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.

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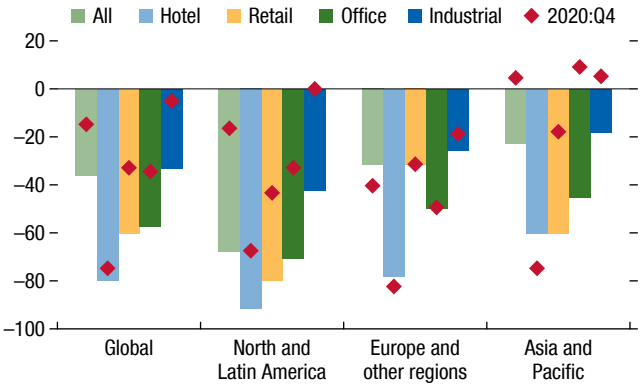
Figure 3.1. Developments in Global Corporate Real Estate Markets during the COVID-19 Crisis

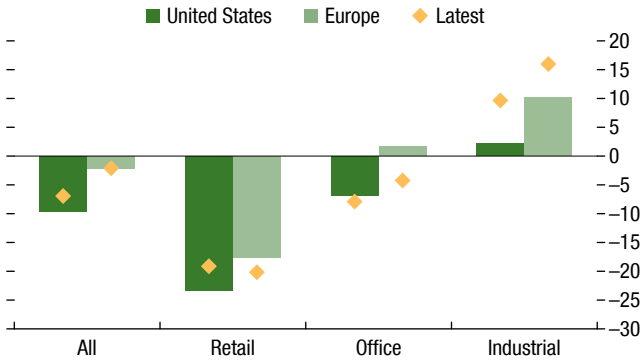
Transaction volumes decreased across market segments.

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



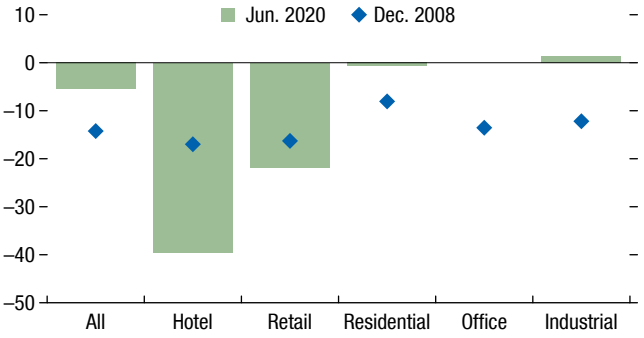
Prices in the retail and office segments were hit hard ...

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



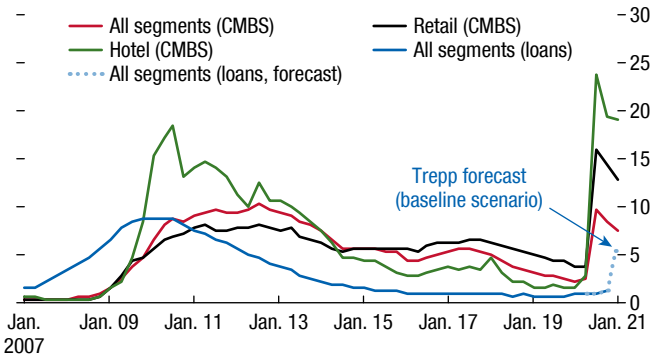
... while net operating income dropped in the hotel and retail segments.

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

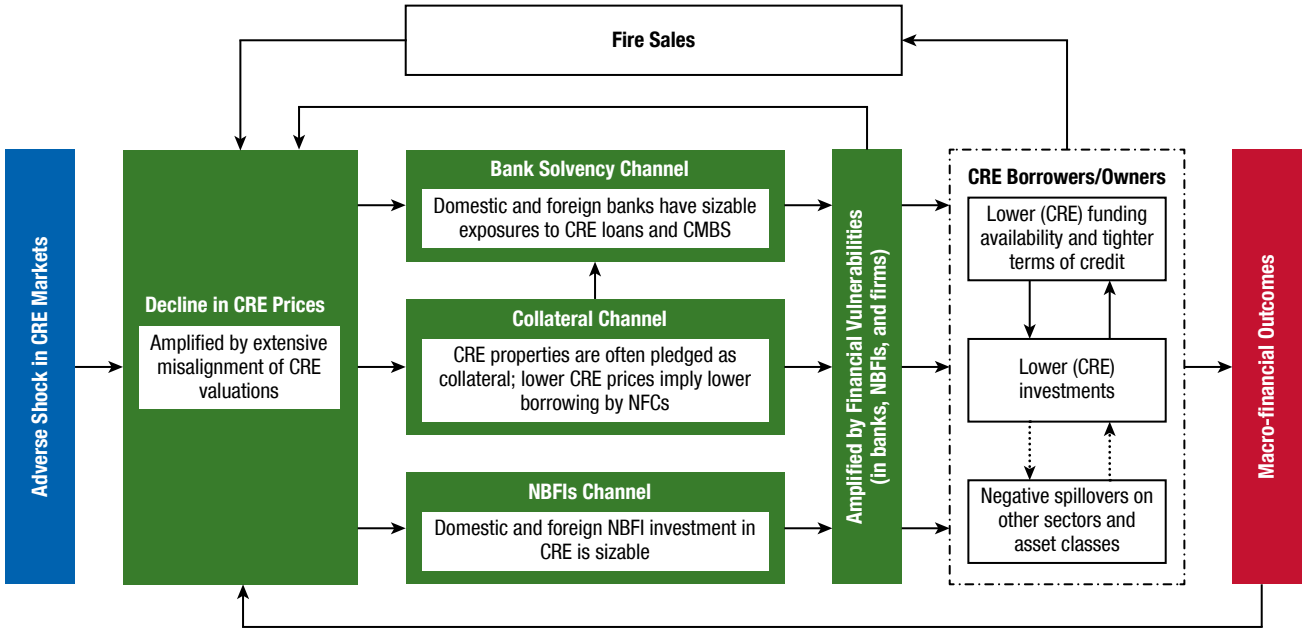
The commercial real estate sector is subject to sector-specific shocks, as well as to economy-wide shocks, with the COVID-19 crisis representing a combination of both. An adverse shock—whether sectoral (such as a decline in demand for specific commercial real estate segments), macroeconomic (such as 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.

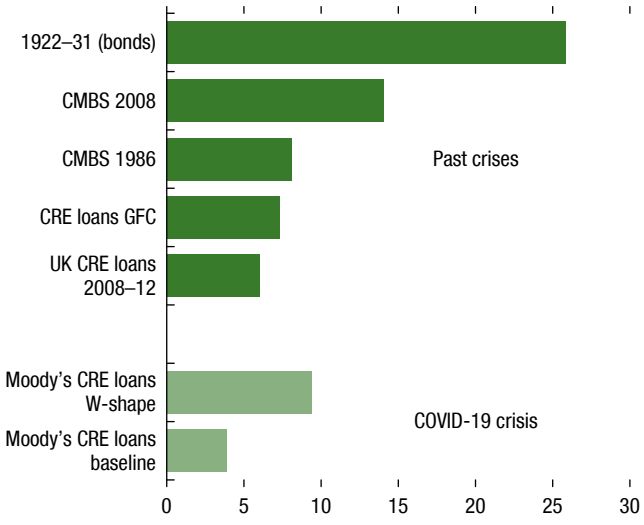
[6]For example, Dell'Ariccia and others (2016) and Biljanovska, Gornicka, and Vardoulakis (2019) show that elevated asset prices are detrimental to financial stability when accompanied by high levels of indebtedness.

[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

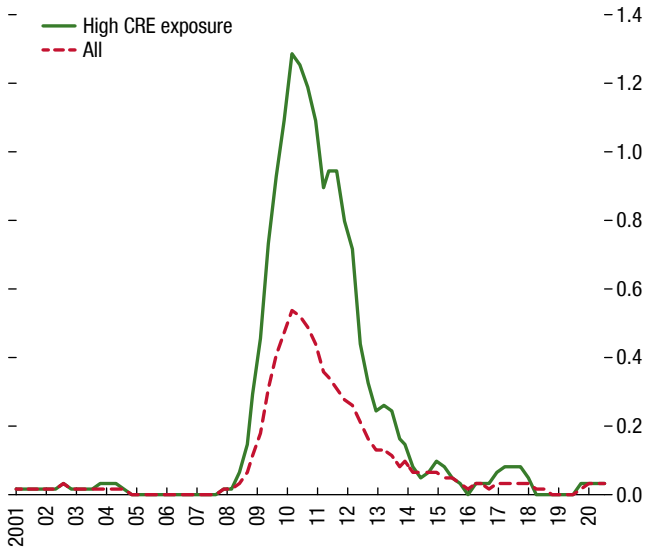
Commercial real estate debt losses have been substantial in past crises.

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).

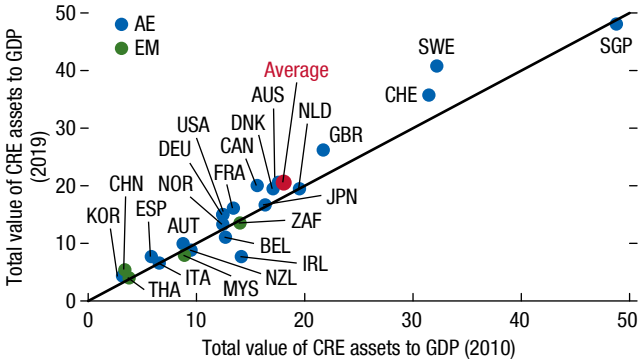
[10]While commercial real estate lending activity has been robust across economies, loan-to-value ratios have generally been lower in recent years than before the global financial crisis. For example, in the United States and the European Union, loan-to-value ratios on new commercial real estate loans 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

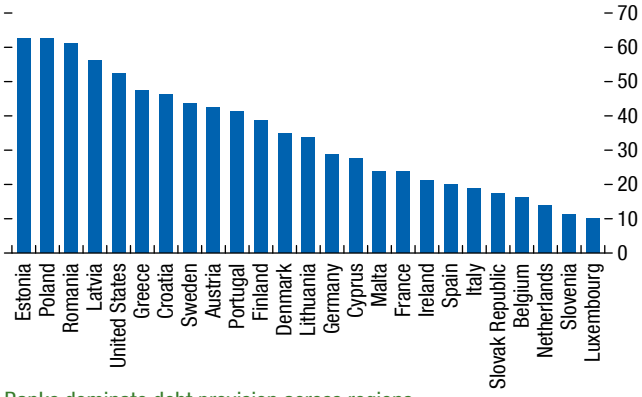
Commercial property markets have grown faster than GDP in many economies since the global financial crisis.

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



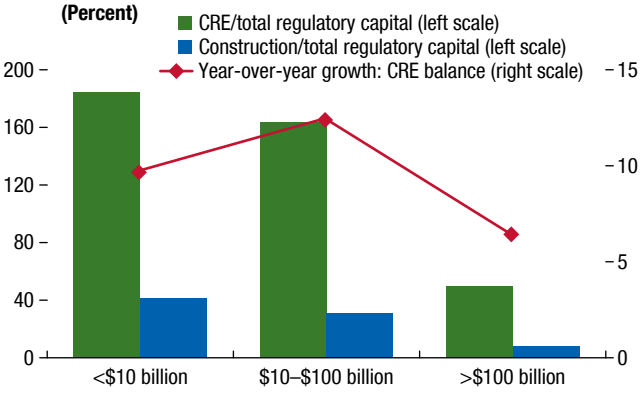
The CRE sector represents a sizable share of banks' exposures to firms.

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



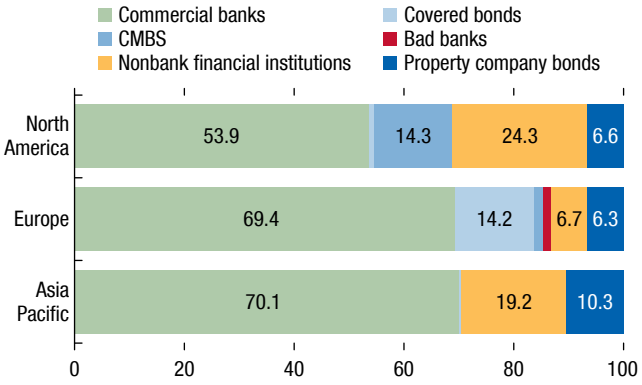
Smaller banks tend to have a higher share of CRE exposures.

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



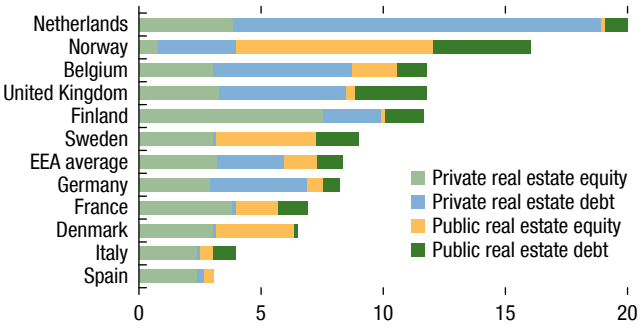
Banks dominate debt provision across regions.

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



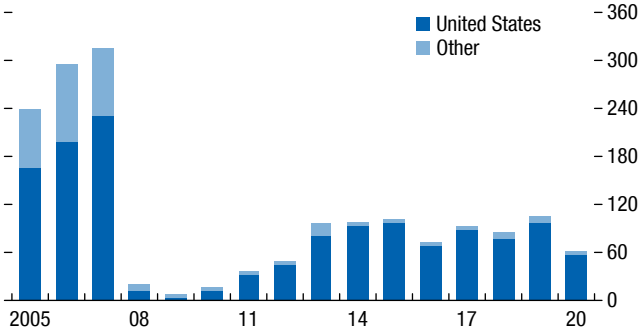
The insurance sector is also highly exposed to the CRE sector.

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)



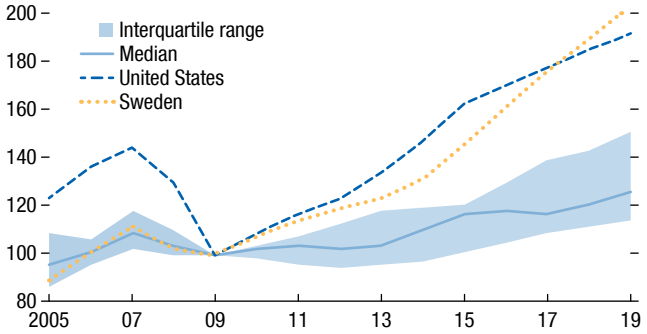
Sources: Commercial Mortgage Alert; Cushman & Wakefield; European Central Bank, Statistical Data Warehouse; DWS; MSCI Real Estate; S&P Global; Trepp; and IMF staff calculations.

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

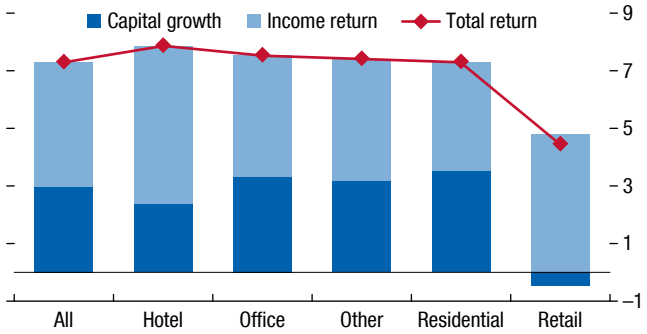
In most economies, real commercial property prices have risen above their levels before the global financial crisis.

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



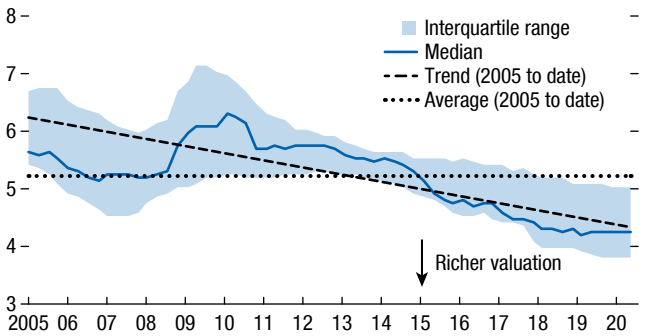
Retail performance was weak even before the pandemic.

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



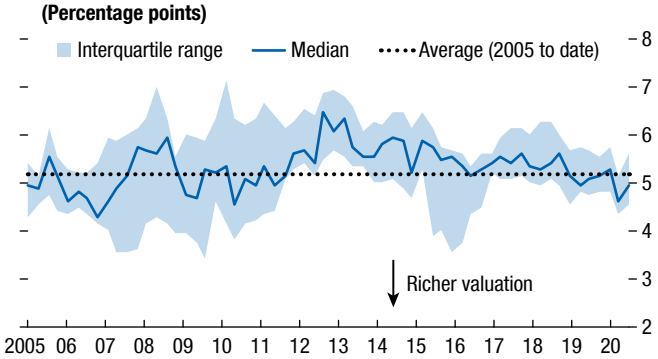
The net operating income to price ratio has declined steadily since the global financial crisis to historically low levels ...

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).

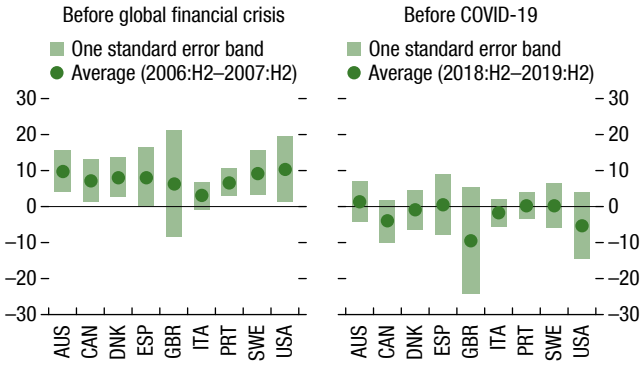
A more formal analysis of valuations through a novel fair-value model of commercial real estate prices supports this observation, suggesting that most economies in the sample did not enter the pandemic crisis with large price misalignments (Figure 3.6, panel 1).[12] Across

[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

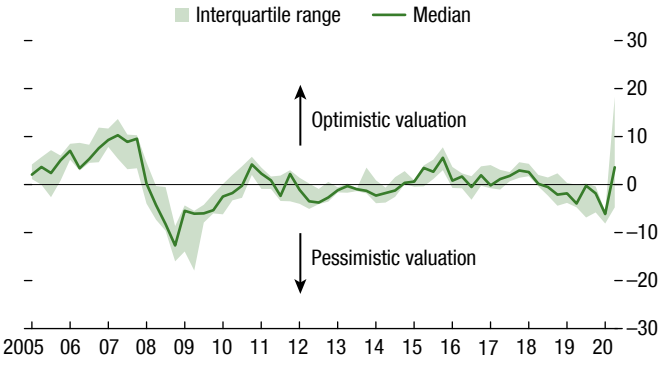
There is little evidence of large pre-pandemic misalignments in overall CRE prices.

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



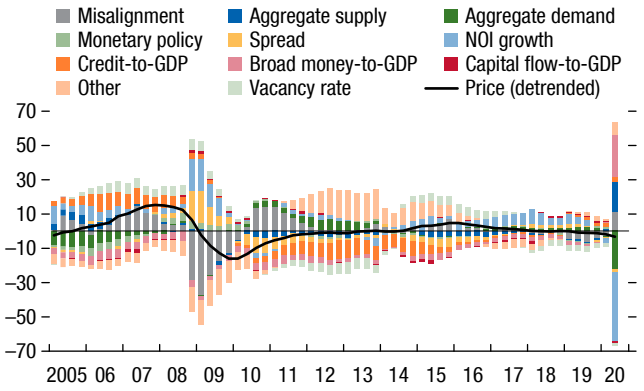
However, misalignments increased sharply in some economies in 2020.

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



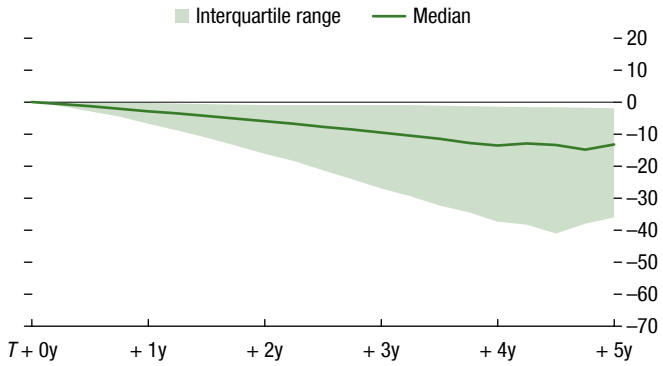
In the United States, the sharp decline in aggregate demand and net operating income during 2020 put downward pressure on fair values, implying an overvaluation.

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.

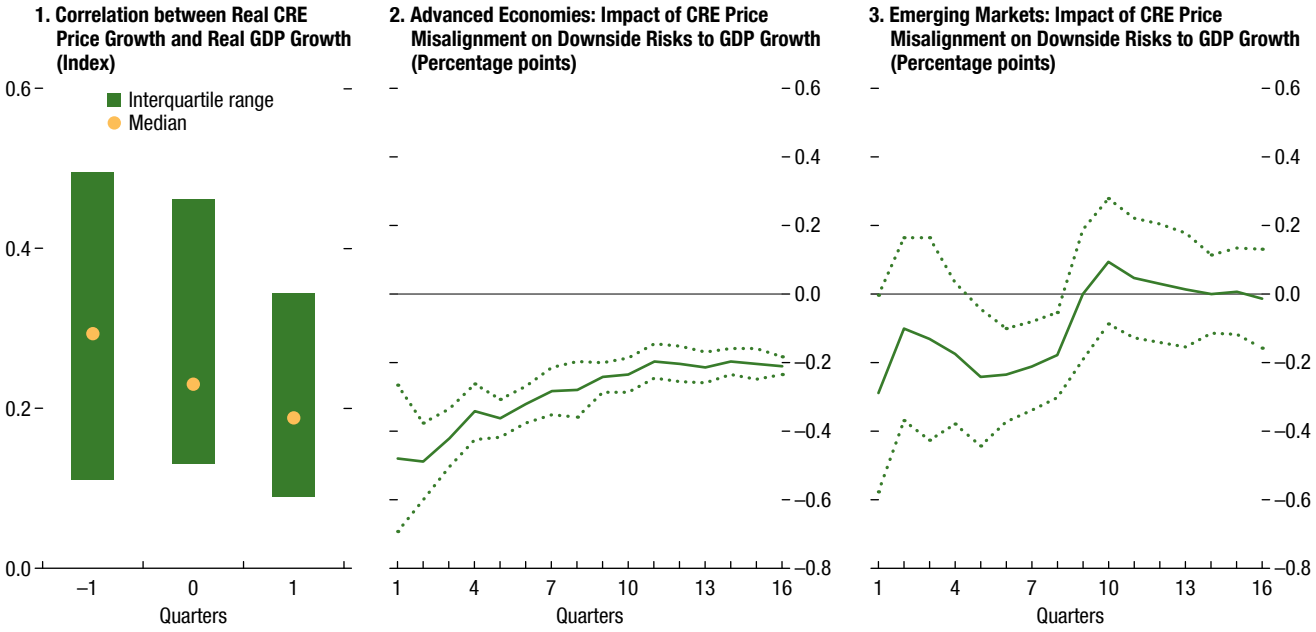
[16]If actual prices do not follow suit, perhaps because of valuation uncertainty, prices may become overvalued, which could increase the risk of a sharp price correction down the road.

[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).

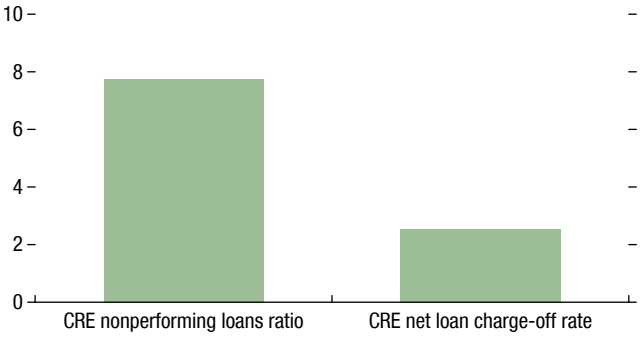
[25]Market value of real estate assets is normalized by the value of property, plant, and equipment, and the standard deviation of this ratio is 1.4. The estimated effect of changes in the market value of firms' real estate on investment expenditures is meaningfully large: each additional $1 of real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

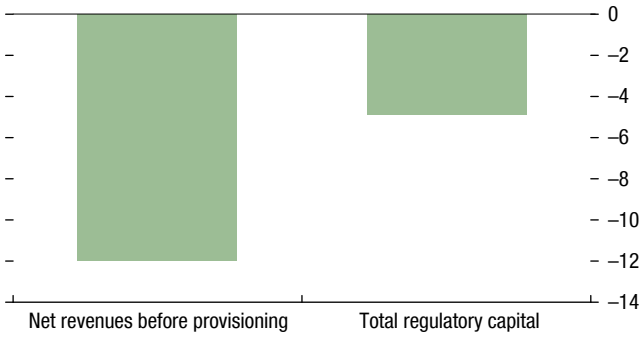
For banks with higher CRE exposures, a drop in CRE prices leads to a higher share of nonperforming CRE loans and higher loan charge-offs ...

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



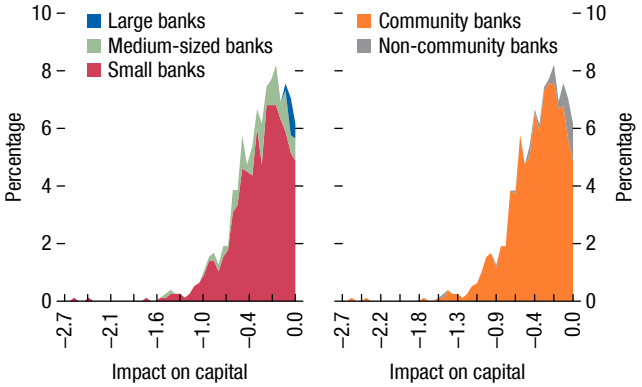
... as well as lower bank revenues and capital.

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



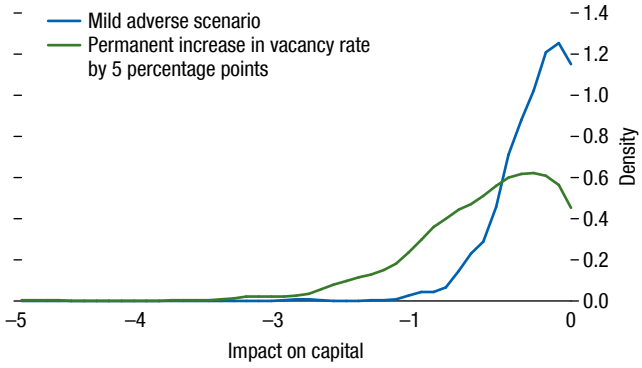
Capital losses are concentrated in smaller and geographically concentrated banks ...

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)

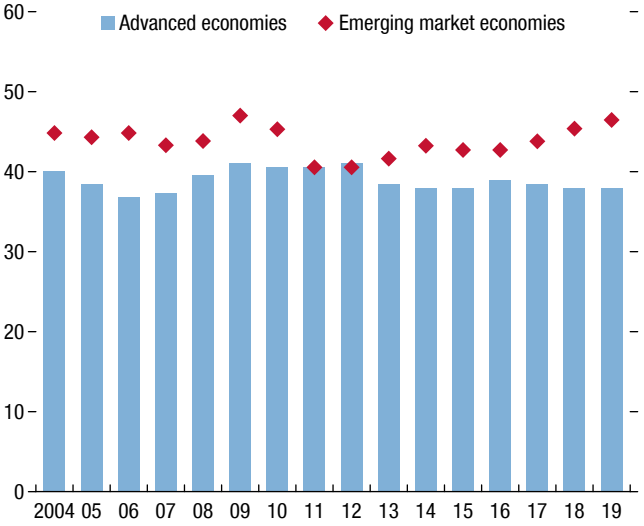


Sources: FDIC Deposit Survey; Federal Financial Institutions Examination Council (FFIEC) Call Reports; MSCI Real Estate; and IMF staff calculations.
Note: Panels 1 and 2 show the effect of a change in commercial real estate (CRE) prices on bank outcome variables: the CRE nonperforming loan rate (90+ 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

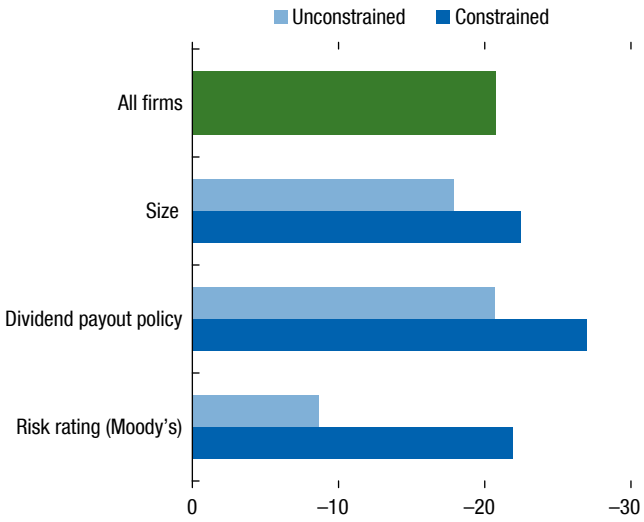
Real estate holdings are a sizable part of nonfinancial corporations' assets.

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.

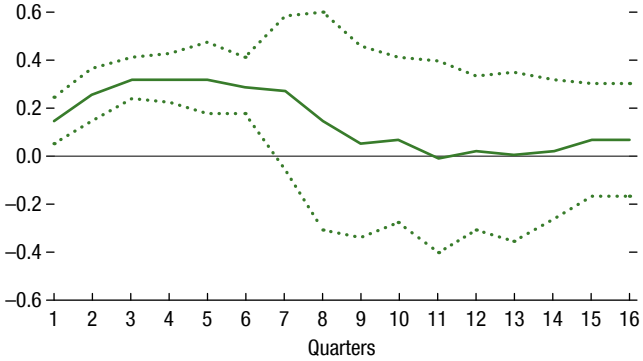
[32]Macroprudential measures are constructed as categorical variables. The sample for this exercise comprises 30 economies over 2000:Q1–2019:Q4. See Online Annex 3.4 for details of the empirical analysis.

[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

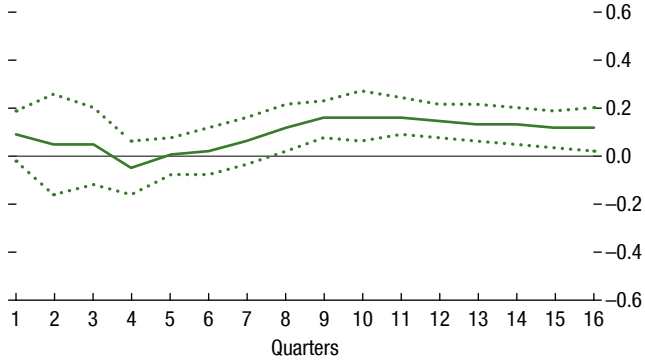
CRE-specific macroprudential tightening measures are effective in limiting downside risks to CRE prices in the short term.

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



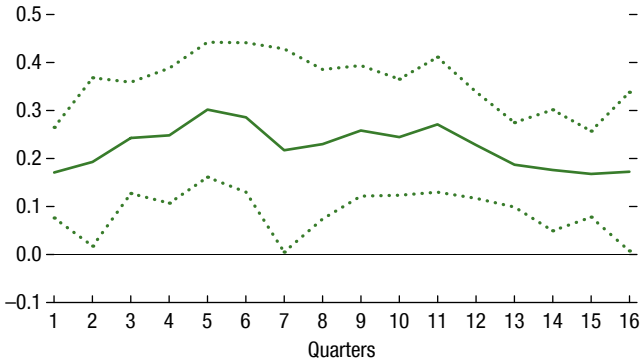
Broader borrower-based tightening measures reduce downside risks to CRE prices in the medium and long terms.

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



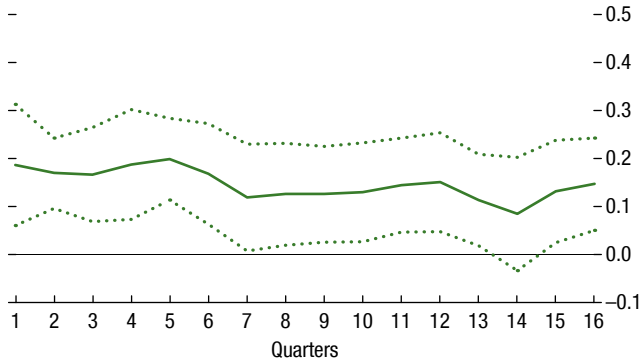
Capital flow management measures appear to limit tail risks to CRE prices ...

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).

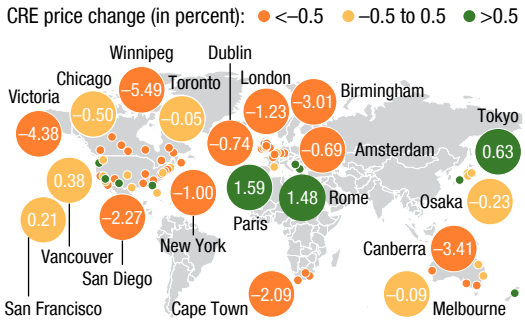
[4]In addition to the variation in city-level prices across commercial real estate segments, there is also a difference in price changes between urban and suburban areas around major cities (such as London, New York, Paris, and Tokyo). The commercial real estate price decline was slightly larger in urban 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

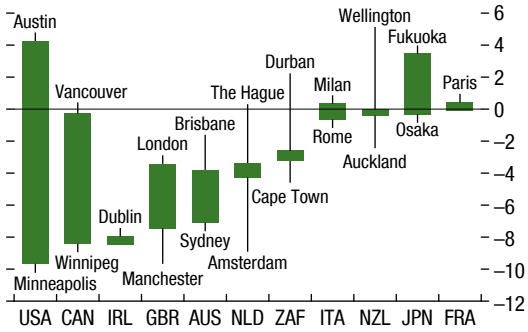
The impact of the pandemic has varied across cities ...

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



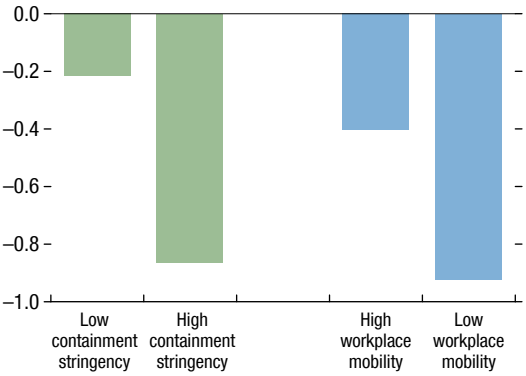
... especially, in the retail sector.

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



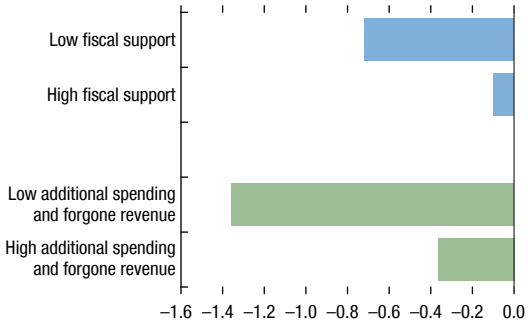
More stringent containment measures have been associated with larger price declines ...

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).

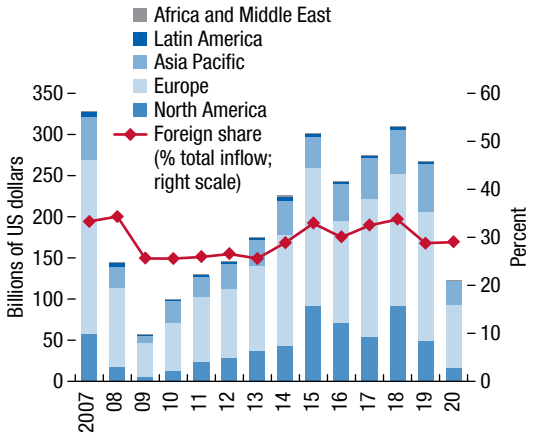
[3]Synchronization is calculated using a simple metric based on the median absolute difference of commercial real estate price growth rates across economies. The measure is normalized with a maximum value equal to 100.

Box 3.2 *(continued)*

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

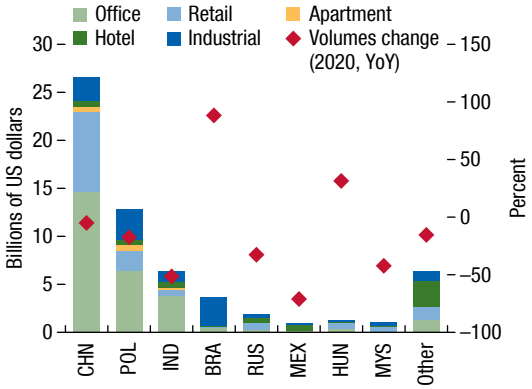
Global and cross-border CRE investments had recovered since the global financial crisis ...

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



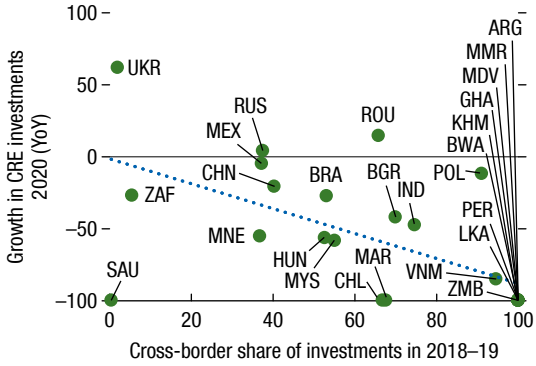
... but the impact of the COVID-19 crisis varied across emerging market economies.

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)



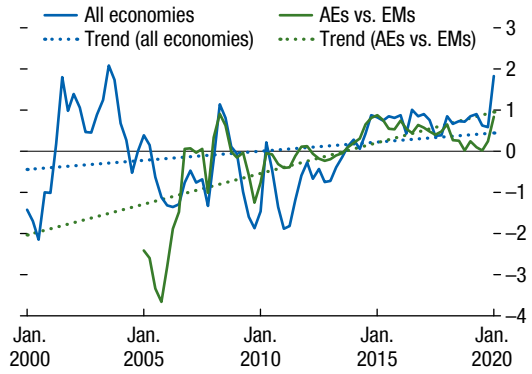
Total inflows declined most in markets with a higher precrisis share of foreign participation.

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.

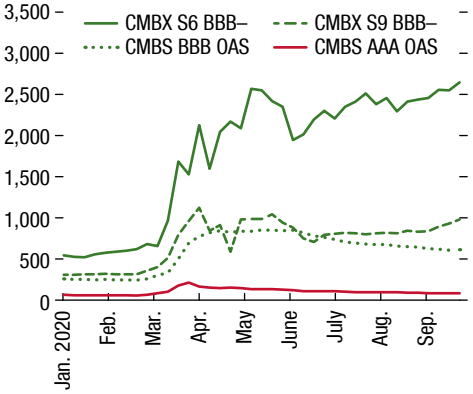
[3]The regulation, launched in 2014, implements credit risk retention standards for asset-backed securities, including commercial mortgage-backed securities. The regulation requires issuers to retain at least 5 percent of any security they issue on their books.

Box 3.3 *(continued)*

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

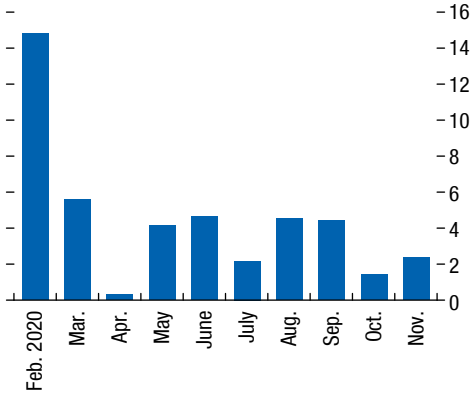
Funding costs in the CMBS market increased in 2020 ...

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



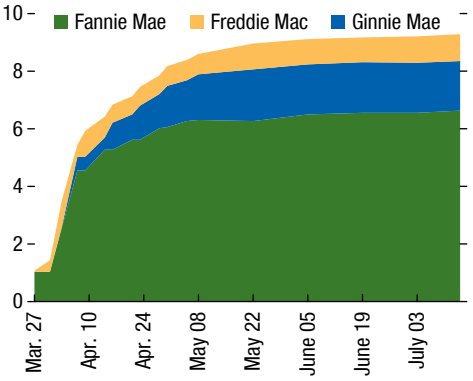
... and issuance dried up.

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



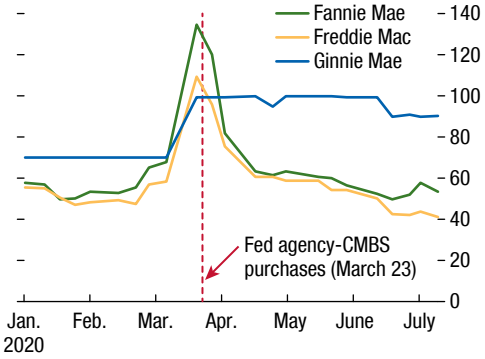
Federal Reserve purchases of agency CMBS increased significantly, especially for Fannie Mae securities.

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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