from its long-term trend by 10 basis points—is associated with an increase in downside risk of ½ percentage point in GDP in the short term and ¼ percentage point in the medium term. For emerging market economies, the impact is about 0.2 percentage point in the short term. The lower estimated impact for emerging market economies could reflect the smaller size of the commercial real estate market and the lower leverage in the sector relative to advanced economies.

Banking Sector Profits and Solvency

As explained earlier, a key channel through which commercial real estate prices could affect financial stability is bank solvency. A decline in these prices causes a deterioration in the quality of banks' loan portfolios, credit losses, and lower revenues, accompanied by a potential drag on capital adequacy and, in extreme cases, defaults. Quantifying this channel requires bank-level data on exposures to commercial real estate loans and detailed data on commercial real estate prices at the subnational level. At this point, this detailed level of information is publicly available only for the United States, which is considered as a case study here.[22]

The analysis indicates that, following a decline in commercial real estate prices, banks with larger commercial real estate loan exposures experience significantly higher nonperforming commercial real estate loan ratios and higher loan charge-offs over the subsequent eight quarters (Figure 3.8, panel 1).[23] Consequently, their net revenues before provisioning and total regulatory capital are also lower (Figure 3.8, panel 2).

Based on these estimates, a simulation exercise shows that a drop in commercial real estate prices by 16 percent over eight quarters under a mild adverse scenario (equivalent to one standard deviation) could lead to significant revenue and credit losses for some US banks. The estimated losses relative to banks' risk-weighted assets before the shock are moderate, averaging 14 basis points. However, they are greater than 1 percentage point for banks with very high commercial real estate exposures (that is, those in the top 3 percent for the ratio of commercial real estate loans to total assets—smaller banks and community banks) (see Figure 3.8, panel 3).[24]

A structural shift in the CRE market inducing a decline in demand would represent a more severe adverse scenario and would lead to a greater impact on bank capital (Figure 3.8, panel 4). For instance, should vacancy rates permanently increase by 5 percentage points, as envisaged in the previous section, the impact on bank capital would be about twice as large. Overall, these results confirm a significant transmission from commercial real estate prices to bank capital, which in turn could undermine financial stability.

Decline in Corporate Investment

Given the sizable commercial real estate holdings of nonfinancial corporations across economies (Figure 3.9, panel 1), price shocks are likely further transmitted to the broad economy through the collateral channel. The chapter's analysis shows that changes in the market value of firms' real estate holdings indeed affect their investment expenditures significantly (Figure 3.9, panel 2). Quantitatively, a one standard deviation decrease in the market value of real estate assets implies a decrease in the ratio of investment to the value of property, plant, and equipment by 21 percent.[25] The impact is generally greater for financially constrained firms (proxied by firms that are small, do not pay dividends, or do not have a credit rating) than for other firms.[26]

Overall, the findings presented in this section confirm the importance of some of the key channels laid out in the conceptual framework earlier in the

[22]Banks' exposures to the commercial real estate sector are proxied by their outstanding commercial real estate loans. In addition to these loans, banks' holdings of commercial mortgage-backed securities and commercial property could also expose them to commercial real estate price fluctuations, but those exposures are not considered in the analysis because data are not available. For details on the data and empirical framework, see Online Annex 3.3.

[23]In this analysis, banks are matched with the average commercial real estate prices in the metropolitan statistical area where they are headquartered. Quantitatively, for banks with an ex ante ratio of commercial real estate loans to total assets in the 75th percentile of the distribution (corresponding to 43 percentage points), a cumulative one standard deviation (16 percent) decline in local commercial real estate prices over a two-year horizon implies a cumulative 8 percentage point increase in the commercial real estate nonperforming loan ratio; a cumulative 2.5 percentage point increase in the net charge-off rate of commercial real estate loans; a 12 percent drop in net revenues before provisioning; and a 4.9 percent decline in total regulatory capital (compared with banks with no commercial real estate loan exposure).

[24]Further extensions of the analysis show that community banks in more densely populated areas are at greater risk than other types of community banks for a given commercial real estate loan exposure, perhaps because economic activity in those areas has been affected more following the enactment of COVID-19 containment policies (Deghi and others, forthcoming).

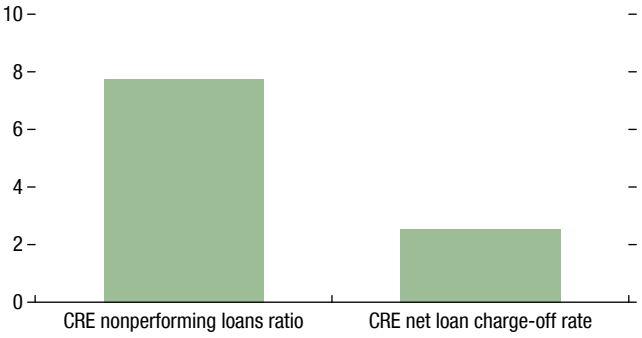
[25]Market value of real estate assets is normalized by the value of property, plant, and equipment, and the standard deviation of this ratio is 1.4. The estimated effect of changes in the market value of firms' real estate on investment expenditures is meaningfully large: each additional $1 of real estate collateral increases investment by $0.03.

[26]The analysis also shows that commercial real estate price declines contribute to a tightening of firms' borrowing constraints and that the estimated effect is of a similar magnitude across advanced economies and emerging market economies (Deghi and others, forthcoming). On average, firms borrow less when the value of their real estate declines, and the effect is particularly salient for long-term debt. See Online Annex 3.4 for further details.

Figure 3.8. United States: Impact of an Adverse Commercial Real Estate Price Shock on Bank Soundness

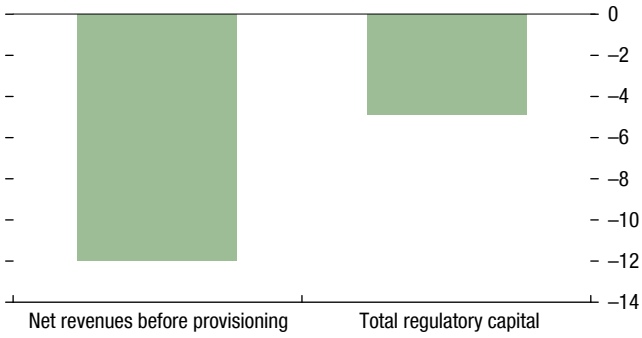
For banks with higher CRE exposures, a drop in CRE prices leads to a higher share of nonperforming CRE loans and higher loan charge-offs ...

1. Change in Loan Portfolio Performance of Banks with Higher CRE Exposures
(Percentage points, eight quarters ahead)



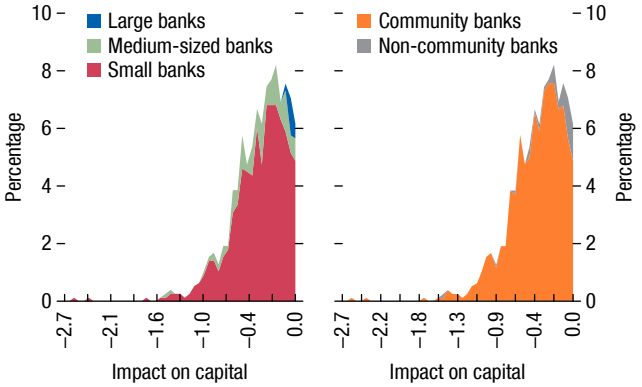
... as well as lower bank revenues and capital.

2. Change in Revenue and Risk-Based Capital of Banks with Higher CRE Exposures
(Percent, eight quarters ahead)



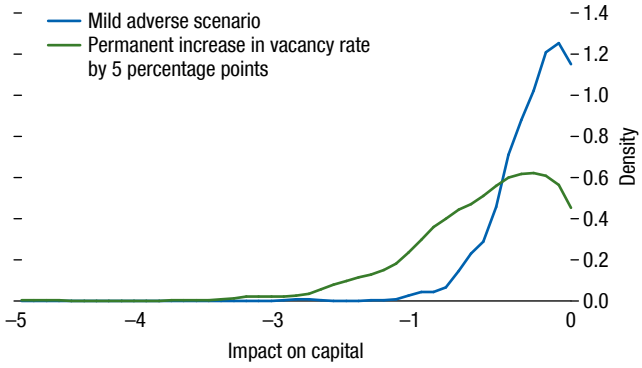
Capital losses are concentrated in smaller and geographically concentrated banks ...

3. Distribution of Projected Capital Losses under Mild Adverse Scenario
(Percent of risk-weighted assets)



... and could potentially be amplified by structural shifts in CRE demand.

4. Distribution of Projected Capital Losses with Permanent Shocks to Vacancy Rates
(Percent of risk-weighted assets)

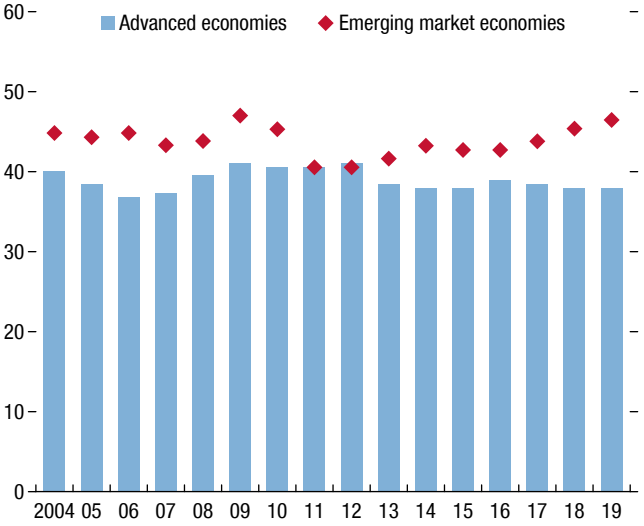


Sources: FDIC Deposit Survey; Federal Financial Institutions Examination Council (FFIEC) Call Reports; MSCI Real Estate; and IMF staff calculations.
Note: Panels 1 and 2 show the effect of a change in commercial real estate (CRE) prices on bank outcome variables: the CRE nonperforming loan rate (90+ days overdue), CRE net loan charge-off rate (each accumulated over the eight-quarter horizon), net revenues before provisioning, and total regulatory capital. Banks with high CRE exposure correspond to banks with an ex ante CRE-loans-to-total-assets ratio that is in the 75th percentile of the distribution of the ratio of CRE loans to total assets (43 percentage points higher exposure). Panel 3 shows the distribution of eight-quarter-ahead projected capital losses due to a sustained CRE price decline as in the mild adverse scenario (which amounts to a 16 percent cumulative drop in CRE prices over eight quarters and a slow recovery in prices afterward). The panel shows the distribution for different bank groups (depending on size or on whether the bank is a community bank). A bank is labeled as a "small bank" if its total assets never exceed $5 billion during the sample period (2001:Q1–2020:Q3), as a "medium-sized bank" if its total assets exceed $5 billion at least once but never exceed $100 billion, and as a "large bank" if its total assets exceed $100 billion at least once. Panel 4 shows the capital loss distribution as in panel 3, together with an alternative CRE price forecast scenario based on the valuation model presented in the previous section. For CRE price forecast scenarios and further details, see Online Annex 3.3. In panels 1 and 2, all coefficients are statistically significant at 10 percent or lower.

Figure 3.9. Impact of an Adverse Shock to Commercial Real Estate Prices on Corporate Investment

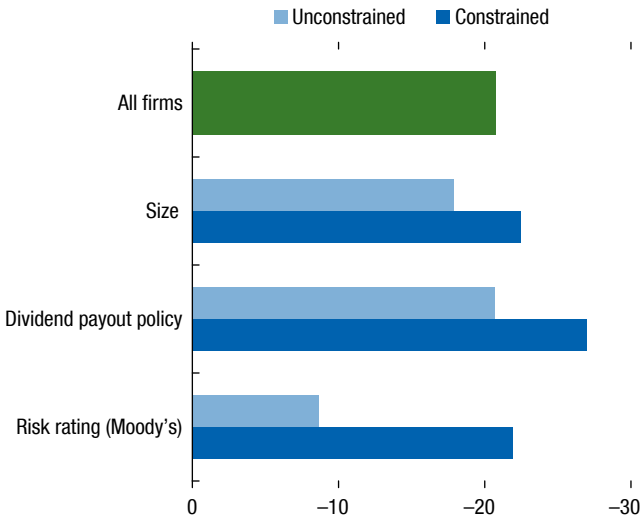
Real estate holdings are a sizable part of nonfinancial corporations' assets.

1. Average Real Estate Holdings by Nonfinancial Corporations, 2004–19 (Percent of total assets)



The effect of a CRE price decline on investment is larger for financially constrained nonfinancial corporations.

2. Effect of a CRE Price Decline on Nonfinancial Corporations' Investment (Percent)



Sources: Haver Analytics; MSCI Real Estate; Refinitiv Datastream; and IMF staff calculations.
Note: This analysis uses commercial real estate (CRE) price and firm-level data from 84 cities in 24 major advanced and emerging market economies. Panel 1 shows the average real estate holdings of nonfinancial firms at book values. The sample excludes firms operating in the real estate, construction, and basic resources sectors. Panel 2 shows the average impact of a CRE price correction (that is, a one standard deviation decline in the market value of CRE assets) of a firm on the ratio of its capital expenditures to lagged property, plant, and equipment (expressed as percent of the mean of firms' investment). Results are shown for the full sample ("All firms") and for subsamples with different degrees of financial constraint. Financially constrained firms are defined as those with total assets less than the 30th percentile ("Size"), those that do not pay any dividends ("Payout policy"), and those with no Moody's risk rating on their debt or with an expected default frequency higher than the 70th percentile ("Risk rating"). Solid bars in panel 2 indicate statistical significance at 10 percent or lower.

chapter.[27] These results are particularly salient in the current context, suggesting that any further adverse shocks to commercial real estate prices could amplify the downturn and derail the recovery by affecting the real and financial sectors.

The Impact of Policies on Commercial Real Estate Prices

Given the potential threat to macro-financial stability stemming from commercial real estate price misalignments and shocks to the sector, is there a role for macroprudential policies in preventing a future buildup of vulnerabilities in this market? While commercial real estate price levels are not a policy objective per se, macroprudential policies—by leaning against the wind and reducing balance sheet vulnerabilities of borrowers and lenders—could in principle mitigate the risk of large price corrections and alleviate the strains from price adjustments should a correction occur.

To examine the effectiveness of macroprudential policies in the context of commercial real estate markets, two categories of measures are considered here. The first is *targeted measures* that apply specifically to the commercial real estate sector and limit borrowers' access to bank credit—such as caps on loan-to-value or debt-service-to-income ratios that are specific to commercial real estate—or that enhance banks' resilience and increase the cost of commercial real estate lending through higher risk weights or sectoral capital buffers for exposures to this sector. These measures could also include specific limits on banks' concentration in commercial real estate or supervisory

[27]The chapter empirically examines the bank solvency and collateral channels. Data limitations prevent a detailed analysis of the nonbank financial institution channel.

guidance on such lending.[28] The second category is *broader borrower-based measures* that include measures targeting the residential segment of the real estate market (such as caps on loan-to-value and debt-service-to-income ratios for residential mortgages), given that the effect of these measures on house prices could spill over to prices in the multifamily dwellings segment of commercial real estate.[29]

These macroprudential measures, however, are generally applicable to domestic banks. They could be circumvented in the case of commercial real estate debt funding borrowed directly from abroad or through nonbank financial institutions. Although there are not many examples of measures targeting nonbank financial institutions,[30] borrowing from abroad in some cases has been limited through capital flow management measures. These measures restrict investments by nonresidents, for example, through ownership restrictions on nonresidents or higher stamp duties for nonresidents on purchases of real estate.[31]

The analysis evaluates the effect of targeted and broader borrower-based macroprudential measures, as well as of capital flow management measures, on downside risks to changes in (real) commercial real estate prices—captured by the 5th percentile of the distribution of future (average) commercial real estate price growth.[32] Focusing on the downside risks to commercial real estate prices can shed light on measures that can help prevent a buildup of vulnerabilities in this sector that could translate into large downward price corrections and threaten financial stability down the road.

The analysis suggests that macroprudential policies may have an important role in curtailing commercial real estate sector vulnerabilities. Specifically, tighter targeted measures reduce downside risks to commercial real estate prices by 0.26 percentage point a quarter in the near term (Figure 3.10, panel 1). Broader borrower-based measures also tend to have a significant impact, with tightening reducing downside risks to commercial real estate prices by about 2 percentage points (cumulative) in the medium and long term (Figure 3.10, panel 2).[33]

The analysis looks at the effect of restrictions on capital flows, captured through an overall index of capital inflow restrictiveness (Figure 3.10, panel 3), as well as through a restrictiveness index specific to commercial real estate capital inflows. (The sample comprises advanced economies only, given that such measures have generally been applied in these economies [Figure 3.10, panel 4].) The results show that such measures are also associated with lower downside risks in commercial real estate prices. The use of capital flow management measures to address financial stability risks should, however, be considered only under specific circumstances, as outlined in IMF (2012, 2017).

Conclusion and Policy Recommendations

The commercial real estate sector has been severely affected by the COVID-19 crisis, with transaction volumes and prices falling globally, especially in some segments such as retail, hotels, and offices. Overall, the large size of the sector, its heavy reliance on debt funding, and its strong interconnectedness with the real economy make it highly relevant for domestic macro-financial stability and warrant enhanced supervisory attention at the current juncture.

[28]A limited number of macroprudential measures directly target the commercial real estate sector (for examples, see Online Annex 3.4). Hence assessments of their effectiveness are rare. There are a few exceptions. Duca and Ling (2020), for example, show that the tightening of effective capital requirements on commercial mortgage-backed securities in the United States following the Dodd-Frank Act helped prevent sharp declines in commercial real estate risk premiums after the global financial crisis. Bassett and Marsh (2017) find that the 2006 US commercial real estate lending guidance for banks with a high concentration of such loans reduced commercial real estate lending.

[29]Borrower-based measures targeting residential real estate can thus affect the commercial real estate market directly by limiting a borrower's access to credit for multifamily housing (such as apartment buildings). They can also affect downside risks to markets by dampening the amplification effects from the interaction between residential and commercial real estate prices that threaten financial stability (ESRB 2018).

[30]One example of commercial-real-estate-specific measures targeting nonbank financial institutions is the credit risk retention standards for asset-backed securities, including commercial mortgage-backed securities, adopted by the United States in 2014. Furfine (2020) finds that these standards have enhanced the safety of the commercial mortgage-backed securities market but increased borrowing costs.

[31]Examples of such cases include restrictions in Australia, Canada, China, and Hong Kong SAR.

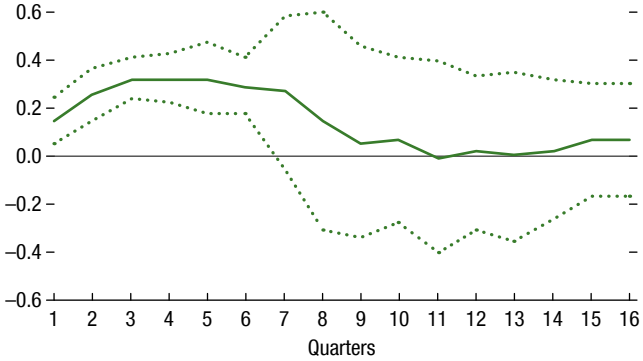
[32]Macroprudential measures are constructed as categorical variables. The sample for this exercise comprises 30 economies over 2000:Q1–2019:Q4. See Online Annex 3.4 for details of the empirical analysis.

[33]For further context, these estimates suggest that a borrower-based macroprudential tightening in the run-up to the global financial crisis would have reduced the decline in commercial real estate prices from about 11 percent to 9 percent.

Figure 3.10. Macroprudential Policies, Capital Flow Management Measures, and Downside Risks to Commercial Real Estate Prices

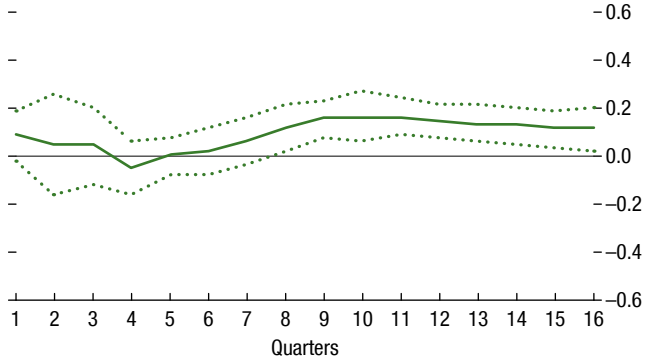
CRE-specific macroprudential tightening measures are effective in limiting downside risks to CRE prices in the short term.

1. Impact of a CRE-Specific Macroprudential Tightening Measure on Downside Risks to CRE Prices (Percentage points)



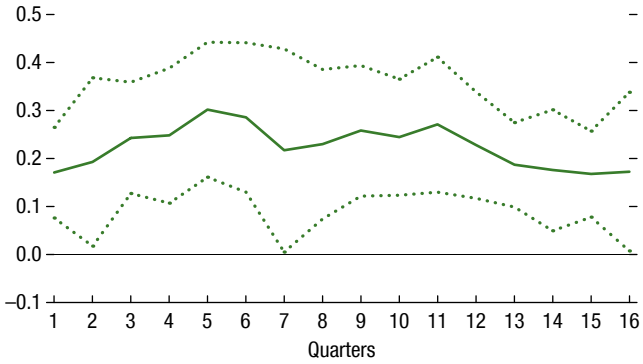
Broader borrower-based tightening measures reduce downside risks to CRE prices in the medium and long terms.

2. Impact of a Borrower-Based Macroprudential Tightening Measure on Downside Risks to CRE Prices (Percentage points)



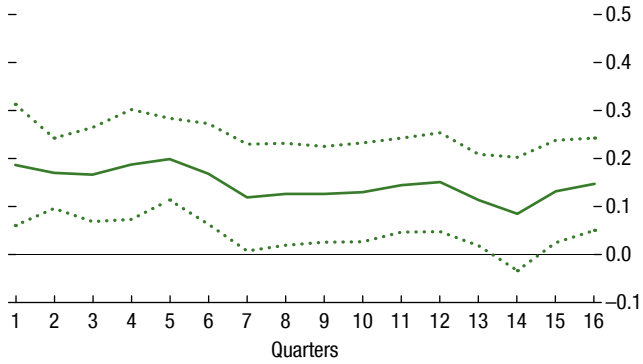
Capital flow management measures appear to limit tail risks to CRE prices ...

3. Impact of Overall Capital Inflow Restrictions on Downside Risks to CRE Prices (Percentage points)



... with CRE-specific measures having a more pronounced effect.

4. Advanced Economies: Impact of Real Estate Inflow Restrictions on Downside Risks to CRE Prices (Percentage points)



Sources: Haver Analytics; MSCI Real Estate; and IMF staff calculations.
Note: In all four panels, the dependent variable is defined as the 5th percentile of the future (average) commercial real estate (CRE) price growth distribution. In panel 1, CRE-specific measures are defined as a categorical variable taking the values –1, 0, or 1 if there was a loosening action, no change, or a tightening action, respectively, in a quarter. In panel 2, all borrower-based macroprudential policies are considered. These are based on a two-year rolling sum of the individual measures (+1 = tightening, 0 = no change, –1 = loosening) and are purged of the credit-to-GDP ratio to address potential endogeneity concerns. In panels 3 and 4, changes in capital flow management measures correspond to the overall and the real-estate-specific capital inflow restriction indices, respectively. The indices are based on a two-year rolling sum of individual measures (+1 = tightening, 0 = no change, –1 = loosening) and purged of the capital-flow-to-GDP ratio. Dotted lines indicate 90 percent confidence intervals.

The findings in this chapter indicate that commercial real estate price misalignments amplify downside risks to future growth and that commercial real estate price declines affect macro-financial outcomes through several channels, including a weakening of bank soundness and a decline in corporate investment.

Although considerable uncertainty surrounds fair-value estimates because of the unprecedented nature of the COVID-19 shock—in addition to a possible structural change in demand for some types of commercial property—preliminary estimates point to overvaluation in 2020, as actual prices did not fall as much as implied by model-based estimates.

Given the high procyclicality of the commercial real estate sector, its outlook is closely tied to broader economic recovery but also to possible pandemic-induced structural changes. In the near term, policy support to maintain the flow of credit to nonfinancial

corporations and to stimulate aggregate demand remains essential to facilitate a recovery of the sector and preserve financial stability.[34] As discussed in Chapter 1, borrower support measures such as debt repayment relief, credit guarantees, and direct support for viable firms should be kept in place until the economic recovery is firmly established. Nonviable firms in the sector with high solvency and liquidity risks should be encouraged to restructure or liquidate.[35] To ensure banking sector resilience and inform decisions regarding the adequacy of capital buffers for commercial real estate exposures, stress testing exercises embedding large declines in commercial real estate prices could be considered.[36] Supervisors should also review banks' commercial real estate valuation assumptions and ensure that provisions are adequate.

Once the extent of structural changes as a result of the pandemic becomes clearer, policymakers should deploy targeted macroprudential tools to address excessive financial risk taking in the sector and prevent persistent large price misalignments that could put growth at risk in the medium term.[37] Such tools could include borrower-based measures (such as loan-to-value and debt-service-to-income ratios).[38] The optimal timing of such policy actions depends on the economy-specific pace of the recovery and the degree of financial vulnerabilities, keeping in mind possible lags between implementation and full impact that would call for early action.

Given the significant presence of cross-border commercial real estate investors in some jurisdictions, commercial-real-estate-specific capital flow management measures could be considered if a surge in capital flows into the sector poses systemic financial risks that cannot be addressed with other policy tools. These measures should, however, be phased out once such risks subside. Finally, there is an urgent need to address commercial-real-estate-related systemic risks stemming from nonbank financial institutions by broadening the reach of macroprudential tools and granting macroprudential powers to relevant supervisors as well as by enhancing data collection.[39]

[34]Like the rest of the nonfinancial corporate sector, commercial real estate firms have benefited from government and central bank actions to ensure adequate funding liquidity during the pandemic crisis. In addition, several policy initiatives have been undertaken across economies to directly support this sector. In Korea, for instance, landlords who reduce rent for commercial tenants are eligible for tax cuts, while in the United States, the Coronavirus Aid, Relief, and Economic Security (CARES) Act offered forbearance of federally backed commercial mortgage payments that helped limit significant losses in agency commercial mortgage-backed securities (see Box 3.3). The United Kingdom imposed an eviction moratorium and provided cash grants for certain retail, hospitality, and leisure businesses. In Egypt and Kazakhstan, real estate tax relief has been extended to hard-hit industries.

[35]See Chapter 1 for a framework to determine the viability of firms, and the recommended policy actions to deal with viable and nonviable firms. For guidance on private debt resolution measures in the context of the pandemic, see Liu, Garrido, and DeLong (2020).

[36]The adverse scenario in the forthcoming European Bank Authority and Federal Reserve Board banking sector stress tests includes large multiyear declines in commercial real estate prices (EBA 2020; FRB 2021).

[37]See Chapter 2 for a discussion of macroprudential tools that could help tame the buildup of leverage in the nonfinancial corporate sector. In some economies where recovery has gained momentum (such as China and New Zealand), macroprudential measures pertaining to the real estate sector have been tightened in recent months.

[38]Measures targeting risk taking in the new lending are less likely to conflict with policy efforts aimed at resolution of nonperforming loans.

[39]Nonbank financial institution supervisors often do not have macroprudential powers to lean against the wind. They can, however, reduce structural vulnerabilities—for example, with stricter rules for property investment funds to reduce maturity mismatches, as envisioned by the United Kingdom, or by linking life insurers' capital requirements to the type of commercial real estate property or to loan-to-value and debt-service-to-income ratios, as in the United States (Glancy and others 2019).

Box 3.1. Containment Measures during the COVID-19 Pandemic and City-Level Commercial Real Estate Prices

The impact of the COVID-19 pandemic on commercial real estate prices has varied widely at the city level, both across and within economies. In a sample of 64 cities in 11 economies, prices are estimated to have declined the most in Canada during the second quarter of 2020, with Winnipeg recording the highest quarter-over-quarter decline, of about 5½ percent. In contrast, prices in French cities generally increased during this period (Figure 3.1.1, panel 1). Among "first-tier" cities, London recorded the largest fall (–1.2 percent), followed by New York (–1 percent).[1]

The differential price movement is even more striking in the retail segment, with prices falling by up to 9½ percent in Minneapolis, Minnesota, and Baltimore, Maryland, during the second quarter of 2020, but increasing by 4 percent in Austin, Texas, and Fukuoka, Japan (Figure 3.1.1, panel 2). In the office segment, the worst performing cities were Halifax, Canada, and Houston, Texas, while the best were Melbourne, Australia, and Philadelphia, Pennsylvania.

What could explain this inconsistency? The stringency of containment measures and changes in work mobility, which directly affected the vacancy rate and net operating income of commercial property, appear to have played an important role. Cities with an above-median score in the stringency of containment measures recorded about a 0.6 percentage point larger price decline than other cities in the second quarter of 2020 (Figure 3.1.1, panel 3). This observation holds when considering an alternative index of work mobility, which shows higher mobility associated with lower price declines.[2] Across different commercial real estate segments, the correlation between containment stringency and price decline is highest for the retail sector, followed by office property, as containment measures directly targeted large parts of the retail sector and in-office workplaces.

Other factors seem to have mattered too. Smaller cities, cities with lower commercial real estate capital growth before the pandemic, and those with a sharper decline in market liquidity during the pandemic, all appear to have suffered large commercial real estate price declines.[3,4] Along with these city-specific factors, the breadth of government policy support at the national level—including mortgage holidays, retail tax relief, financial support to businesses, and additional spending and forgone revenue compensation programs—also appears to have contributed to price developments during the second quarter of 2020, with greater fiscal support generally associated with smaller price declines (Figure 3.1.1, panel 4).

The author of this box is Andrea Deghi.

[1]For this analysis, the hierarchy of cities is defined following Morgan Stanley Capital International: "first-tier" cities comprise large, globally significant, and highly connected cities; "regional" cities are those with regional rather than global significance; and "other" cities are smaller cities in secondary markets.

[2]The mobility index is sourced from Google for each city in the sample and captures mobility trends for places of work.

[3]Market liquidity is proxied by a composite measure of indicators capturing the depth and breadth of commercial real estate capital markets. The composite measure includes indicators such as the total volume and foreign share of commercial real estate inflows. The index is normalized between 0 (low market liquidity) and 100 (high market liquidity).

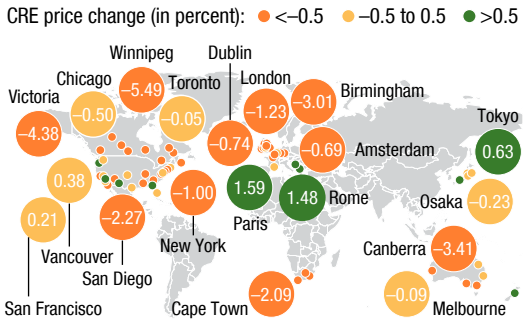
[4]In addition to the variation in city-level prices across commercial real estate segments, there is also a difference in price changes between urban and suburban areas around major cities (such as London, New York, Paris, and Tokyo). The commercial real estate price decline was slightly larger in urban areas than in suburbs, as demand for commercial property—captured by the vacancy rate—fell in inner-city relative to outer areas. This differs from earlier years (2010–19), when the increase in urban commercial real estate prices was, on average, 1.4 percent larger than for suburban areas.

Box 3.1 *(continued)*

Figure 3.1.1. Commercial Real Estate Market Developments across Cities during the COVID-19 Pandemic

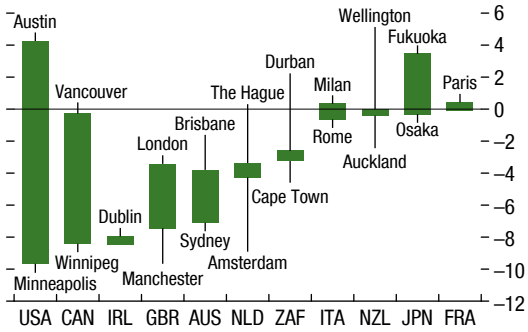
The impact of the pandemic has varied across cities ...

1. CRE Price Growth
(Percent, 2020:Q2, quarter over quarter)



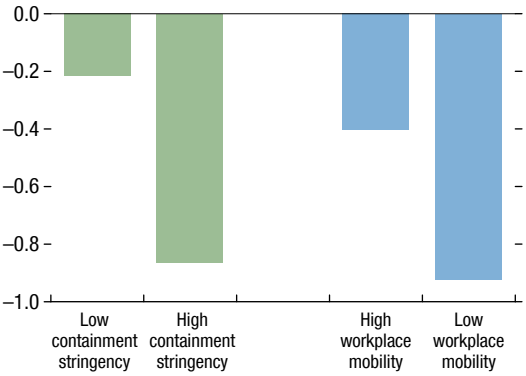
... especially, in the retail sector.

2. CRE Retail Price Growth
(Percent, 2020:Q2, quarter over quarter)



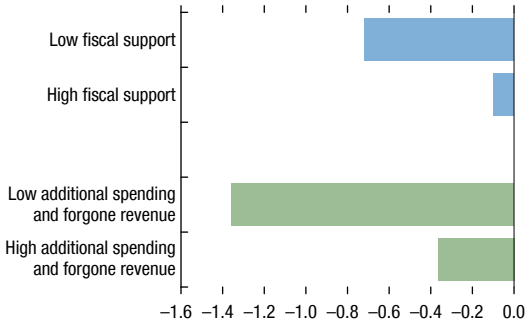
More stringent containment measures have been associated with larger price declines ...

3. CRE Price Growth by Stringency of Containment Measures and the Mobility Index
(Percent, 2020:Q2, quarter over quarter)



... though policy support has helped contain CRE price declines.

4. CRE Price Growth by Level of Policy Support
(Percent, 2020:Q2, quarter over quarter)



Sources: IMF, Fiscal Monitor database; MSCI Real Estate; Oxford COVID-19 Government Response Tracker; Real Capital Analytics; and IMF staff calculations.
Note: Panel 1 shows real commercial real estate (CRE) price growth (quarterly) in selected cities. Panel 2 shows the distribution (minimum-maximum) of CRE price changes in the retail sector across economies. The panel uses International Organization for Standardization (ISO) country codes. In panel 3, the containment stringency indicator is defined as in Hale and others (2020). The work mobility index is sourced from Google for each city and averaged over the quarter. In panel 4, the fiscal support indicator is based on the sum of equity, loans, and guarantees, as well as of additional spending and forgone programs (as percent of GDP) implemented in response to the pandemic. High (low) stringency, workplace mobility, and fiscal support measures, as well as additional spending and forgone revenue indicators, refer to the sample of cities with a score above (below) the sample median in 2020:Q2.

Box 3.2. Cross-Border Investments in the Commercial Real Estate Sector

Cross-border investment flows to the commercial real estate sector fell sharply in the aftermath of the global financial crisis, but gradually recovered to near precrisis levels in 2015, averaging about $270 billion a year during 2014–19.[1] In 2020, however, these flows dropped again as the COVID-19 crisis hit economies around the world (Figure 3.2.1, panel 1).

A large share of global cross-border investments in this sector is in advanced economies. However, as a share of total commercial real estate investment within economies, cross-border investments are relatively larger in emerging markets, which makes them particularly vulnerable to shifts in global investor sentiment.

Among emerging markets, China has been the major recipient of commercial-real-estate-related flows in recent years, followed by Poland (Figure 3.2.1, panel 2), but both economies experienced a slowdown in these flows during the COVID-19 crisis. Frontier markets in Africa and the Middle East also experienced large declines in 2020, falling 5 percent to 100 percent relative to 2019. Across different segments, office and retail, which had the largest share of cross-border commercial real estate investment during the past decade, fell the most (48 percent and 65 percent, respectively) during the crisis.[2]

The greater the share of cross-border investment before the pandemic, the larger the decline in total commercial real estate acquisition in the first three quarters of 2020. It is also quite striking that there was no commercial real estate investment in 2020 in economies that relied entirely on foreign investors (Figure 3.2.1, panel 3).

The volatility of commercial real estate investments is affected by the presence of institutional investors—primarily pension funds and insurance companies, whose share in cross-border investment flows has increased significantly over the past decade, especially in Europe and Asia and the Pacific. Given that cross-border institutional investors tend to be more fickle when facing a large global shock than direct investors (such as property developers, operators, and users), domestic markets may become more synchronized with global financial and commercial real estate cycles and thereby more vulnerable to global risk as cross-border investment in the sector increases. Indeed, international price synchronization spiked during the pandemic, building on an already increasing trend since the global financial crisis (Figure 3.2.1, panel 4).[3]

Structural changes in the demand for commercial real estate space could amplify the risks from cross-border investments in the future. If such investments increase market vulnerabilities and threaten financial stability, policymakers might consider policies that reduce demand by foreign buyers in some circumstances, as outlined in IMF (2012).

The author of this box is Andrea Deghi.

[1]"Investment flows" refers here to property transactions in primary and secondary markets.

[2]This was driven mainly by the pullback of cross-border financial intermediaries that invest on behalf of indirect financial investors (Liu, Shim, and Sushko 2020).

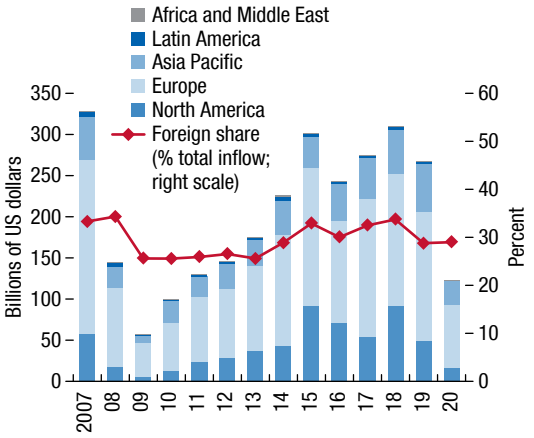
[3]Synchronization is calculated using a simple metric based on the median absolute difference of commercial real estate price growth rates across economies. The measure is normalized with a maximum value equal to 100.

Box 3.2 *(continued)*

Figure 3.2.1. Trends and Developments in Cross-Border Commercial Real Estate (CRE) Investment Flows

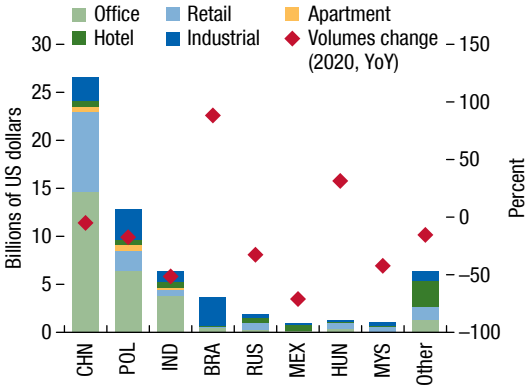
Global and cross-border CRE investments had recovered since the global financial crisis ...

1. Global CRE Total and Cross-Border Investments (Billions of US dollars, left scale; percent, right scale)



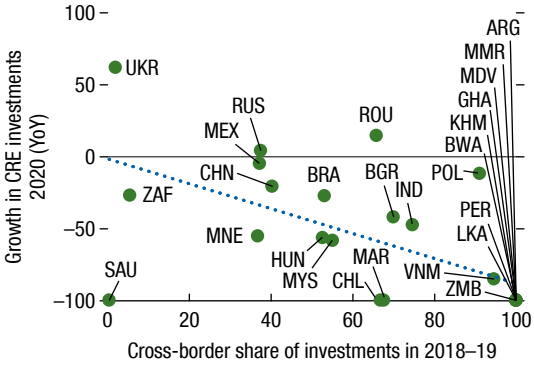
... but the impact of the COVID-19 crisis varied across emerging market economies.

2. Cross-Border Investments in Emerging Market Economies: Cumulative Volume in 2018–20 and Annual Growth Rate in 2020 (Billions of US dollars, left scale; percent, right scale)



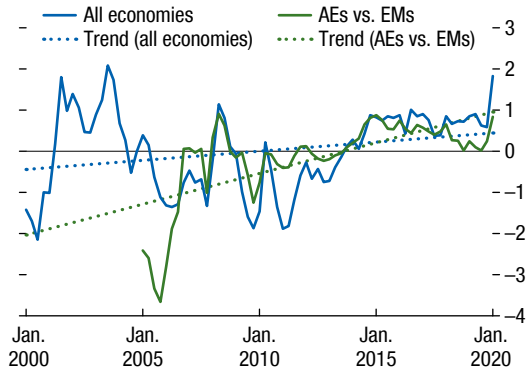
Total inflows declined most in markets with a higher precrisis share of foreign participation.

3. Growth in CRE investments in 2020 and Pre-COVID Share of Cross-Border Investments (Percent)



CRE price co-movements spiked during the pandemic.

4. CRE Price Synchronization across Economies (Standard deviation of the synchronization index)



Sources: MSCI Real Estate; Real Capital Analytics; and IMF staff calculations.
Note: In panel 1, observations for 2020 are for the first three quarters of the year. Panel 2 shows the top emerging market recipients of cumulative commercial real estate (CRE) investments in the 2018–20 period (left scale) and recent change in volumes computed for the first three quarters of 2020 relative to the previous period (right scale). In panel 3, the change in total inflows is calculated for the first three quarters of 2020 relative to the first three quarters of the previous year. The cross-border share is calculated for 2018–19. In panel 4, the synchronization metric is computed across all pairs of economies ("All") and on advanced economy (AE)–emerging market (EM) pairs ("AEs vs. EMs"). Country labels in panels 2 and 3 use International Organization for Standardization (ISO) country codes.
YoY = year over year.

Box 3.3. The US Commercial Mortgage-Backed Securities Market during the COVID-19 Crisis

In March 2020, the commercial mortgage-backed securities market in the United States was severely disrupted as stress in funding markets reverberated through the commercial real estate sector. Funding costs increased sharply, with the spread on BBB-rated commercial mortgage-backed securities and these securities' indices jumping sharply (Figure 3.3.1, panel 1). Concurrently, monthly commercial mortgage-backed securities issuance fell from $14.8 billion in February to $0.3 billion in April (Figure 3.3.1, panel 2).

To prevent a collapse in the market, the Federal Reserve stepped into the agency commercial mortgage-backed securities market,[1] buying almost $9.3 billion in securities issued by Fannie Mae, Freddie Mac, and Ginnie Mae during the second quarter (Figure 3.3.1, panel 3). As a result of these interventions, spreads of agency securities tightened significantly and returned to their precrisis level after a few weeks (Figure 3.3.1, panel 4). Issuance of agency commercial mortgage-backed securities rebounded during the second quarter, allowing for the resumption of credit flows to the multifamily housing sector, although the volume of year-to-date cumulative issuance at the end of June 2020 was still lower than for the corresponding period in 2019. While in the early stages of the program the total amount of bids submitted greatly exceeded the announced maximum purchase amount at the weekly auction, the difference between the two declined rapidly thereafter, indicating that the market was recovering.

Despite these positive developments, the recovery has been more uneven in nonagency segments of the commercial mortgage-backed securities market. The Coronavirus Aid, Relief, and Economic Security (CARES) Act tied much of the mortgage relief supported by the federal government to residential mortgages (including the multifamily segment), but no explicit protection was granted to nonresidential commercial real estate borrowers.[2] The Federal Reserve included nonagency AAA commercial mortgage-backed securities in its Term Asset-Backed Securities Loan Facility (TALF 2.0) program in early April 2020, but did not intervene more broadly in the nonagency commercial mortgage-backed securities market. As a result, the spread between BBB-rated and AAA-rated securities continued to widen over the second half of 2020 (Figure 3.3.1, panel 1), raising the question of whether there were gaps in the policy response.

In contrast to the residential mortgage market, the relevant question in the nonagency commercial mortgage-backed securities market is to what extent policies should mitigate private sector losses that could pose systemic risk (similar to the 2007–09 financial crisis). Although previous regulatory reforms such as Dodd-Frank credit risk retention requirements may have reduced the overall risk in commercial mortgage-backed securities loans and improved lending standards,[3] a sluggish recovery in commercial real estate markets may result in greater losses than current initiatives can address. Stress in this market could spill over to other financial market segments, leading to liquidity or potential solvency problems for banks and nonbank financial institutions, especially those with large exposures to commercial mortgage-backed securities.

The authors of this box are Andrea Deghi and Zhi Ken Gan.

[1]Agency commercial mortgage-backed securities are primarily securitizations of multifamily residential properties.

[2]Indirect support has been provided by the Main Street Lending Program, which offers loans with deferred repayments for smaller companies, and the Small Business Administration's Paycheck Protection Program.

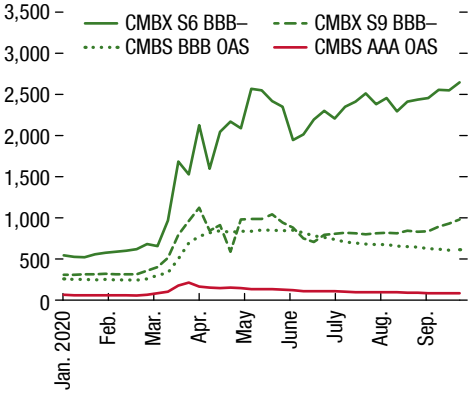
[3]The regulation, launched in 2014, implements credit risk retention standards for asset-backed securities, including commercial mortgage-backed securities. The regulation requires issuers to retain at least 5 percent of any security they issue on their books.

Box 3.3 *(continued)*

Figure 3.3.1. The US Commercial Mortgage-Backed Securities Market during the COVID-19 Crisis

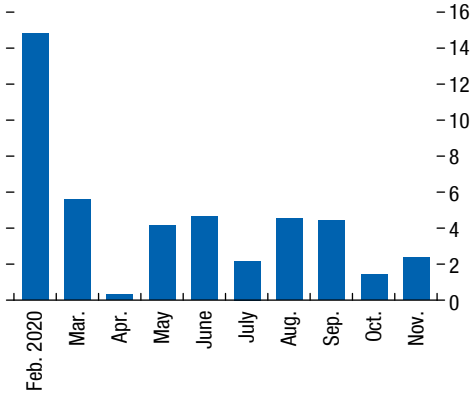
Funding costs in the CMBS market increased in 2020 ...

1. CMBS Funding Conditions in the United States, January 1–September 30, 2020 (Basis points)



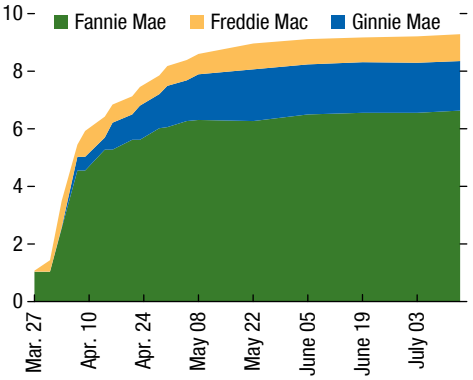
... and issuance dried up.

2. Monthly CMBS Issuance, February–November 2020 (Billions of US dollars)



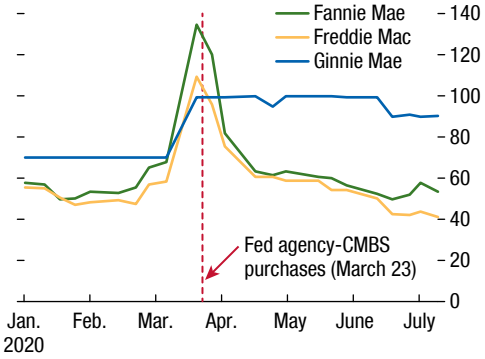
Federal Reserve purchases of agency CMBS increased significantly, especially for Fannie Mae securities.

3. Federal Reserve Cumulative Purchases of Agency CMBS, March–July 2020 (Billions of US dollars)



Agency CMBS spreads widened in March, but decreased rapidly after the Federal Reserve's first few CMBS purchase operations.

4. Agency CMBS Spreads, January–July 2020 (Basis points)



Sources: Bloomberg Finance L.P.; Federal Reserve Board; Mortgage Bankers Association; US Securities Industry and Financial Markets Association; and IMF staff calculations.
Note: In panels 1 and 4, spreads are defined over the Treasury yield curve. In panel 2, nonagency CMBS deals are included. CMBS = commercial mortgage-backed securities; CMBX = Commercial Mortgage-Backed Securities Index; MBS = mortgage-backed securities; OAS = option-adjusted spread.

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