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STRATEGY, POLICY, AND REVIEW; MONETARY AND CAPITAL MARKETS; AND LEGAL DEPARTMENTS

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Prepared by Nassira Abbas, Bruno Albuquerque, Jose Garrido, Deepali Gautam, Benjamin Mosk, Thomas Piontek, Anjum Rosha, Thierry Tressel, and Aki Yokoyama

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Executive Summary

Nonfinancial corporations in many jurisdictions appear to have navigated the COVID-19 pandemic shock relatively well, supported, in part, by an unprecedented policy reaction that mitigated the effect of aggregate shocks on corporations. Corporations' financial performance also seemed to have withstood the initial effects from the synchronized global monetary policy tightening cycle initiated in late 2021/early 2022 to get inflation back on target. Nevertheless, there are increasing signs that the interaction of high corporate indebtedness with the new environment of high interest rates is uncovering vulnerabilities in the corporate sector, posing risks to the ongoing global recovery.

This paper provides a comprehensive overview of corporate sector vulnerabilities that have emerged since the pandemic. It focuses particularly on the financial stability implications from corporate sector vulnerabilities in a new environment of high interest rates. Although several central banks have recently started cutting interest rates, the expectation is that high interest rates, above prepandemic levels, are here to stay. In this context, it is especially important to design and deploy appropriate policies that may prevent and mitigate risks from the corporate sector. The main findings of the paper include the following:

- First, this paper finds that the global share of financially distressed firms has been trending upward, especially in emerging markets. This is relevant because the evidence in this paper points to interest rate increases transmitting more strongly to the real economy when the share of distressed firms is high. The lagged effects of past monetary policy tightening will lead to a significant increase in corporate financing rates going forward, with adverse effects on firms' capacity to invest.
- Second, firms with higher refinancing needs—the so-called maturity wall—may face more challenges in rolling over their debt in an environment of high interest rates. The empirical analysis in this paper finds that the financial performance of nonfinancial corporations with high rollover needs tends to be more affected.
- Third, an adverse macroeconomic scenario of negative demand shocks, coupled with higher interest rates, would lead to a fast and large increase in corporate defaults. Financial stability risks would increase materially, especially for emerging markets and less developed banking systems, because bank capital buffers would fall considerably in this scenario.
- Fourth, the increasing role of nonbanks in corporate credit intermediation in advanced economies may amplify overall financial stability risks. This paper closes some of the data gaps and shows that since the global financial crisis, nonbanks have been increasing their exposure to riskier firms and to the less productive segment of the economy, including zombie firms and nontradable firms. The migration of credit risk to the unregulated sector raises concerns about the propagation of risks to the rest of the financial system from a potential corporate default cycle. It is then paramount to continue closing data gaps in this sector while extending the regulatory perimeter to nonbanks to improve the overall resilience of the financial sector.
- Finally, the paper documents some progress on insolvency and restructuring regimes to deal with corporate distress since the pandemic. Nevertheless, several shortcomings still persist that would prevent countries from resolving firms quickly in a potential scenario of an intensification of corporate distress. For instance, out-of-court mechanisms have not yet been introduced in most countries, and reforms that improve the quality of liquidation regimes or the regulation of insolvency professionals also remain limited.

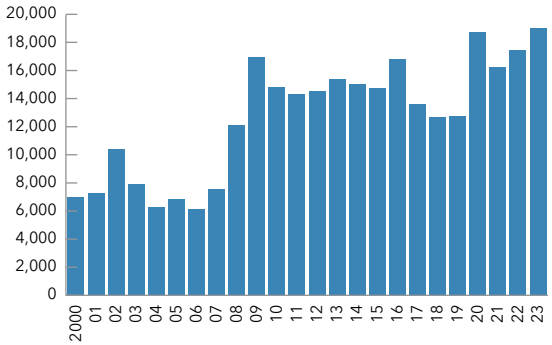
1. Introduction

Nonfinancial corporations managed to generally preserve the health of their balance sheets during the COVID-19 pandemic. The unprecedented COVID-19–related governmental policy measures and, more recently, the resilient aggregate demand that contributed to strong corporate earnings help explain the resilience of corporations. Nonetheless, as the global economy enters into a new phase of the credit cycle, vulnerabilities in the corporate sector continue to pose risks to the world economy because concerns about high corporate indebtedness and the sustainability of the global corporate debt cycle had already been on the radar of the media and policymakers before the pandemic.[1]

These concerns seem to be more prevalent in recent years. For instance, references to key words related to corporate sector vulnerabilities in news articles increased during the pandemic, reaching higher levels than during the global financial crisis (Figure 1). Although the substantial policy support—fiscal, monetary, and financial—during the pandemic was instrumental in containing the collapse in aggregate demand, it may have nonetheless helped to keep some weak firms alive, increasing the overall fragility of the corporate sector.

Figure 1. Number of News Articles Mentioning Corporate Sector Vulnerabilities

Rising concerns about corporate vulnerabilities since the pandemic



Sources: Factiva; and authors' calculations.

Note: Articles mentioning "corporate bankruptcy," "corporate default," "corporate distress," "corporate debt," or "corporate vulnerabilities."

This paper argues that concerns about rising corporate sector vulnerabilities are justified on several grounds. First, corporate debt levels have increased or, at the very least, have remained very high in many countries, suggesting higher underlying vulnerabilities in the corporate sector.

Second, funding costs are expected to remain at considerably higher levels relative to those prevailing before the pandemic amid high refinancing needs in the near term—the so-called maturity wall. After decades of extremely low interest rates and the extraordinary easing of financial conditions during the pandemic, many central banks pivoted and aggressively tightened their policy stance in late 2021/early 2022 to get inflation back on target. This sharp tightening transmitted rapidly to the real economy, challenging many businesses that were confronted with both tighter financial conditions and lending standards. The swift rise of interest rates has increased rollover risks because firms refinance their debt at much higher rates than those prevailing before the COVID-19 crisis. Although central banks have started cutting interest rates, markets are pricing that policy rates will remain considerably above the prepandemic levels, implying higher funding costs for firms. Moreover, higher interest rates are consistent with recent estimates that the natural rate of interest in the euro area and the United States may have edged up relative to the prepandemic period, possibly because of shifts in the savings–investment balance and a more inflationary environment (Benigno and others 2024).

[1] The literature has found that corporate debt booms predict lower overall economic activity in the medium term, especially when booms are originated in the nontradable sector (Giroud and Mueller 2021; Albuquerque 2024; Müller and Verner 2024). By contrast, Jordà and others (2022) found that nonfinancial debt fluctuations play a limited role in driving the decline in medium-term growth, although they document that corporate debt has strong adverse effects in jurisdictions with inefficient and costly debt restructuring frameworks.

Third, cash buffers built during the pandemic are eroding and corporate margins are compressed, with a significant reduction in profits, which limits the room to smooth shocks in a potential adverse scenario. At the same time, the debt share of firms with low cash buffers has been increasing over the past two years, adding to concerns about these firms' ability to repay their debt in a higher-for-longer interest rate environment.

Fourth, because lending standards have become tighter, some firms (generally low rated and at higher risk of default) have turned to other more opaque sources of funding, including the private credit market, especially in advanced economies (AEs). At the same time, interconnectedness risks are more prevalent in these markets because the majority of private credit investors are usually nonbank financial institutions (NBFIs), which are typically subject to less stringent regulation.

Finally, corporate defaults and bankruptcy filings have been increasing in many countries, particularly on the speculative grade, and for leveraged loans, adding to concerns about the potential effect on the real economy if these ongoing trends are to continue.

In this context, this paper first provides a comprehensive analysis of corporate sector vulnerabilities in the postpandemic economic context, followed by an analysis of its macrofinancial implications in an environment of high interest rates. It then discusses appropriate policies that may be deployed to prevent and mitigate risks emanating from the corporate sector. The main findings of the paper are as follows:

- First, the paper finds that the temporary policy measures in the context of COVID-19 pandemic, coupled with low levels of interest rates, masked some of the underlying prepandemic trends in corporate sector vulnerabilities in many parts of the world. The interaction of elevated corporate vulnerabilities with high interest rates, as policy support is scaled back, will test the resilience of the nonfinancial sector going forward.
- Second, using nonfinancial firm–level balance sheet data, this paper provides novel empirical evidence on the heterogeneous transmission of contractionary monetary policy to corporations' financial performance for a large panel of 48 countries. The main finding points to a substantially larger effect of monetary policy on financially distressed firms relative to other firms. In this context, this paper stresses that the transmission of monetary policy is state dependent, whereby interest rate increases may transmit more strongly to the real economy when the share of distressed firms is high, which seems to be the case in the current environment, especially in (some) emerging markets (EMs). Moreover, the financial performance of financially distressed firms tends to fall considerably more relative to other firms during a banking crisis. This is a reminder about corporate vulnerabilities possibly having additional nonlinear feedback effects on the real economy during periods characterized by troubles in the financial sector.
- Third, by exploiting the preexisting debt maturity structure of firms, this paper finds that firms with high rollover risks tend to be affected more by contractionary monetary policy shocks. This exercise controls for firm-specific balance sheet characteristics and a rich set of fixed effects to establish that the comparison is between similar firms that only differ in the portion of debt that needs to be rolled over. These findings highlight that firms with high debt rollover needs, including firms that may have healthy balance sheets, may react more strongly to the effect of higher interest rates because of differences in the debt structure. Overall, this underscores the importance of assessing corporate vulnerabilities along several dimensions that go beyond looking at metrics that capture firms' financial distress.
- Fourth, this paper uses a corporate sector stress test model for a large set of countries to quantify the potential losses to creditors from corporate defaults under stressed/adverse macroeconomic scenarios. The main findings point to a significant decline in bank capital buffers from an adverse scenario of negative shocks to aggregate demand, coupled with further increases in the cost of debt, that lead to a large number of corporate defaults. The increase in financial stability risks seems to be stronger for EMs and less developed banking systems.

- Fifth, the paper zooms in on some of the data gaps on nonbanks by providing novel findings on the exposure of nonbanks to weak corporate borrowers. By combining loan-level information on the issuance side with balance sheet data on nonfinancial borrowers, the paper finds that since the global financial crisis, nonbanks have been increasing their exposure to riskier firms and to the less productive segment of the economy, including zombie firms and nontradable firms, such as real estate. Nonbanks are expected to continue playing an important role for credit intermediation in the current environment of high interest rates—a period when deposits typically flow out of the banking sector to nonbanks—allowing nonbanks to increase their activity in corporate credit intermediation (Drechsler, Savov, and Schnabl 2017; Nelson, Pinter, and Theodoridis 2018; Xiao 2020; Elliot and others 2021; Cucic and Gorea 2022; Elliott, Meisenzah, and Peydró 2023). The risk, however, is that high interest rates may promote a shift in lending from nonbanks toward riskier corporate borrowers. In this context, the increasing shift from bank to nonbank corporate credit intermediation creates new challenges for financial stability, especially in AEs.
- Finally, the paper updates the crisis preparedness indicator, first developed in Araujo and others (2022), to document the progress made on insolvency and restructuring frameworks for 60 countries since 2021. Although it finds that countries have generally made some progress in strengthening their insolvency frameworks, it also documents that several shortcomings persist. For example, out-of-court mechanisms have not been introduced in most countries, which prevent the fast resolution of distressed firms. This is important, as illustrated by novel empirical estimates that show that healthy firms in countries with less developed insolvency frameworks tend to be more affected by monetary policy. These findings are consistent with the narrative that in countries with more deficient insolvency frameworks, distressed firms may remain alive for longer, potentially becoming zombie firms, thus delaying a necessary creative destruction that ultimately affects healthy firms operating in the same sector through a misallocation of capital or crowding-out effects.

Our results show that the interaction of corporate sector vulnerabilities with postpandemic higher interest rates, amid reduced policy support, may lead to financial stability risks in the world economy. To be sure, the substantial policy support amid low interest rates that dominated the early years of the pandemic may have encouraged the prevalence of unproductive and unviable zombie firms, which have been found to reduce overall productivity, investment, and employment in the economy. These developments call for the continued use of financial policies to prevent and mitigate the buildup of risks in the corporate sector. For instance, stringent stress tests should be deployed to allow supervisors to better assess where risks from postpandemic higher interest rates on firms' repayment capacity are more pressing. Supervision should also be vigilant about emerging risks from specific sectors of the economy that have been hit hard by the pandemic and by the monetary policy tightening cycle, including in the commercial real estate (CRE) market. Also, importantly, steps are gradually being taken to extend the regulatory perimeter to nonbanks. However, large data gaps still persist in this sector related to the lack of balance sheet data, information on leverage and liquidity mismatches, and nonbank interconnectedness with banks; the collection of reliable data is thus paramount to analyze vulnerabilities stemming from origination practices and chains of bank and nonbank intermediation in the corporate debt market.

Countries will also need to continue improving their crisis preparedness systems to deal with potential adverse scenarios of an intensification of corporate distress. For instance, shortcomings still persist in out-of-court mechanisms, which have not been introduced in most countries, and reforms that improve the quality of liquidation regimes or the regulation of insolvency professionals also remain limited. Moreover, some support measures deployed during the pandemic were based on loan and guarantee programs, which have resulted in an increased exposure of firms to the state. This raises, in turn, new issues in restructuring and insolvency. As economies continue to recover from the pandemic, the state will need to act as a "private creditor" (that is, states should take decisions based on the most productive outcome that may involve restructuring, reorganization, or liquidation of firms). These actions aim at limiting moral hazard and fiscal costs and preserving the efficiency of the insolvency process.

The rest of the paper is organized as follows. Section 2 documents the evolution of corporate sector vulnerabilities in the wake of the pandemic. Section 3 carries out two empirical exercises: (1) the investigation of the effect of higher interest rates on corporations' financial performance (Section 3.A), and (2) the assessment of the potential effect on banks' capital from adverse scenarios of corporate sector defaults (Section 3.B). Section 4 sheds some light on the exposure of banks and nonbanks to weak corporate borrowers. Section 5 discusses the progress made on insolvency and restructuring regimes since 2021, and Section 6 presents the needed policies to deal with corporate sector vulnerabilities. Section 7 concludes the paper.

2. Corporate Sector Vulnerabilities in the Wake of the Pandemic

The rapid tightening of financial conditions started in 2022, combined with the heightened uncertainty of the macrofinancial backdrop, has challenged the resilience of the corporate sector. The pass-through of the monetary tightening has begun to affect businesses' activity across regions, although the quantitative tightening conducted in parallel had a limited effect on the funding conditions of the corporate sector (Box 1).

Although the unprecedented policy support and large cash buffers helped corporations to navigate the pandemic shock relatively well, there is a particular concern about the ability of the corporate sector to weather a sharp economic downturn because the effect of underinvestment could be especially detrimental for vulnerable firms.

Higher interest rates typically increase corporate interest expenses with a time lag, squeezing profits and limiting firms' ability to invest and hire workers, so the transmission of higher rates to firms' average cost of funding may take some time to fully materialize (Brauning, Joaquim, and Stein 2023). In effect, and although central banks have started cutting interest rates, there is the expectation that policy rates will remain considerably above those observed just before the pandemic, which implies higher funding costs for firms. Moreover, some firms seem to have adjusted their issuance patterns in an attempt to "wait out" the current monetary policy cycle but may struggle if financing conditions do not ease as rapidly as they had hoped for. With the postpandemic surge in inflation, firms faced two new threats: (1) an increase in funding costs as central banks have tightened monetary policy and (2) an increase in the cost of inputs and in goods sold as price pressures propagate through production chains. Firms with pricing power managed to pass on cost increases downstream or to consumers, but firms with weaker business models and limited pricing power faced a compression of their income margins. These two forces threaten to push a weaker tail of firms into lower and, sometimes, unsustainable interest coverage ratios (ICRs).

The macroeconomic conditions surrounding nonfinancial corporations are gradually deteriorating, and vulnerabilities in the sector have steadily increased in a "higher interest rate" environment. Firms have generally managed to maintain their sales at high levels so far despite the central banks' rapid rate hikes, although with some exceptions, most prominently in Brazil and China (Figure 2, panel 1). Firms have benefited from the recent drop in the prices of energy and some raw materials while also demonstrating pricing power by passing some cost inflation to consumers. Nevertheless, the rise in corporate earnings since 2020 is losing momentum in most parts of the world. Accordingly, earnings growth expectations have slowed as demand weakens (Figure 2, panel 2). The April 2024 *World Economic Outlook* growth forecasts (IMF 2024b) highlight that the world economy will grow only at a pace below the historical average over the past two decades. One of the possible reasons why the weakness in productivity is increasingly weighing on the world economy can be explained by the rise in the number of unviable and unproductive—zombie—firms (Box 2).

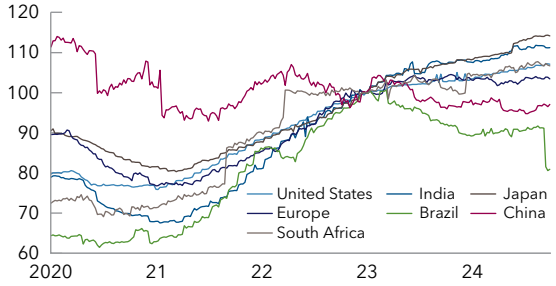
Although price pressures have been receding, the persistence of inflation remains the main concern of corporate managers in the recent earnings disclosures. Corporate margins are under pressure in some regions with higher input costs and increasing labor shares (Figure 2, panel 3). The risk of declining corporate earnings under tighter funding conditions may ultimately squeeze firms' ability to borrow. This can be amplified by tighter lending standards because banks and other lenders reduce their supply of credit in response to realized or expected firm defaults. The combination of these two factors could lead to a further increase of corporate interest expenses through wider spreads.

Figure 2. Corporate Earnings in a Higher-for-Longer Environment

Sales and price increases have slowed, and profit margins have compressed

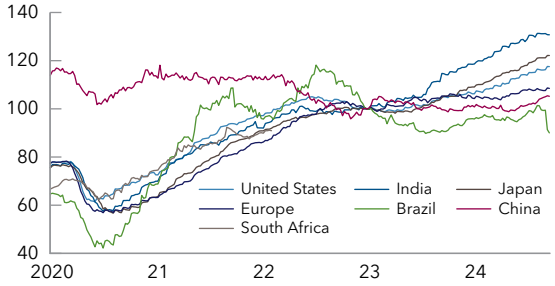
1. Global Large Firms: Sales 12-Month Trailing

(January 1, 2023 = 100)



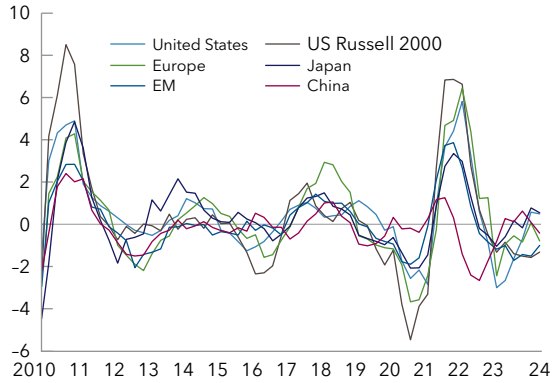
2. Expected Earnings, 12-Month Forward

(January 1, 2023 = 100)



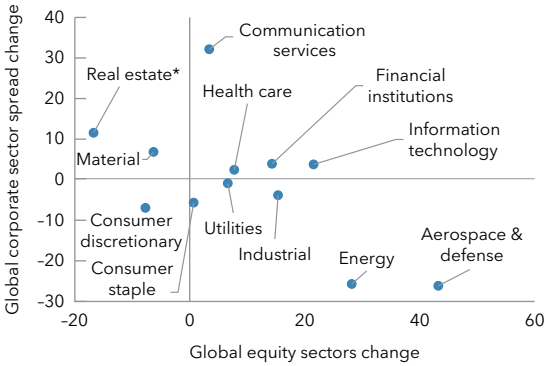
3. Corporate Profit Margin

(Percent, year-over-year change)



4. Global Corporate Sectoral Performance

(Percent; basis points, changes since December 31, 2021)



Sources: Bloomberg Finance L.P.; National Association for Business Economics; Refinitiv Datastream; and IMF staff calculations.
Note: Panel 2 shows expected earnings per share. EM = emerging market.

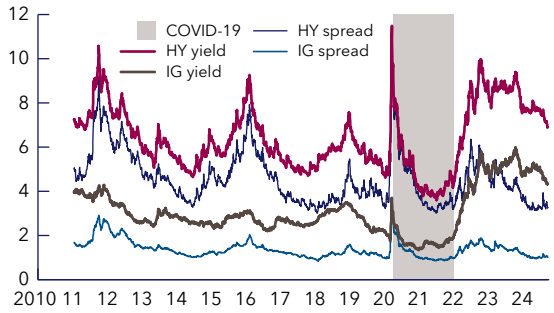
During 2021, corporations deftly leveraged the pandemic-time policy support, both fiscal and monetary, to strengthen their balance sheets, which translated into significant improvement in their valuations—tighter corporate bond spreads. This started to reverse soon after, especially about the time the Federal Reserve started to hike rates in early 2022. Since early 2024, corporate bond spreads have narrowed again, and share prices have reached all-time highs. However, taking a more granular view, spreads remain wide, and equities are underperforming in some sectors, on net, since 2021. In particular, corporations in the lower-rated segment, and in the real estate sector, have struggled with rising rates amid higher costs and falling real estate prices (Figure 2, panel 4). Spreads have performed relatively better in the consumer cyclical, energy, and aerospace and defense sectors, broadly in line with equity performance, reflecting strength in the household sector and artificial intelligence–related investor enthusiasm, as well as robust arms-related demand in the context of heightened geographical risks and ongoing conflicts. Despite the narrowing of bond spreads during 2023, this has not translated into cheaper corporate funding costs because absolute yields remain elevated and even higher than at the height of the pandemic crisis for investment-grade yields (Figure 3, panel 1). Compressed spreads are therefore indicative of stretched valuations in the corporate bond market. Indeed, corporate bond spread misalignment—measuring the extent to which spreads are lower than those implied by fundamentals-based model values—has become more severe in the euro area high-yield bond market and in US investment-grade and high-yield bond

Figure 3. Corporate Performance and Bond Spread Valuations

Corporate bond spreads and yields have increased since the global monetary policy tightening started

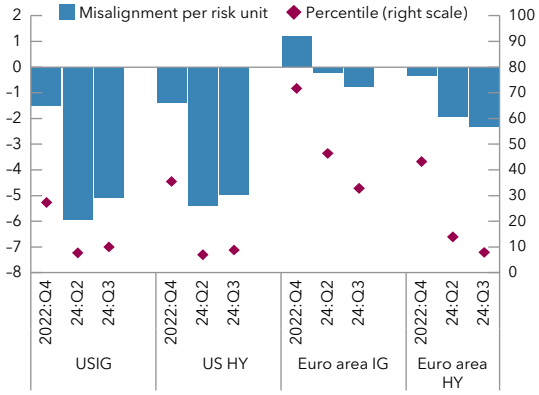
1. Global Corporate Bond Yield and Spread

(Percent)



2. Global Corporate Spreads Misalignments

(Deviation from fair value per unit of risk; percentile)



Sources: Bank of International Settlements; Bloomberg Finance L.P.; Consensus Economics Inc.; EUROPACE AG/Haver Analytics; European Central Bank; Federal Reserve; Refinitiv Datastream; and IMF staff calculations.

Note: Panel 2 shows results of a corporate bond valuation model. Negative values indicate overvaluation in the corporate bond markets relative to macro fundamentals (see Section 1 of Online Annex 1 in IMF 2019). HY = high yield; IG = investment grade.

markets (Figure 3, panel 2).[2] In addition to relatively healthy corporate balance sheets (discussed in the following paragraphs), strong demand from corporations drives the compression of spreads, particularly in the United States.

In the context of heightened macroeconomic uncertainty, rising firm distress leading to defaults remains a key risk for the upcoming year. A prolonged war in Europe, newly emerged geopolitical risks in the Middle East, and higher commodity demand from green and artificial intelligence technologies could weigh on the commodity and energy prices trajectory, and a more fragmented world could further worsen the corporate outlook. These vulnerabilities may be exacerbated by worsening credit quality in corporate debt. In fact, corporate defaults and bankruptcy filings, particularly on the speculative grade, and for leveraged loans, have been increasing in many jurisdictions. There are concerning signs of deterioration in credit fundamentals. Although we have not seen a significant increase in nonperforming loans (NPLs) or corporate defaults, due largely to policy support measures during the COVID-19 pandemic and still-large cash buffers, some vulnerabilities have already materialized among some segments of the weak tail of corporations. Global default rates have increased from 4.3 percent in 2022 to 4.8 percent in 2023, reaching 5 percent in January 2024. According to Moody's, global default rates are expected to remain close to the historical average of about 4 percent in the baseline scenario where central banks cut rates in 2024, thus supporting financial conditions. However, given heightened geopolitical risks and uncertainty around the global economy outlook, default rates could rise sharply in a more adverse scenario. In the same vein, bankruptcies have also risen across many jurisdictions (Figure 4, panels 1 and 2). Notably, bankruptcy cases are higher than pre-COVID-19 levels in the euro area and Japan, although they remain lower in the United States. It is worth noting that in the United States, the favorable market environment incites companies to reorganize internally instead of considering the usual process of liquidation.[3]

[2] Historically, narrow corporate bond spreads can be attributed to technical factors such as limited bond issuance and robust duration demand for asset liability management from investors, such as life insurance companies and pension funds. In addition, investors' expectations of a soft landing and an improved balance sheet because of policy support during the pandemic may have played a role in narrowing corporate spreads.

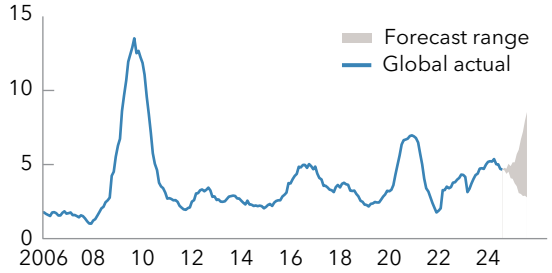
[3] Apollo Research shows that 70 percent of US bankruptcy filings in 2024 have been reorganizations (see Slok 2024).

Figure 4. Corporate Default Rate and Bankruptcy Fillings

Global default rate and bankruptcies have increased amid a higher-interest-rate environment

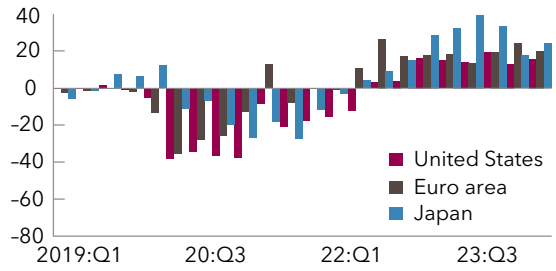
1. Global Default Rate

(Percent, trailing 12 months)

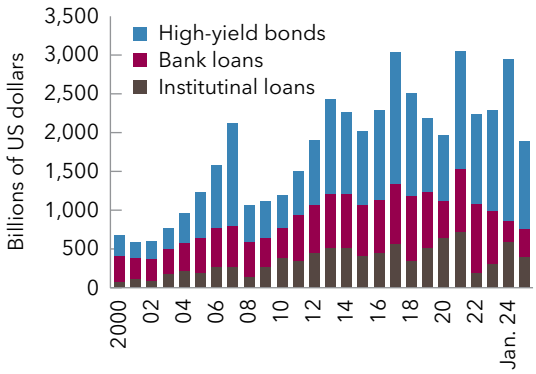


2. Bankruptcy Fillings across Regions

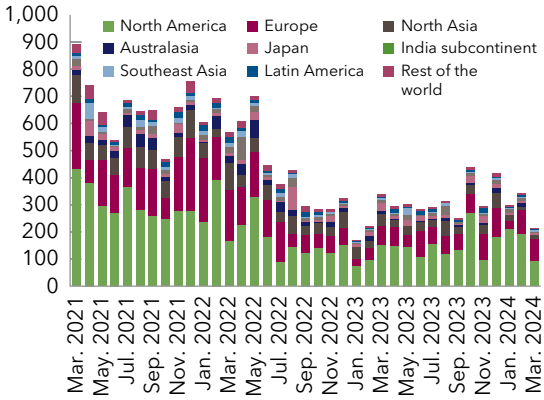
(Percent, four-quarter changes)



3. Global High-Yield Corporate Bond and Leverage Loan Issuance

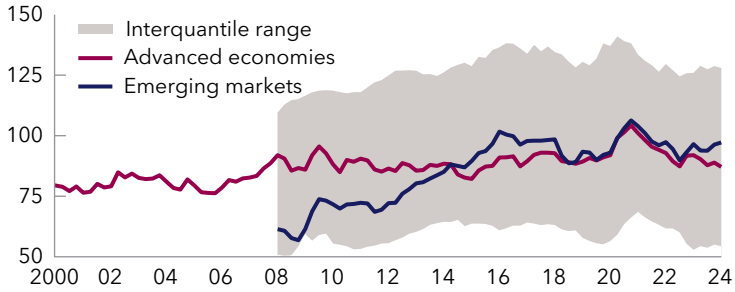


4. Mergers and Acquisitions Activity across Regions



5. Nonfinancial Corporate Debt to GDP

(Percent)



Sources: Administrative Office of US Courts; Bloomberg Finance L.P.; Dealogic; EUROPACE AG/Haver Analytics; Eurostat; Moody's; Tokyo Shoko Research; and IMF staff calculations.

Note: In panel 2, US bankruptcies are counted as the sum of Chapters 7, 11, and 13. For the euro area, declarations of bankruptcies for euro area countries. For Japan, bankruptcy cases with a total debt of ¥10 million or more. In panel 3, the January and February 2024 bars are annualized. In panel 4, the shaded area represents the interquartile range of 43 countries, including advanced economies and emerging markets.

Capital markets have also seen a decline in new bond and loan issuance—a trend that is more pronounced for high-yield corporate bonds and leveraged loans (Figure 4, panel 3). Relatedly, merger and acquisition deals volume has also slowed down in 2023 since the boom in 2021. In a higher rate environment, managers have favored cost efficiency while waiting for a more favorable backdrop in 2024 (Figure 4, panel 4).

The high level of corporate debt is an important area of concern in the current environment. Corporate debt has ballooned significantly over the past decades, with debt relative to GDP increasing, particularly in EMs (Figure 4, panel 5). The long era of an ultralow interest rate environment and ample liquidity has facilitated increasing corporate debt financing. At the same time, the unprecedented policy package deployed during the COVID-19 outbreak in 2020—including government guarantee programs and loan moratoria—has supported bank lending amid very tight financial conditions**.** This untargeted support helped some companies navigate the pandemic, supported much-needed credit flows, and enhanced some firms' creditworthiness, making it easier for them to access funding. As a result, many companies have loaded up on debt to finance their businesses, taking advantage of the extraordinary easing of financial conditions. Lower funding costs thus enabled corporations to hold down debt-servicing costs even with increasing debt relative to their cash flows. However, the extraordinary level of the state involvement during the pandemic is not without consequences (see Table 1 from IMF 2020): it raises several issues, including moral hazard and market distortions by keeping artificially alive uncompetitive firms. Moreover, it creates challenges from a debt resolution process standpoint (elaborated further in Section 6).

As the corporate sector is progressing in the credit cycle, cash buffers have so far mitigated the effects of tighter monetary policy. For instance, in the United States, despite 525 basis points of rate hikes between March 2022 and July 2023, default rates are increasing but remain low by historical standards, credit spreads are narrow, and equity valuations are high, implying relatively easy financial conditions based on the price of risk indicators. One possible explanation is that the corporate sector's large cash buffers, built up during the pandemic, have provided financial cushioning amid lower refinancing needs. US corporations have held financial assets exceeding total liabilities since 2021, notably interest-bearing assets, providing resources to weather the adverse effects of higher interest rates (Figure 5, panel 1). Abundant interest-bearing assets have helped meaningfully lower net interest payments since 2022, contrary to the previous rate hike cycle when net interest payments (IMF 2023b, 2024a) increased substantially (Figure 5, panel 2). The difference in the interest rate sensitivity of assets and liabilities is a key factor. Corporations seem to have invested a sizable portion of fixed-rate borrowings during the extremely low-rate period after the pandemic in 2020–21 in variable-rate deposits, benefiting from higher rates (Edwards 2023). Such rates are not usual for all corporate assets and liabilities, nor are lower net interest payments guaranteed should rates rise further. In fact, liquidity buffers in corporate balance sheets have been gradually declining on an aggregated basis, dipping below the long-term average. Notably, liquidity buffers in the real estate sector are lower on a flow basis (relative to interest expenses), implying severe challenges amid the higher interest rate regime. In Japan, the actual default rate in recent years has been rising, mainly by distressed firms, whose business has been deteriorating since before the pandemic. Because these firms have seen a further increase in their operating losses, their interest payment burden relative to profits has increased, leading to a continued decline in their liquidity buffer.

Yet deteriorating corporate fundamentals will likely continue to erode corporate buffers globally and may see some firms reaching the trough of the credit cycle. The share of firms with low cash-to-interest-expense ratios—weaker firms with fewer buffers—has increased over the past two years (Figure 5, panel 3). This is especially true among small and medium enterprises (SMEs). Reduced buffers could lead to repayment difficulties for these weaker firms, considering that the corporate sector will be exposed to rollover risks in the coming years (IMF 2023c). Although refinancing is not an imminent problem for the average corporation in most countries, because the tenor of outstanding debt is longer than six years, a growing number of companies need to start refinancing debt with higher funding costs as early as the next year. Global corporate refinancing needs in 2024 total more than $5 trillion, with approximately half accounted for by US companies (Figure 5, panel 4). Furthermore, in some countries, floating-rate corporate debt represents a considerable share of overall corporate debt, putting firms at risk of a heavier debt-service burden as interest rates climb. Based on Dealogic data, these countries include Australia and New Zealand among AEs and Egypt, Pakistan, Poland, Sri Lanka, and Türkiye among EMs. Refinancing at the current market yield increases the average interest rate payment, deteriorating firms' debt-servicing ability (Figure 6, panel 1).

Table 1. Monetary and Financial Policy Responses to COVID-19

(In 29 jurisdictions with systemically important financial sectors)

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

Source: IMF (2020).

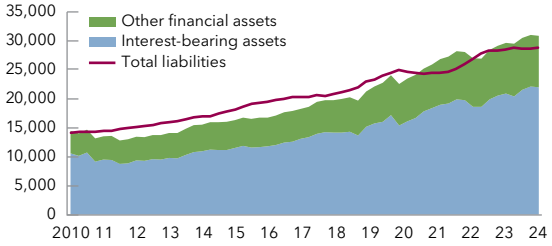
Note: Data labels in the figure use International Organization for Standardization (ISO) country codes. Y = Yes, meaning that countries implemented a particular policy referenced on the first column.

Figure 5. Corporate Debt Servicing

Abundant cash liquidity buffers have provided financial cushioning, but buffers will likely continue to erode

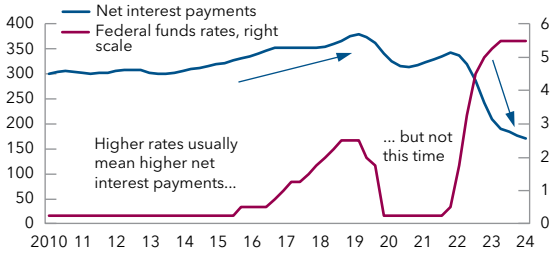
1. US Nonfinancial Firms' Balance Sheet

(Billions of US dollars)



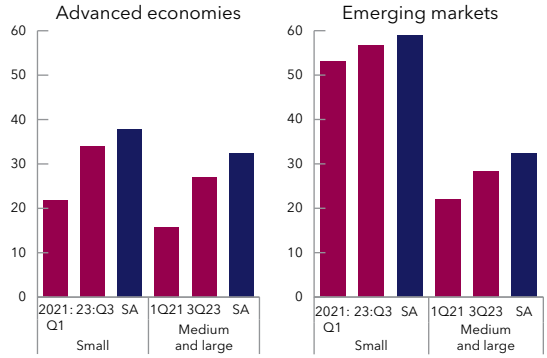
2. US Nonfinancials' Net Interest Payments

(Billions of US dollars, left scale; percent, right scale)



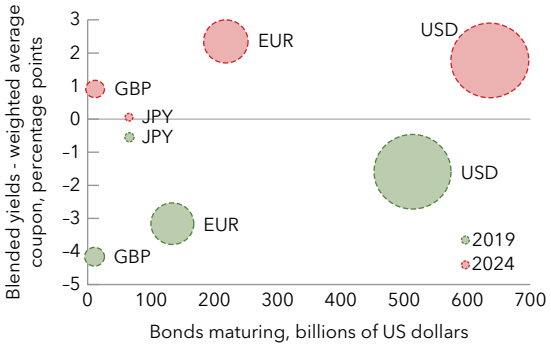
3. Cash Liquidity Buffers at Risk in Firms

(Percent)



4. Additional Cost of Refinancing versus Maturing Corporate Bonds for the Year

(Percentage points; billions of US dollars)



Sources: Bloomberg Finance L.P.; Bureau of Economic Analytics; Dealogic; EUROPACE AG/Haver Analytics; Federal Reserve Bank of St. Louis; S&P Global; and IMF staff calculations.

Note: In panel 3, bars display the share of debt issued by firms with the cash-to-interest-expense ratio below one (debt at risk). "Cash" includes cash and equivalents. "SA" bars display the share of debt at risk under the scenario where interest expense increases to the equivalent levels to the current market yields. The sample consists of 15 advanced economies, including Czech Republic, and 14 emerging market and developing economies, including Korea. In panel 4, the size of bubble displays the amount of corporate debt outstanding denominated in each currency. For advanced economies, the nonfinancial corporations group either includes private sector utilities, industrial and other companies except those operating in the financial sector (including insurance), and closed-end funds, or is composed of holding companies. In addition, the emerging market nonfinancial corporation group includes public sector corporations such as utilities, industrial, and others. Issuance by special purpose financing vehicles is not included for advanced economies and emerging markets. EUR = euro; GBP = British pound; JPY = Japanese yen; USD = US dollar.

These dynamics amid high levels of economic and policy uncertainty could be further compounded by a repricing of risk assets, such as a sharp equity valuation correction, or negative rating events. Downgraded firms would face much higher funding costs as investors typically demand a significantly higher premium. The amount of debt issued by "fallen angels" (issuers that have been downgraded to below investment grade) is now roughly equal to the amount of debt issues by "rising stars"—that is, debt upgraded to investment grade (Figure 6, panel 2). These dynamics suggest that on an aggregated basis, global corporations are at the beginning of the downturn in the credit cycle.

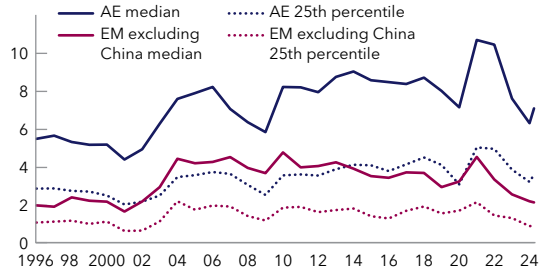
Risks in the CRE sector are particularly worrisome. The CRE sector is grappling with higher interest rates and postpandemic structural changes stemming from a shift in demand, especially office properties. At the same time, CRE prices have fallen dramatically during the recent interest rate hike cycle (Figure 6, panel 3). The stress in the CRE sector raises concerns about the effect on the financial sector. For instance, in the United States, where the market amounts to $6 trillion, the high concentration of CRE exposures represents

Figure 6. Corporate Credit Fundamentals

Increasingly concerning signs of deterioration in corporate fundamentals

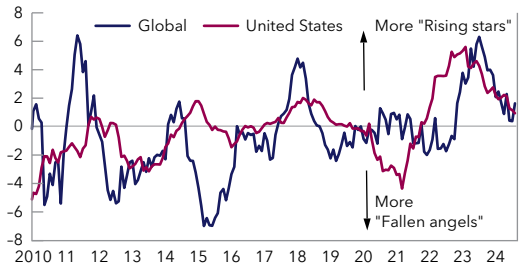
1. Global Firms' Interest Coverage Ratio

(Percent)



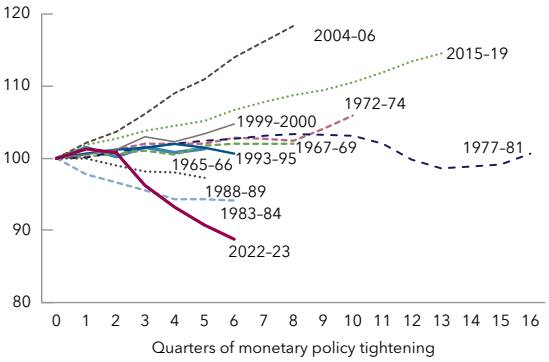
2. Credit Cycle Based on Corporate Bond Index Returns

(Percentage points, 12-month moving average, annualized)



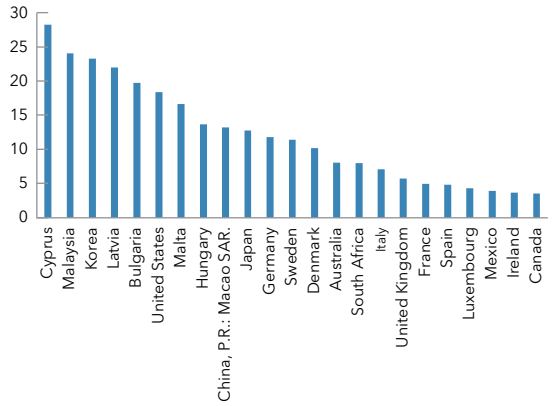
3. CRE Price Trajectory during Rate Hike Cycles

(Index 100 at the beginning of cycle)



4. Banking Exposures to CRE Sector to Total Loans

(Percent)



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

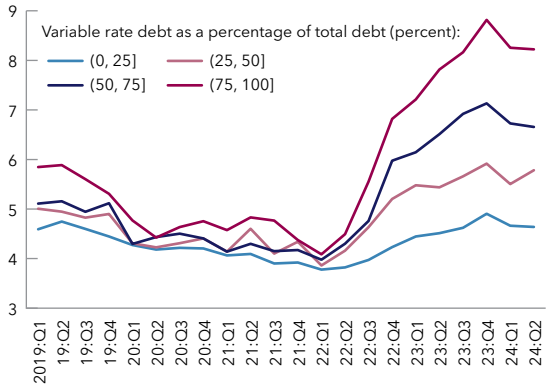
Note: Panel 2 shows the gap between the total return of investment-grade corporate bond index and its proxy return based on yield changes. If a constituent corporate bond gets downgraded or defaults, then it drops out of the index at a loss so that the actual total returns become smaller than the proxy returns, while the gap turns negative, indicating the downturn in the credit cycle (or vice versa, Panigirtzoglou 2023). AE = advanced economies; CRE = commercial real estate; EM = emerging markets.

a serious risk to banks amid economic uncertainty and higher interest rates, potentially further declines in property values, and asset quality deterioration. The nonperforming CRE loan rate for US banks by the end of 2023 doubled, reaching 0.81 percent from just 0.41 percent at the end of 2022, with large banks reporting a sharper increase (+153 basis points) compared with small (+44 basis points) and regional banks (+49 basis points). Although the banking sector appears well capitalized to absorb CRE losses on aggregate, some jurisdictions could face painful losses, given the large size of the sector and its interconnectedness with the financial system and the broader economy (Figure 6, panel 4).

Another risk area concerns the structure of the corporate sector funding that has gradually shifted from banks to nonbanks. This raises concerns about financial stability risks, especially in an environment of higher interest rates. Corporates' financial leverage has grown substantially, supported by the increase of risk appetite and search for higher yields. Therefore, in parallel to the traditional lending channel, direct financing through the issuance of bonds and loans in the capital and private credit markets, where NBFIs are the main credit providers, has developed rapidly. Since the global financial crisis, the presence of NBFIs in credit intermediation has increased, given more stringent regulations introduced to curb excessive risk taking by banks.

Figure 7. Firms Relying on Variable-Rate Debt Have Seen the Largest Increase in the Cost of Debt

1. North American Firms' Cost of Debt
(Percent)

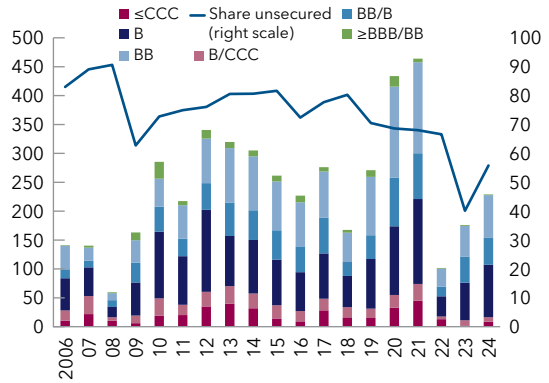


2. Change in Firms' Cost of Debt by Region
(Percentage points)

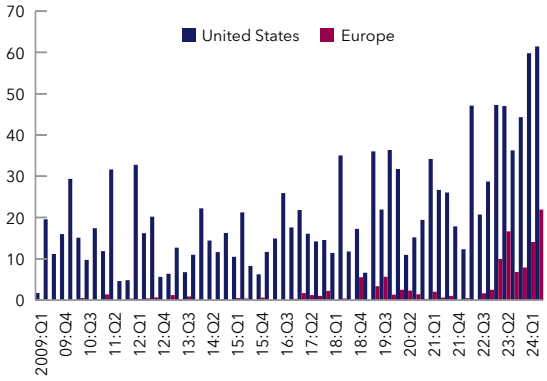
2021:Q2–24:Q2 — Variable rate debt percent of total debt, bucket

	(0, 25]	(25, 50]	(50, 75]	(75, 100]
Africa/Middle East	1.5	2.3	2.3	3.0
Asia/Pacific	0.7	0.9	1.1	1.3
Europe	1.1	1.7	2.1	2.6
Latin America	1.4	2.4	3.8	4.3
North America	0.4	1.1	2.0	2.6

3. US High-Yield Corporate Bond Issuance
(Billions of US dollars; percent, right scale)



4. Leveraged Loan Amend-to-Extend Volume
(Billions of US dollars and billions of euros)



Sources: Bloomberg Finance L.P.; PitchBook Data, Inc.; S&P Capital IQ Pro; and IMF staff calculations.

Note: Panel 1 shows the median cost of debt for nonfinancial corporations with varying degrees of variable rate debt for a sample of 7,975 North American firms. Panel 2 shows the median change of firms' cost of debt between the second quarter of 2024 and the second quarter of 2021 for a sample of 49,988 firms.

NBFIs—comprising investment funds, insurance companies, pension funds, and other financial intermediaries—have different business models, balance sheets, and governance structures and are subject to distinct regulatory frameworks within and across jurisdictions. Although nonbank funding is a valuable alternative to bank financing, while also helping to support real economic activity, significant vulnerabilities in the nonbank sector may interact with corporate sector fragilities, thus compounding financial stability risks (see Section 4).

The tightening of global financial conditions after the COVID-19 pandemic, with central banks increasing interest rates, has placed significant pressure on some corporations as they grapple with higher borrowing costs. Firms with a large share of variable-rate debt have been more vulnerable to a sudden increase in their cost of funding (Figure 7, panel 1). By size, SMEs are more dependent on bank loans and therefore have higher variable-rate shares. Although firms have the option to mitigate the interest rate risk by buying financial derivatives, recent research has found that only roughly half the firms with variable-interest-rate debt in the euro area, the United Kingdom, and the United States tended to do so over 2007–22 (Banerjee and others 2023). In addition, there is an indication that interest rate hedging has been declining over time, suggesting that interest rate increases may transmit more strongly now. The increase in the cost of debt between the second quarter of 2021 and the second quarter of 2023 is most pronounced for Latin America,

where some countries' central banks had started hiking relatively early, with a relatively fast and long hiking cycle (Figure 7, panel 2).[4] Firms in the Asia/Pacific region have seen a more limited increase in the cost of debt, reflecting the slower and shorter monetary policy tightening cycle in some countries.

In a higher-for-longer scenario, firms with fixed-rate debt will eventually also face a substantial increase in their cost of debt. Firms with fixed-rate debt—that typically rely more on corporate bonds[5]—have been relatively shielded from the higher-interest-rate environment because their funding cost increases only when debt is rolled over or new issuance is required. At the same time, several bond-issuing firms had front-loaded their issuance during the pandemic (2020–21) to build a precautionary cash buffer (Figure 7, panel 3). These firms were able to lock in relatively low rates. Issuance in the high-yield segment plummeted during 2022–23 because central banks rapidly hiked their policy rates. In addition, high interest-rate volatility discouraged high-yield-rated issuers from entering the market. The decline in issuance was most pronounced at lower ratings. Firms that did issue during 2022–23, did so in shorter maturities and with a lower share of unsecured bonds (Figure 7, panel 3). In the leveraged loan market, the elevated amend-to-extend activity shows that firms attempted to push back redemptions, likely in the expectation of getting more favorable funding conditions after such extension (Figure 7, panel 4).[6] This has contributed to firms' attempt to push back their maturity wall.

[4] The Federal Reserve increased its target range by 5.25 percentage points between March 2022 and July 2023. By contrast, the central banks of Brazil, Chile, Colombia, and Mexico raised their policy rate by—trough to peak—11.75., 10.75, 11.50, and 7.25 percentage points, respectively, between 2021 and 2023.

[5] Regional differences exist; for example, in Brazil, more than half the outstanding amount of nonfinancial corporate bonds is floating rate.

[6] The leveraged loan market reflects a segment of more highly leveraged firms. These firms typically access floating-rate syndicated loans.

Box 1. Effect of the European Central Bank Quantitative Tightening on European Corporate Sector Financial Conditions

The European Central Bank (ECB) started the normalization of its balance sheet—quantitative tightening—in July 2023 when the Governing Council decided to discontinue the full reinvestments of its assets purchase programs. The large-scale asset purchases were launched in 2015 when the euro area economy was facing intense deflationary pressures and sluggish economic growth. The ECB initiated the Corporate Sector Purchase Program (CSPP) in early 2016 to enhance the effectiveness of the pass-through of its monetary policy and support the banking sector in providing credit to the real economy. This program was designed to help the direct financing of large firms and, by ripple effect, improve lending conditions for small- and medium-sized enterprises.

Research looking at the effect of the CSPP on the corporate bond market and financing conditions of nonfinancial corporations (NFCs) converged to the conclusion that ECB purchases supported the sector through different channels (De Santis and others 2018): a significant easing in financing conditions for euro area NFCs and improvement of market liquidity, a tightening of corporate bond spreads in both the primary and secondary markets, and an enhancement of bank lending to NFCs that do not have access to market-based funding (Betz and De Santis 2019). The magnitude of this effect is generally greater for bonds eligible for purchase, but ineligible bonds have also benefited from the ECB program by freeing up the banks' balance sheet for lending to this segment (De Santis and others 2018).

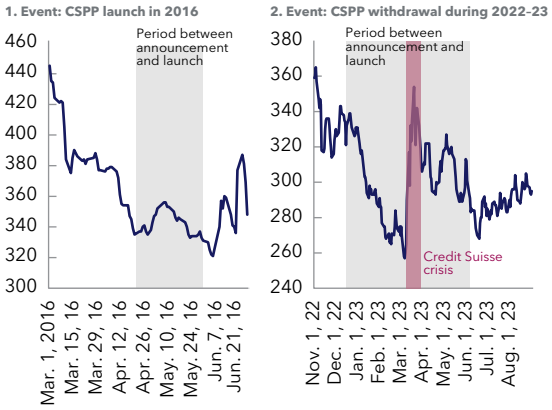
As of January 2024, the stock of the Eurosystem corporate sector holdings amounted to €302.8 billion—assets purchase programs and pandemic emergency purchase programme. The net redemptions are estimated at €7.4 billion for the first quarter of 2024. Considering the recent data, market research estimates the redemptions at €36 billion per year and €48 billion per year for 2024–25 and 2026–27, respectively. Overall, the ECB's share in the euro area's (EA-19) investment-grade bond outstanding balance is estimated to have come off its 2022 peak of 25.3 percent to 17.2 percent in 2023.

To check if the quantitative tightening announcement and its effective start have reversed the transmission mechanism of the CSPP, this box runs an event study regression by tracking the response of spread differentials between investment grade and high yield around the key CSPP announcements.[1] In contrast to 2016, when the spread differentials narrowed sharply (about 100 basis points) in the run-up to the launch announcement of the CSPP, the movement in spread differentials appears disassociated from the developments in CSPP policy in 2022 (Box Figure 1.1).[2]

As an extension, the analysis focuses on CSPP announcements on spreads of the eligible bonds. The new analysis finds that the April 2016 announcement brought down the spreads by 10 basis points (Annex Table 1.2).[3] In addition, the December 2022 withdrawal announcement seemed to have caused a widening in spreads by 13 basis points. Moreover, by the time the CSPP roll-off started in June 2023, spreads seemed to have disassociated with the developments in the CSPP policy (Box Figure 1.2).

Box Figure 1.1. Event Study of Corporate Spreads Differentials

(Basis points)

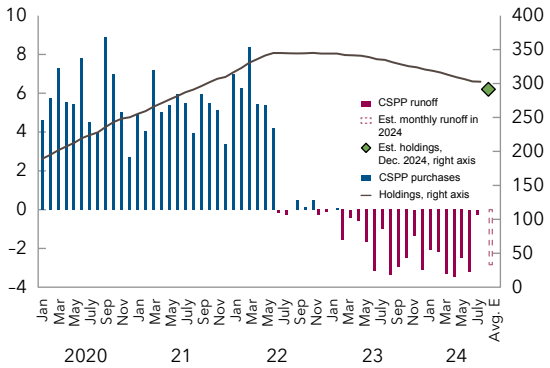


Sources: Bloomberg Finance L.P.; and IMF staff calculations.

Note: The spread differential represents the difference between the spread of euro area high-yield corporations and investment-grade corporations. The shaded area in panel 1 represents the period between April 21, 2016, and June 1, 2016. The shaded area in panel 2 represents the period between December 15, 2022, and July 3, 2023.

Box Figure 1.2. CSPP Runoff and Holdings

(Billions of euros)



Sources: European Central Bank; and authors' calculations.

Note: CSPP = Corporate Sector Purchase Program.

[1] The event study tracks the movements in investment-grade corporate spreads 30 days before and after (1) the period between the announcement of the CSPP in April 2016 and its implementation in June 2016, and (2) the period between the announcement of the withdrawal and its implementation over December 2022 and June 2023.

[2] The average change in spreads in the 30 days prior to the withdrawal announcement in December 2022 was about 30 basis points. However, spreads widened sharply in March 2023, coinciding with the collapse of Credit Suisse.

[3] The regression analysis includes dummy event variables with the same definition, 30 days before and after the event but splitting the launch and withdrawal events into (1) announcement and (2) actual implementation. Moreover, to reflect the conundrum in markets because of monetary policy expectations and the macroeconomic outlook in 2022–23, the two withdrawal event dummies are interacted with the probability of recession. Regression analysis finds a positive and statistically significant relationship between investment-grade corporate spreads and interest rates, probability of recession, and US investment-grade corporate spreads (see Annex 1.C).

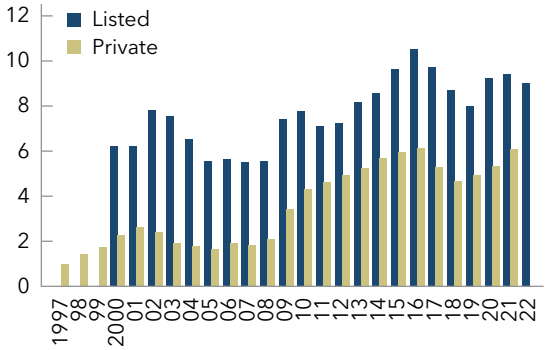
Box 2. The Rise of Zombie Firms

Another dimension of corporate sector vulnerabilities typically not captured by just looking at individual balance sheet indicators, such as leverage, is the increased incidence of unviable and unproductive "zombie" firms in the nonfinancial sector. Although zombie firms are not directly observable in the real world, the literature has come up with several definitions, ranging from a concept of subsidized interest rates (Caballero, Hoshi, and Kashyap 2008; Acharya and others 2019) to old firms that do not generate enough operating revenues to meet their interest payment obligations (McGowan, Andrews, and Millot 2018) and, combined with a lack of growth opportunities (Banerjee and Hofmann 2022), to financially distressed firms with negative sales growth (Favara, Minoiu, and Perez-Orive 2022; Albuquerque and Iyer 2024). Zombie firms typically manage to avoid immediate default because of lenders' (banks, investors, governments) continued support, in light of misaligned incentives (Caballero, Hoshi, and Kashyap 2008).

The concept of zombie firms was first documented during Japan's lost decade that started in the 1980s. This was a period when lending to weak and unproductive firms played a key role in amplifying the ongoing economic stagnation, by misallocating capital away from the most productive firms (Peek and Rosengren 2005; Caballero, Hoshi, and Kashyap 2008; Giannetti and Simonov 2013). A similar phenomenon seems to have taken place in some European countries during the European sovereign debt crisis in the 2010s (Storz and others 2017; Acharya and others 2021; Schivardi, Sette, and Tabellini 2022). This was a period when weak banks "kicked the can down the road" by evergreening loans to zombie firms—that is, providing a new loan to finance the old one. The overall lesson from these episodes is that the combination of undercapitalized banks and weak supervision creates incentives for weak banks to allocate too much capital to zombie firms. Weak banks then have incentives not to recognize loan losses to avoid taking a hit to their capital and risk, breaching regulatory requirements.

Box Figure 2.1. Share of Zombie Firms for Listed and Private Firms

(Percent of total firms)



Source: Updated data set from Albuquerque and Iyer (2024).

Note: The blue (yellow) bars refer to the percentage share of listed (private) zombie firms.

The survival of zombie firms generates important congestion effects on healthy firms, weighing on their productivity and growth. These congestion effects can materialize in increased competition for input goods and excessive supply of goods, lower market prices for healthy firms' products, and higher market wages relative to productivity because zombie firms keep low-productivity workers in their firms. Overall, by not exiting the market, the survival of zombie firms reduces the profits of productive and healthy firms and thus their investment and growth opportunities.

Recent research has found that the incidence of zombification among nonfinancial firms is a global phenomenon, and its share has been rising worldwide, especially since the global financial crisis. The presence of zombie firms has detrimental effects on overall productivity, investment, and employment in the economy (Banerjee and Hofmann 2022; Albuquerque and Iyer 2024). Using firms' balance sheet data for a sample of 63 countries since 2000, Albuquerque and Iyer (2024) find that the share

of listed zombie firms stood at roughly 9 percent of all listed firms in 2021, which is more than half as large relative to the share in 2000 (Box Figure 2.1).[1] The updated zombie share for 2022 shows that zombification declined slightly in 2022 but still remaining at very high levels. The share of private firms stood at above 6 percent in 2021, roughly three times as large as in 2000.[2] The recent uptick in zombie shares, after the temporary downward trend between 2016 and 2019, is possibly the result of the unprecedented policy support and easy financing conditions during the pandemic. This support, which was initially largely untargeted, may have helped unviable firms stay afloat, thus delaying the necessary restructuring of firms that were already unviable and unprofitable before the pandemic.

Albuquerque and Iyer (2024) document a wide dispersion in zombie shares across countries. The incidence of zombification tends to be more prevalent in countries with a looser macroprudential policy stance, less-prepared corporate insolvency frameworks, weaker GDP growth, and lower interest rates. Zombie firms are also more prevalent in nontradable sectors, such as in real estate, the energy sector, information technology, materials, and consumer discretionary. These sectors tend to be more financially vulnerable, less productive, experience more credit-fueled booms, and face weaker growth opportunities (Albuquerque 2024; Müller and Verner 2024).

Albuquerque and Mao (2023) find that the negative spillovers from the prevalence of zombie firms to aggregate productivity growth may be amplified when interest rates increase. They rationalize this theoretically and empirically by a more muted tightening in credit conditions to zombie firms: when interest rates increase, banks have incentives to offer better credit conditions to zombie firms relative to other firms to prevent them from defaulting. These so-called evergreening motives are particularly strong for low-capitalized banks, in jurisdictions with looser macroprudential policies, and where insolvency regimes are deficient.

To deal with zombification, the empirical evidence points to policies that limit banks' incentives to engage in zombie lending, by making it more difficult for banks to window-dress their balance sheets. In fact, tighter bank supervision and regulation to improve the health of the banking sector—for example, through bank recapitalizations and enhanced and regular stress-testing exercises—seem to be effective (Giannetti and Simonov 2013; Acharya and others 2021; Blattner, Farínha, and Rebelo 2023). Albuquerque and Iyer (2024) also find that strengthening the banking sector may not be enough to tackle zombie lending if the insolvency frameworks in place are deficient, not well prepared, or are costly to deal with the restructuring or insolvency of firms. For instance, if the institutional framework is not well equipped to deal with corporate insolvencies, banks will then face a lower expected recovery value of the debt the zombie firm owed them, potentially promoting lending to zombie firms even more.

[1] Albuquerque and Iyer (2024) define zombie firms by resorting to three balance sheet indicators that aim at capturing firms that are most likely in financial distress and are persistently unprofitable. More specifically, zombie firms have an interest coverage ratio below one, their leverage ratio is above the median firm in the same country and industry, and they have experienced negative real sales growth. These indicators need to persist for at least two consecutive years to minimize misclassification from cyclical fluctuations.

[2] Albuquerque and Iyer (2024) explain that the lower share of private firms relative to listed firms is likely the result of the substantially higher exit rates of private firms compared with those of listed firms, which automatically lead to a lower zombie share. Publication lags are more severe for private firms, which explains why the share of zombie firms for these firms ends in 2021.

3. Assessment of Financial Stability Risks

A. Transmission of Monetary Policy to Corporate Balance Sheets

The lagged effects of the previous monetary policy tightening will gradually increase the cost of capital for many nonfinancial corporations as they refinance their debt at significantly higher interest rates. A higher cost of debt will ultimately affect corporations' investment decisions--a key driver of business cycle fluctuations. Moreover, the interaction of the increase in corporate sector vulnerabilities (see Section 2) with tighter financial conditions in a likely higher-for-longer interest-rate environment is expected to create more challenges for financial stability. Although nonfinancial corporations have managed to generally preserve the health of their balance sheets during the current environment, a number of factors suggest that the effects of higher interest rates on the real economy, which usually transmit with lags (typically of about one or two years), are expected to increasingly test the underlying resilience of the nonfinancial sector going forward.

In this context, this section assesses empirically the historical transmission of contractionary monetary policy to nonfinancial corporations' financial performance for a large set of countries. The sample includes microlevel balance sheet data for listed firms for 48 countries (23 EMs and 25 AEs) from the first quarter of 2000 to the fourth quarter of 2019 (see Annex Table 1.1). Country-specific monetary policy shocks are sourced from Albuquerque and Mao (2023), who identify exogenous variation in local monetary conditions through the effect of US monetary policy shocks on each country. This approach draws from the US spillovers literature, whereby US monetary policy drives the global financial cycle and is arguably exogenous to changes in economic conditions in the rest of the world (Rey 2013; Bruno and Shin 2015).

Given the documented significant heterogeneity in balance sheets across firms, the empirical framework allows monetary policy to transmit heterogeneously to firms, conditional on firms' financial distress. The bank lending and risk-taking channels of monetary policy suggest a stronger transmission of higher interest rates to financially distressed firms relative to other firms because access to external financing should tighten more for the former firms with weaker balance sheets (Bernanke and Gertler 1995; Kashyap and Stein 2000; Borio and Zhu 2012; Bahaj and others 2022a; Cloyne and others 2023). Moreover, firms in financial distress may find it more difficult to find alternative financing options in the face of tighter financial conditions, having no other option than to cut costs, including investment.

This section defines financially distressed firms based on the probability of a firm defaulting over the next 12 months, taken from the National University of Singapore's Credit Research Initiative. The probability of default indicator is a modified version of Merton's distance-to-default model (Merton 1974), which takes as inputs the firm's equity valuation and leverage, and the volatility of the market value of the firm's assets. Although it is challenging to define financially distressed firms, because there is not a universally accepted concept of what constitutes financial constraints, the probability of default indicator has been shown to capture more accurately financial constraints relative to other metrics used in the literature, such as leverage, firm size, or the age of the firm (Farre-Mensa and Ljungqvist 2016). More specifically, distressed firms are defined as firms that stand in the upper quartile of the historical country-specific probability of default distribution. This definition is time varying, allowing firms to move in and out of the distressed status, depending on firms' probability of default in each quarter. Annex 1 provides details on the data sets used, the country coverage, the construction of the country-specific monetary policy shocks, and the empirical specifications described in this section.

The share of distressed firms is estimated to have increased globally over the past few years, with a slightly higher share for EMs relative to AEs (Figure 8, panel 1).[7] The share of distressed firms, at almost 25 percent,

[7] The narrative remains practically unchanged when weighting the share of distressed firms by firm debt or assets.

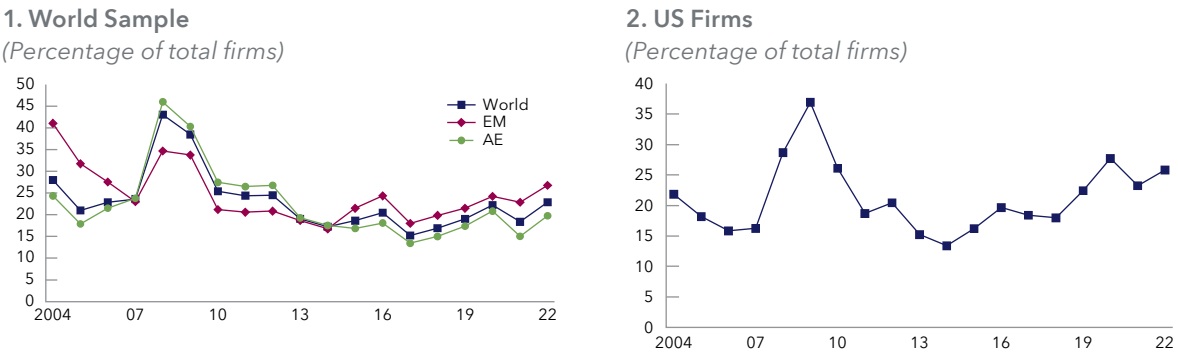
in 2022 is already above 2019 levels and is expected to have risen further in 2023.[8] Although the share of distressed firms remains well below the one reached at the peak of the global financial crisis for AEs, the picture is somewhat more worrisome for EMs; in fact, the 2022 share of distressed firms was not that far off from the global financial crisis peak. In this context, an expected wave of defaults may create pressures on bank capital buffers, especially for EMs, given that sovereigns in some EMs may also be experiencing problems in rolling over debt. Moreover, the country sample includes EMs that are typically larger and with better data, so it is possible that the actual share of distressed firms may be even higher if the sample were to include the whole universe of EMs—in particular, those that are more fragile and with difficulties in accessing external financing.

Despite the lower share of distressed firms in AEs, there is one additional source of risk for AEs that may be less important in EMs: the increasing share of nonbanks in corporate credit intermediation in AEs may amplify overall financial instability. This point will be discussed in Section 4. Zooming in on the US economy (Figure 8, panel 2), the share of distressed firms is estimated to have increased from roughly 15 percent in 2014 to over 25 percent in 2022 (the dynamics remain similar when weighting the share by firms' debt or total assets). The upward trend raises concerns about the financial stability implications to the real economy should further negative shocks hit the world economy in a scenario of high interest rates.

Overall, the increasing share of corporations facing financial distress suggests that higher interest rates may transmit more strongly to the real economy going forward, in line with recent evidence for the US economy (Perez-Orive, Timmer, and van der Ghote 2024).

Figure 8. Share of Distressed Nonfinancial Firms

The share of distressed firms has been increasing in both AEs and EMs over recent years



Source: Compustat and authors' calculations.

Note: Distressed firms are defined as firms that fall in the upper quartile of the country-specific probability of default distribution. AE = advanced economy; EM = emerging market.

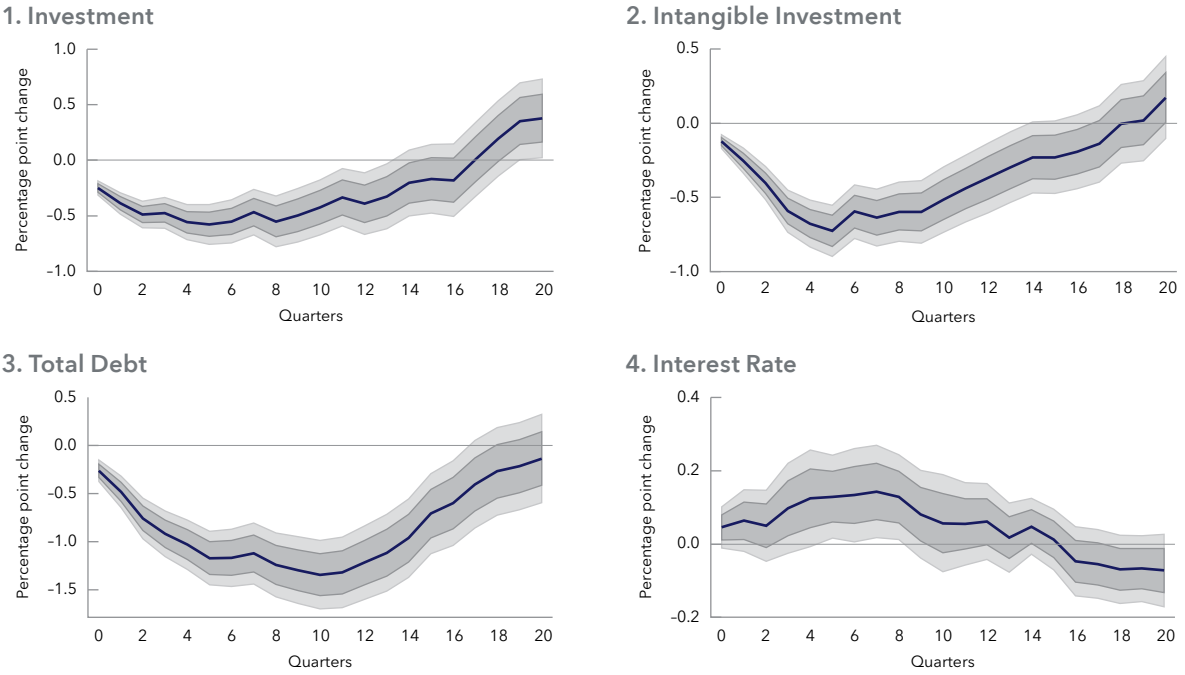
To assess how firms' financial performance can be affected by higher global interest rates, this section uses local projection methods (Jordà 2005) by running a series of regressions of firm-specific outcomes on country-specific monetary policy shocks, calibrated to increase the country-specific one-year bond yield by 100 basis points. The focus will be on assessing the differential response to monetary policy of distressed firms relative to other firms. The responses will be shown up to 20 quarters ahead to shed light on the short- to medium-term effects of monetary policy on corporations.

The outcome variables refer to investment in physical and intangible assets, total debt, and the implicit interest rate, computed as interest expenses divided by total debt (as a proxy for the cost of debt). The empirical framework controls for firm fixed effects, several firm-specific characteristics (firm size, debt, liquid assets), and for time-varying country–industry-specific shocks.

[8] The temporary fall in the share of distressed firms in 2021 was likely related to the policy support that aimed to help firms weather the aggregate shock during the pandemic. As policy supports abates, the share of distressed firms globally may continue to trend upward in an environment of high interest rates.

Figure 9. Differential Effect of Monetary Policy Shocks on Financially Distressed Firms

Distressed firms are hardest hit by contractionary monetary policy shocks



Source: Compustat and authors' calculations.

Note: Cumulative impulse responses for distressed firms relative to other firms to a monetary policy shock that increases the country-specific one-year sovereign bond yield by 100 basis points. The blue line represents the average point estimate, and the dark (light) gray area refers to the 68 (90) percent confidence bands.

Figure 9, panels 1 and 2, shows that investment, both in physical assets and in intangible assets, falls by substantially more for distressed firms relative to other firms. The estimates indicate that the monetary policy shock leads distressed firms to cut investment growth by 0.6 percentage point more than other firms after two years. This is an economically important effect: distressed firms' quarterly investment growth over the sample is, on average, 2.2 percentage points lower than that of other firms, implying that the monetary policy shock widens further the investment wedge between the two types of firms by almost 30 percent.[9]

The larger fall in investment of distressed firms seems to originate from a stronger tightening in credit conditions relative to other firms, as illustrated by the larger reduction in debt and a higher cost of debt (Figure 9, panels 3 and 4). Tighter financial conditions create a negative feedback loop for distressed firms, illustrated by a persistent increase in the probability of default over the following 12 months relative to other firms (Figure 10). This is in line with the theoretical prediction that financial constraints for distressed firms become more binding after a contractionary monetary policy shock because these firms face more challenges in accessing external finance, thus raising the probability of distressed firms defaulting.

Figure 11 repeats the previous exercise, but now it allows the transmission of monetary policy to differ, conditional on the economy being in a banking crisis, using the Laeven and Valencia (2020) banking crisis database. The red bars in the figure show the differential effect of distressed firms relative to other firms during banking crises, whereas the green bars refer to nonbanking crisis periods, both over 4, 8, and 12

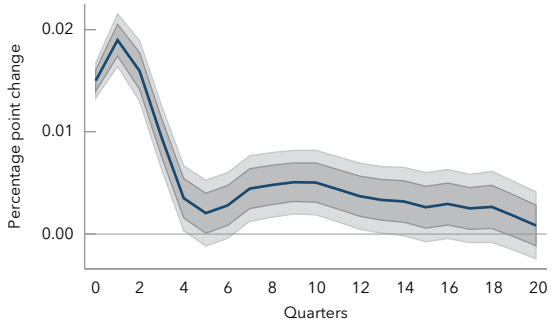
[9] We have also used alternative monetary policy shocks available at the country level from Choi, Willems, and Yoo (2024) as instruments for the country-specific bond yields. This paper estimates monetary policy shocks for a large set of countries based on a hierarchical approach regarding shock identification. Our results remain strongly robust, suggesting that the differential effect we uncover between distressed firms and other firms is not restricted to the international channel of monetary policy.

quarters ahead. The main message that emerges is clear: distressed firms' financial performance tends to be significantly hampered when episodes of contractionary monetary policy coincide with a banking crisis—that is, periods of heightened financial turmoil in the banking system. This is a reminder about corporate vulnerabilities possibly having nonlinear effects on the real economy during periods characterized by troubles in the financial sector.

Corporate vulnerabilities can also arise from the debt structure of firms. For example, available evidence suggests that firms with greater rollover needs during periods of financial shocks (for example, the Great Depression or the global financial crisis), even after controlling for the health of the balance sheet, typically experience larger cuts in investment and employment as credit supply tightens considerably (Almeida and others 2011; Benmelech, Frydman, and Papanikolaou 2019). This section asks a related

Figure 10. Differential Effect of Monetary Policy Shocks on Distressed Firms: Probability of Default

(Percentage point change)



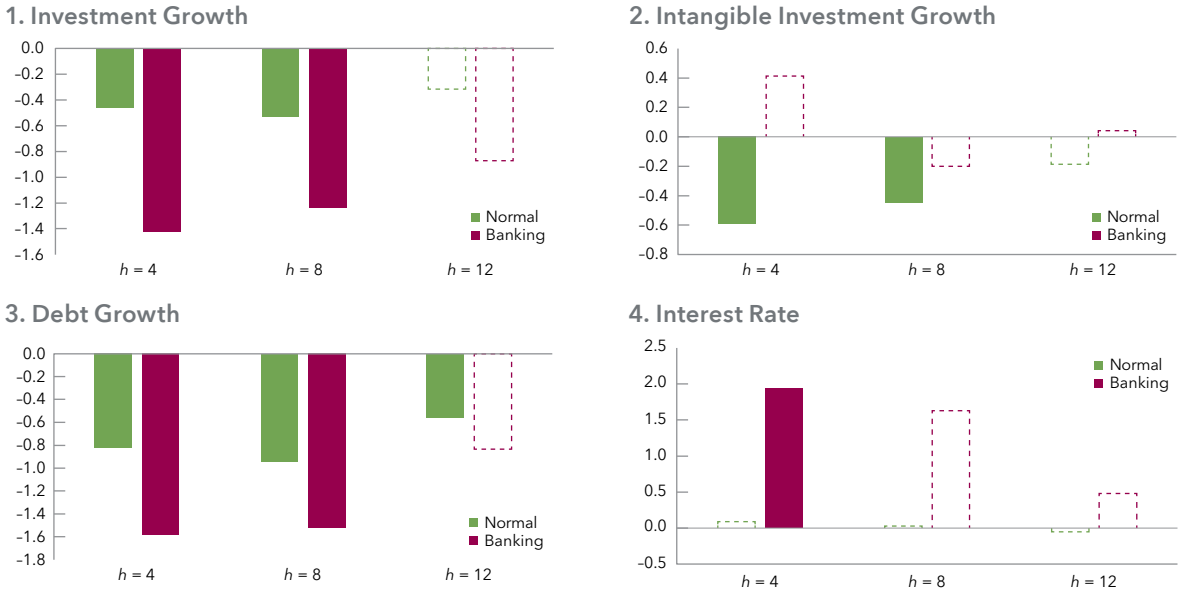
Source: Compustat and authors' calculations.

Note: Cumulative impulse responses for distressed firms relative to other firms to a monetary policy shock that increases the country-specific one-year sovereign bond yield by 100 basis points. The blue line is the average point estimate, and the dark (light) gray area refers to the 68 (90) percent confidence bands.

Figure 11. Differential Effect of Monetary Policy Shocks on Financially Distressed Firms during Normal Times versus Banking Crisis

Distressed Figfirms' financial performance drops considerably after contractionary monetary policy shocks that coincide with a banking crisis

(Percentage point change; quarters)



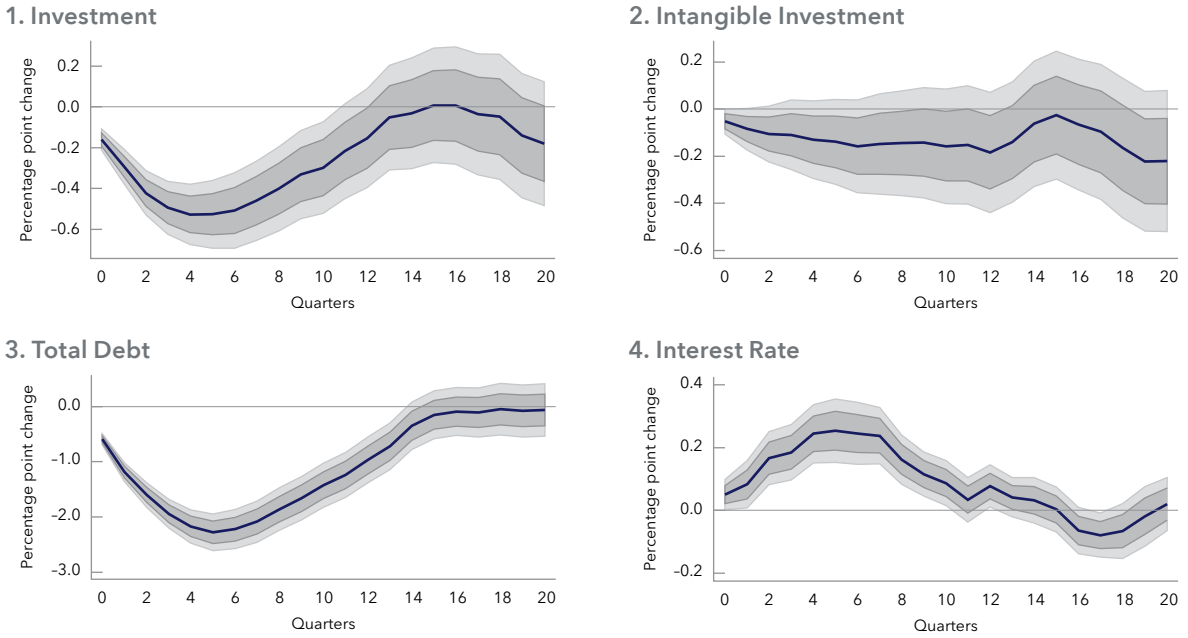
Source: Compustat and authors' calculations.

Note: Cumulative impulse responses for distressed firms relative to other firms to a monetary policy shock that increases the country-specific one-year sovereign bond yield by 100 basis points. Red bars refer to the effects during banking crisis, and green bars refer to nonbanking crisis periods. The *x*-axis represents the effects over horizons 4, 8, or 12 quarters ahead. Full bars refer to statistically significant coefficients at the 90 percent confidence level, whereas statistically insignificant coefficients are represented by hollow bars.

question: how is the financial performance of firms with greater upcoming rollover needs affected in a scenario of tighter monetary policy? This empirical exercise speaks to firms' upcoming maturity wall shown in Section 2—that is, firms' increasing refinancing needs in the next years—which will likely create additional pressures on firms as they refinance debt at a significantly higher cost.

Figure 12. Differential Effect of Monetary Policy Shocks on Firms Facing High Debt Rollover Risks

Firms with greater rollover needs see their financial performance weaken when monetary policy tightens



Source: Compustat and authors' calculations.

Note: Cumulative impulse responses for firms with high rollover debt needs relative to other firms to a monetary policy shock that increases the country-specific one-year sovereign bond yield by 100 basis points. The blue line represents the average point estimate, and the dark (light) gray area refers to the 68 (90) percent confidence bands.

This exercise exploits the preexisting debt maturity structure of firms to uncover rollover risks over the full sample during contractionary monetary policy shocks, after controlling for firm-specific characteristics and time-varying country–industry shocks. Firms with high rollover risks are firms that belong to the upper quartile of the share of long-term debt maturing in the following year for each country-year pair. The assumption is that in periods when interest rates go up, firms with a larger share of long-term debt to rollover the upcoming year may need to cut costs, including through investment or borrowing less, or a combination of the two, to mitigate the higher cost of debt. Comparing the financial performance of firms with high against low debt rollover needs is fundamentally different from the previous indicator employed to identify financial distress; the inclusion of a large set of fixed effects and firm controls ensures that the comparison will be between similar firms in the same country and sector, but that differ in the amount of debt that needs to be rolled over, akin to a difference-in-differences research design.

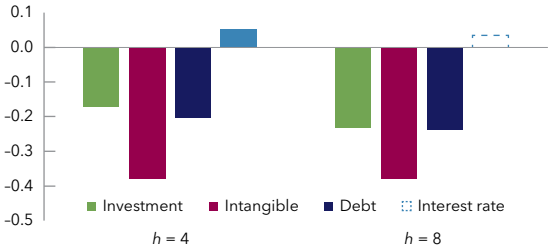
Figure 12 indicates that after a tightening in monetary policy, firms with high rollover needs tend to experience larger falls in investment and debt and a higher increase in the average cost of debt relative to firms that have low rollover needs. This effect is compounded for distressed firms that also have high rollover needs as credit conditions tighten considerably more (results not shown). The findings shown in Figure 12 underscore the importance of assessing corporate vulnerabilities along several dimensions that go beyond just looking at financial distress. This allows us to better uncover the transmission of monetary policy to the real economy. In particular,

firms with high debt rollover needs, including firms that may have healthy balance sheets, may feel the effect of higher interest rates more strongly, which ultimately could affect their investment decisions.

To sum up, this section has shown that corporate sector vulnerabilities matter for the transmission of contractionary monetary policy shocks. In particular, firms at a greater risk of default and firms with higher debt rollover needs may be hardest hit by interest rate increases. This supports the notion that the transmission of monetary policy is state dependent. In this context, interest rate increases may transmit more strongly to the real economy when the share of distressed firms is high, which seems to be the case in the current environment, and may potentially be higher going forward (Figure 8). Figure 13 provides additional empirical support for this claim: firms that operate in countries whose share of distressed firms is one standard deviation above the sample mean tend to experience a further contraction in investment and debt relative to firms that are located in countries with a lower share of distressed firms.

Figure 13. Differential Effect of Monetary Policy Shocks on the Average Firm that Is Located in Countries with a High Share of Distressed Firms

(Percentage point change; quarters)



Source: Compustat and authors' calculations.

Note: Cumulative impulse responses to a monetary policy shock that increases the country-specific one-year sovereign bond yield by 100 basis points. The bars represent the effect for the average firm in countries with a one standard deviation higher share of distressed firms. The *x*-axis represents the effects over horizons of four and eight quarters. Full bars refer to statistically significant coefficients at the 90 percent confidence level, whereas statistically insignificant coefficients are represented by hollow bars.

B. Assessment of Losses to Creditors from Corporate Sector Distress

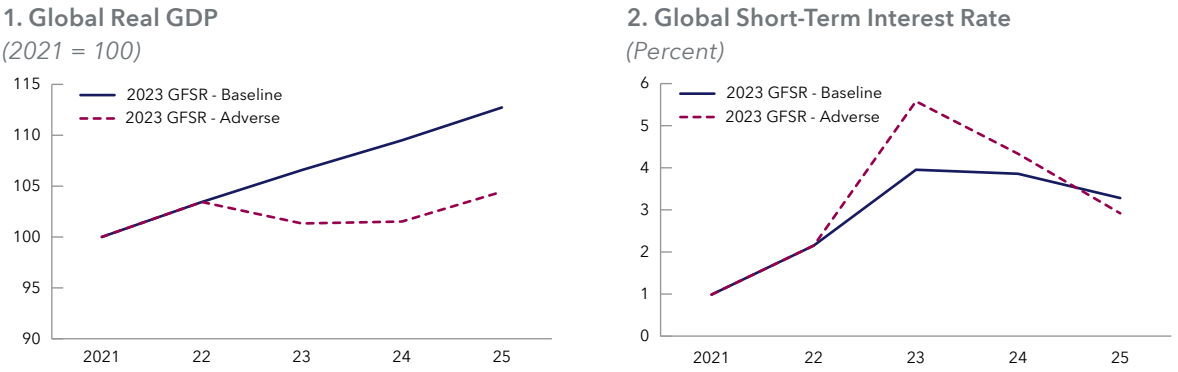
This section explores quantitatively the potential losses to creditors that would arise under stressed macroeconomic scenarios. The modeling approach builds on the model of dynamically consistent scenario-based corporate stress tests described in Tressel and Ding (2021). The model assesses the effect on nonfinancial corporations' liquidity and ability to service their debt arising from shocks to demand and interest rates. The original model has been expanded to take into account balance sheet data and financial statements for the year 2022 and for roughly 23,000 nonfinancial firms covering 40 countries (25 AEs and 15 EMs), expanded from 24 countries in the original paper.

The scenarios consider the risks identified in the October 2023 *Global Financial Stability Report* (IMF 2023b) and are also akin to the stressed scenarios included on global banking vulnerabilities (IMF 2023b, Chapter 2). Modeling of the globally consistent stress scenarios is in line with those being developed for ongoing Financial Sector Assessment Programs. The baseline scenario is sourced from the country forecasts published in the October 2023 *World Economic Outlook* (IMF 2023a), which already entails an increase in nonfinancial corporations' financing costs.[10] The adverse scenario contains an abrupt slowdown/recession in the main countries/regions (China, the European Union, the United States), monetary policy miscalibration, and de-anchoring of inflation expectations, which result in further interest rate increases in short- and long-term interest rates as well as increases in risk premiums and declines in asset market prices (Figure 14).[11] The adverse scenario also includes additional shocks in the first year to the sectors exposed to real estate,

[10] On average, across the 40 countries, corporate financing costs—computed as long-term risk-free rate plus corporate spread—increase by 5.2 percent in the first year and 2.1 percent in the second year of the scenario, relative to 2023. In the third year, they decline by 1 percent, reflecting a decline in both risk-free rate and spreads.

[11] Consistent with the *Global Financial Stability Report* scenarios, the scenario described here includes a policy reaction in China to counter the effect of the decline in asset markets and to support the economy. During the first year of the scenario, the global economy contracts by 2 percent, with recessions across regions, including China. For more details, see October 2023 *Global Financial Stability Report*, Chapter 2.

Figure 14. Assumptions for Real GDP and Short-Term Interest Rate in the Adverse Scenario



Source: IMF (2023b, Chapter 2).
Note: GFSR = *Global Financial Stability Report*.

to account for a potential downturn in housing prices, including in the CRE market. Specifically, it includes additional sectoral shocks, a 300 basis point decline in firms' return on assets, and a 20 percent additional decline in the sales of construction sector firms, in addition to the macroeconomic scenario.[12]

Figure 15 presents the scenario-based projections of nonfinancial corporate indicators under the baseline scenario and under the adverse stress scenario. The indicators considered are the ICR and the cash buffers in percentage of total assets to capture liquidity risk.[13] The firm-level findings are aggregated among groups of countries (AEs and EMs). The ICR figures display the share of aggregated corporate debt of nonfinancial corporations with an ICR below one.[14] The figures on the cash buffers, in turn, display the share of aggregated corporate debt of nonfinancial corporations with negative cash buffers, indicating liquidity concerns, because firms with limited liquid assets face more difficulties in smoothing the effect of a negative macroeconomic shock. In addition, firms with negative cash buffers would need to increase their indebtedness to be able to cover their cash outflows, automatically leading to an increase in the proportion of the debt at risk.[15]

The scenario simulations show that vulnerability indicators—based on either ICRs below one or negative cash buffers—deteriorate over the horizon, especially under the adverse scenario. The deterioration is broad-based across AEs and EMs, being particularly noticeable in the initial years of the scenario. This is consistent

[12] Note that the mitigating effect of macroeconomic policies is indirectly considered through their effect on macroeconomic variables (real GDP, interest rates, spreads). However, the direct effects of policies targeted to nonfinancial corporations are not taken into account. Hence, the findings of this section should be seen as policy counterfactuals "look-through" conservative estimates of the evolution of firm-level balance sheets and financial statements under specific macroeconomic scenarios. Similarly, although the scenarios include general equilibrium effects reflected in a set of consistent macroeconomic variables, the models are not well-suited to explicitly account for potential amplification effects, such as through labor and credit markets, and through behavioral changes (for example, deleveraging by the banking system).

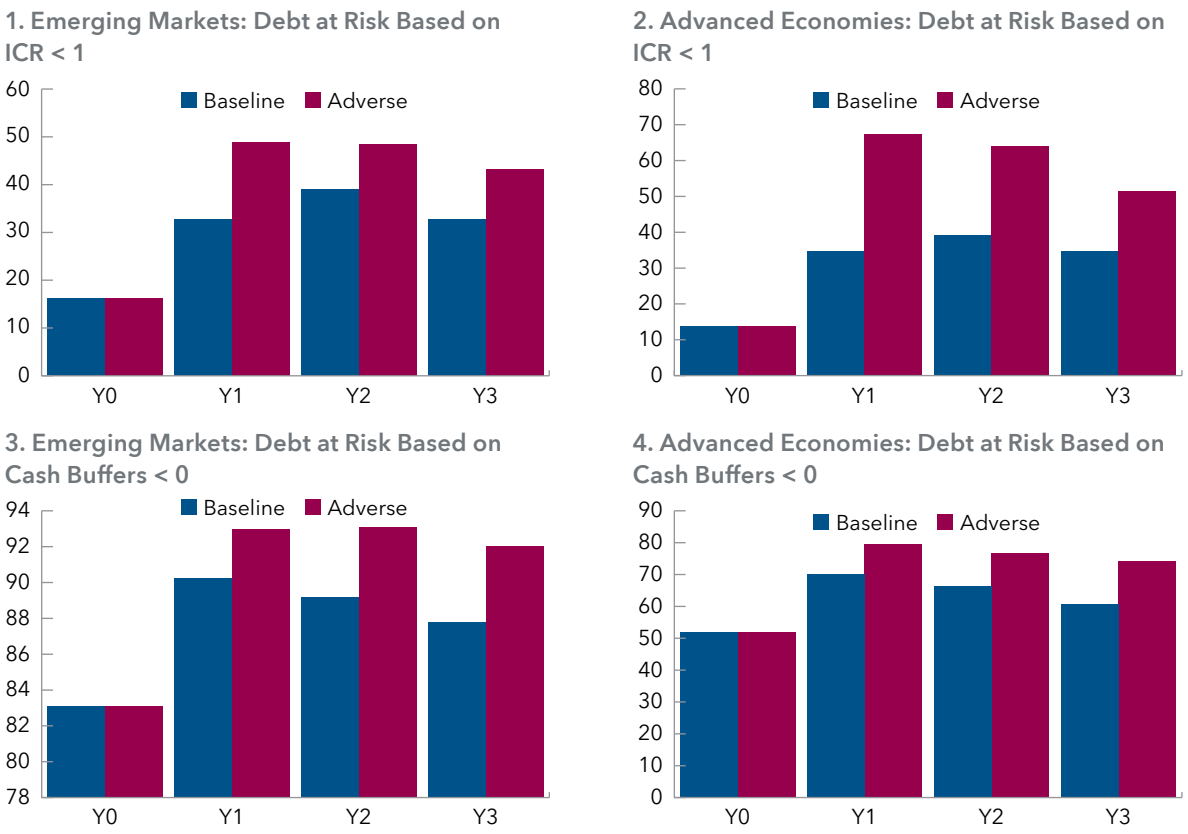
[13] Cash buffers are defined as cash and equivalent plus receivables minus short-term liabilities (excluding short-term debt and the current portion of long-term debt). It is a measure of the cash stock that is available for debt payments and not already tied to other accrued short-term liabilities. Inventories are assumed not to be easily transformed into cash. In the scenario projection, the cash buffer is computed under the assumption of a constant stock of debt (for example, firms incur new debt only to repay the existing debt maturing). We assess the year-end cash position of firms based on constant indebtedness. A negative cash position implies that a firm has to increase its indebtedness to ensure that projected cash inflows are at least sufficient to cover projected cash outflows. If the cash balance is positive, we assume that indebtedness remains constant. In the scenario, firms with positive end-of-period cash balances do not increase their debt and simply accumulate some cash into the following year.

[14] An ICR below one indicates that a firm cannot service its current debt only out of current profits. This is a standard corporate vulnerability indicator that points at short-term cash flow issues but, if sustained, would also indicate potential viability issues in the long term. An ICR below one implies that a firm has to draw down on its cash buffers and/or rollover or increase borrowing to service its debt.

[15] The simulations are performed under the assumption of a constant stock of debt. If the projected cash buffers turn negative under these assumptions, it implies that firms need to increase their borrowing to be able to pay for their short-term obligations. Note that in the projections, the starting point of the stock of cash available at the end of 2022 is adjusted for working capital commitments (such as accounts payables and accrued—but not paid yet—wages and pensions).

Figure 15. Scenario-Based Projections of Corporate Vulnerability Indicators

Debt at risk (for example, the share of debt among firms with the indicator below the threshold) increases significantly under the adverse scenario
(Percentage of nonfinancial corporate debt)



Sources: Capital IQ; Datastream; and IMF staff calculations.
Note: ICR = interest coverage ratio.

with recent work for the Middle East and North African region, which shows that an adverse scenario of significantly higher interest rates would impair the capacity of corporations to service interest expenses, especially among small firms, leading to a higher insolvency risk (Abidi and Belkhir 2022). There is some improvement in the past year of the scenario because economies recover from the real GDP growth decline (in tandem with a recovery in profits), at the same time that interest rates start declining, which lowers debt-servicing costs. The sectors most affected, on average, include construction, energy, communication, and agriculture.

One open question is about how the deterioration in nonfinancial corporations affects creditors. Following the methodology in Tressel and Ding (2021), the firm-level vulnerability indicators are mapped into proxies for annual default probabilities and then aggregated at the country level (and by group of countries) using each firm's total debt as weights in the aggregation. This section presents two sets of default probabilities. The first one is benchmarked for 2022 to actual (or estimated based on NPL ratios) default probabilities on loans by the banking system of each country. The second one is benchmarked for 2022 on the mean expected default frequencies from Moody's KMV; this indicator is taken as a proxy for the default risk faced by holders of nonfinancial corporate bonds. Aggregate corporate bond exposures are from the Organisation for Economic Co-operation and Development. The second default probabilities can (and turn out to) be different than the default probabilities on bank loans, reflecting different average risk characteristics of corporate borrowers between bank loans and corporate bonds.

Figure 16, panels 1 to 4, shows that default probabilities increase both in the baseline and especially under the adverse scenario, for both AEs and EMs.[16] Under the assumption that default risks obtained for the sample of listed nonfinancial corporations are extrapolated to all nonfinancial corporations in each country: (1) the macroeconomic effect of defaulted exposures (over three years) remains, on average, broadly manageable in percent of GDP, for both AEs and EMs, and for bank loans and corporate debt securities (Figure 16, panel 5); (2) in EMs, the macroeconomic default risks, on average, are more significant for bank loans than for corporate securities because initial credit risk in the banking system is higher than for corporate securities and because most corporate financing is channeled through bank loans; (3) in AEs, the macroeconomic default risks are more significant for corporate securities than for bank loans because the initial expected default risk tends, on average, to be higher for securities than for loans; and (4) given the higher loan default probabilities in EMs than in AEs, gross inflows of defaulted loans account for a significant share of aggregate bank capital in EMs and could potentially cause financial stability risks (Figure 16, panel 6).[17]

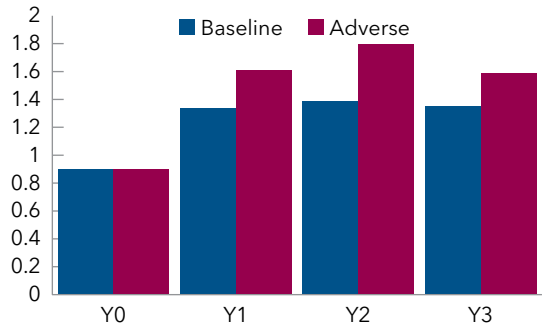
[16] Data on aggregate stocks of loans to nonfinancial corporations and of debt securities for the 40 countries in the sample are collected from different sources, including the Organisation for Economic Co-operation and Development, EUROPACE AG/Haver Analytics, and central banks' websites.

[17] Note that these are cumulative flows of NPLs, not taking into account recovery rates and cures on defaulted exposures, thus constituting an upper bound on the effect on banks' capital. This analysis does not assess potential second-round effects, such as deleveraging by banks, or spillovers to the sovereign from banking sector stress (the so-called sovereign-bank nexus).

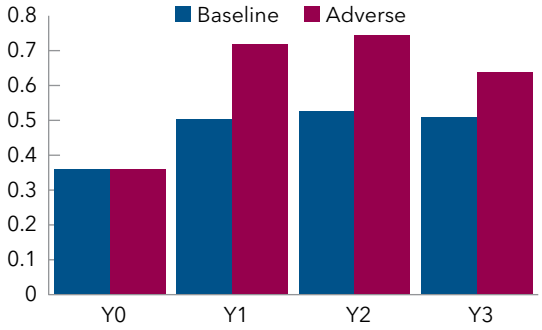
Figure 16. Nonfinancial Corporates Default Probabilities and Macro-estimates of Defaulted Exposures for Bank Loans and Holders of Debt Securities

Default probabilities on bank loans increase significantly in EMs, and the effect of defaulting loans on bank capital appears macroeconomically significant in EMs

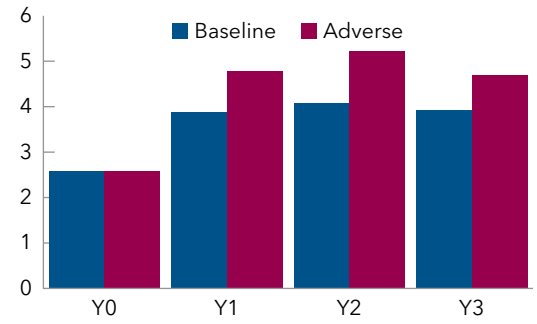
1. Emerging Markets: PDs on Bank Loans
(Percent)



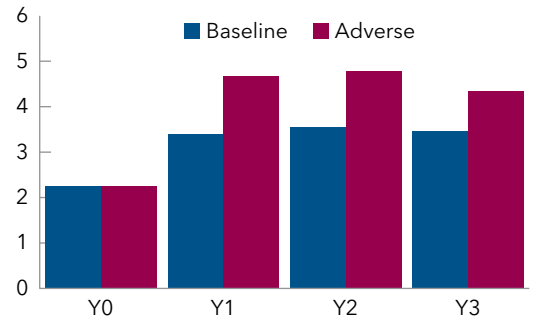
2. Advanced Economies: PDs on Bank Loans
(Percent)



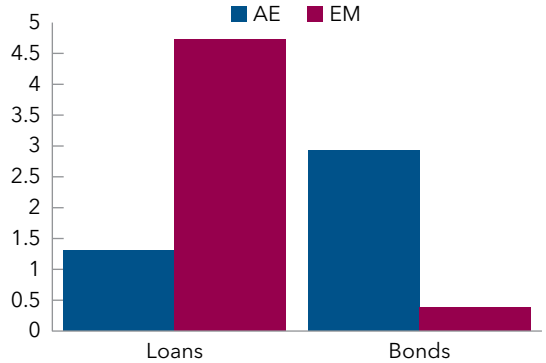
3. Emerging Markets: Mean EDF on Debt Securities
(Percent)



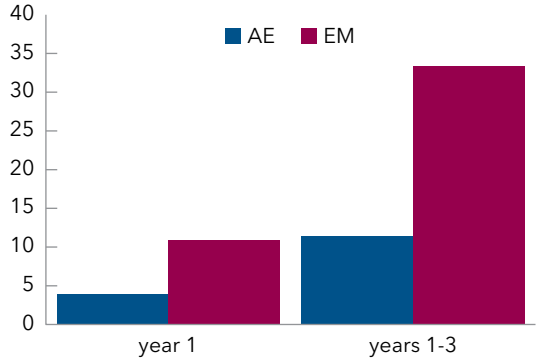
4. Advanced Economies: Mean EDF on Debt Securities
(Percent)



5. Value of Exposures Defaulting over Three Years (Adverse Scenario)
(Percent of GDP)



6. Value of Loans Defaulting (Adverse Scenario)
(Percent of Tier 1 capital)



Sources: Capital IQ; Datastream; EUROPACE AG/Haver Analytics; IMF, International Financial Statistics database; Moody's KMV; and IMF staff calculations.

Note: AE = advanced economy; EDF = expected default frequency; EM = emerging market; PD = Probability of default.

4. The Rise of Nonbank Financials in Corporate Credit Intermediation

Nonbank financials have played an increasingly important role in financial intermediation. This paper has documented how corporate vulnerabilities can have important effects on the real economy and on financial stability. This section will show that the increasing presence of nonbanks—such as investment banks, insurance companies, pension funds, and asset managers—in intermediating corporate credit, particularly in AEs, may create additional challenges for financial stability. Accordingly, this section makes the case for monitoring the exposure of nonbanks to risky borrowers while attempting to close some of the data gaps.

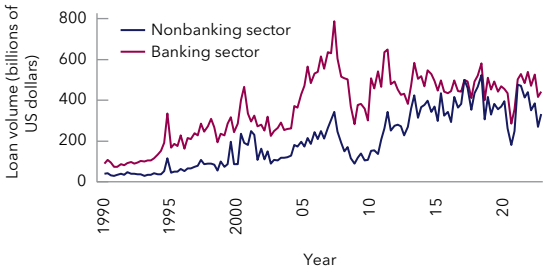
According to Financial Stability Board data, nonbanks' assets represented over 47 percent of global financial assets in 2022, when compared with 43 percent in 2008 (FSB 2023). For instance, this upward trend is supported by the fact that market-based debt has become an increasingly important source of financing for nonfinancial firms. In particular, the presence of nonbanks in the global syndicated loan market has increased substantially over the past two decades from 30 percent of all originated loans in 2000 to almost 40 percent in 2022 (Figure 17, panel 1, shows flows of newly originated loans, and Figure 17, panel 2, shows the share of nonbanks in total outstanding originated loans).[18,19] Although most corporations resorting to the syndicated loan market, particularly on loans originated by nonbanks, are from AEs, some EMs, such as Brazil, have also been increasingly relying on nonbank loans (Figure 17, panel 2).

Figure 17. New and Outstanding Amounts of Syndicated Loans to Nonfinancial Firms Originated by Banks and Nonbanks

Nonbanks have increasingly become more important in credit intermediation to nonfinancial firms

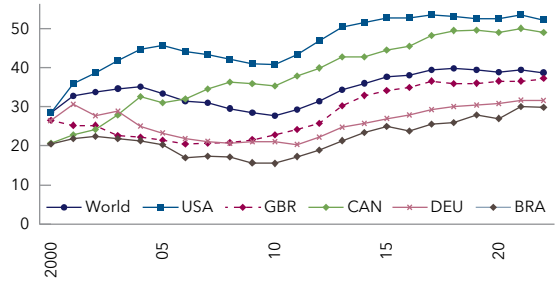
1. New Originated Loans by Sector

(Billions of US dollars)



2. Share of Nonbank Lending to Corporates

(Percent share of total loans)



Sources: Dealogic; and authors' calculations.

Note: Panel 1 shows the amount in billions of US dollars of newly originated syndicated loans by banks and nonbanks to nonfinancial firms. Panel 2 shows the share of syndicated loans intermediated by nonbanks, as a share of total outstanding originated loans, for selected borrower countries. Data labels in the figure use International Organization for Standardization (ISO) country codes.

[18] In the syndicated loan market, corporations borrow from several lenders, a consortium of banks that provide credit and establish the legal framework for the loan of the borrower. Within a syndicate, there is one or more lead arrangers that negotiate the terms of the loan, recruit other lenders, and act as the primary point of communication between the borrower and the participating banks. Cross-border syndicated loans play a crucial role in the economy: they account for roughly three-quarters of the total cross-border bank lending to corporations (Doerr and Schaz 2021) and represent about one-fifth to one-third of the total (to all borrowers) cross-border bank lending (Cerutti, Hale, and Minoiu 2015; Doerr and Schaz 2021).

[19] Participation amounts of each syndicate member are typically missing in loan-level data sets, including in Dealogic. We thus estimate out-of-sample the missing loan shares with a regression-based approach that relies on loan characteristics of the observed loan shares (De Haas and Van Horen 2013).

Risky credit markets (high-yield bonds and leveraged loans) have grown particularly rapidly, supported by investor search for yield and favorable borrowing terms for firms in the previous period of low interest rates (Figure 18).[20] NBFIs, including pension funds, insurance companies, mutual funds, and exchange-traded funds (ETFs), have become increasingly important players in these (risky) credit markets, especially in AEs, potentially compounding financial stability risks.

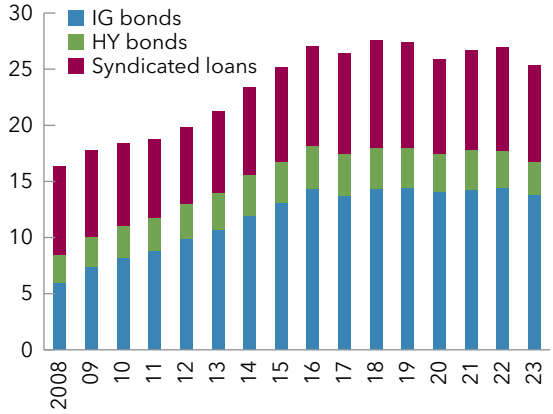
Another segment, private credit markets, has also boomed, reaching over $1 trillion outstanding and rivaling the leveraged loan market.[21] Growth has been partly driven by institutional investors, such as pension funds, foundations, and endowments, with long-term locked-in capital, who are typically not required to mark their positions to current market prices (IMF 2023c). This has reduced liquidity risks, albeit at the expense of increasing the opacity of the market. At the same time, interconnectedness is a key channel of risk, given most private credit investors are usually NBFIs that could face a capital call in the event of broader market stress or face losses on their investments.[22]

Figure 18. Market-Based Debt of the Nonfinancial Corporate Sector

The importance of market-based and nonbank debt in financing the nonfinancial corporate sector has grown

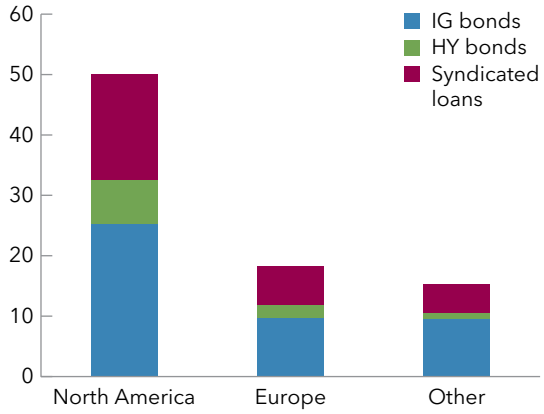
1. Global Share of Market-Based Debt

(Percent of the total credit to nonfinancial corporations)



2. Share of Market-Based Debt, 2023

(Percent of the total credit to nonfinancial corporations)



Sources: Bank for International Settlements; Dealogic; and IMF staff calculations.

Note: Syndicated loans include investment-grade, high-yield, and nonrated loans. Some loan tranches are retained by (underwriting) banks, such as revolving credit lines or term loan A type of loans. HY = high yield; IG = investment grade.

The increasing presence of nonbanks implies that the credit ecosystem has become more complex. Banks' direct exposures to credit risk may have declined because banks have shifted from an originate-to-retain to an originate-to-distribute business model. A broadening of the investor base beyond banks over the

[20] Issuance of floating-rate institutional leveraged loans slowed sharply after the COVID-19 outbreak but has since rebounded strongly because of investor demand for floating-rate instruments in an environment of rising interest rates. On net, global leveraged loans outstanding grew through the end of 2023 (especially in the United States), reaching almost $9 trillion globally, of which $7 trillion was in AEs. The high-yield bond market climbed to almost $4 trillion globally, of which $3 trillion was in AEs. However, the more challenging macroeconomic and policy environment that has prevailed since 2022 has put pressure on the global high-yield corporate sector. With high-yield issuers most vulnerable to an economic downturn and facing tighter financial conditions, alongside waning investor demand for fixed-rate bonds, new issuance of high-yield bonds has pulled back sharply over the past two years and driven a decline in outstanding bonds. In turn, investment-grade bond issuance has remained robust since the COVID-19 outbreak, and the outstanding amount of debt has grown to about $21 trillion globally.

[21] See the April 2024 *Global Financial Stability Report*. Private credit, provided by dedicated funds, is often referred to as "direct lending" because it is not issued or traded in the public markets, and the debt is not originated by regulated bank syndicates. Most private credit is provided as direct lending for private companies that cannot access—or that want to circumvent—public markets or that want certainty of execution and confidentiality.

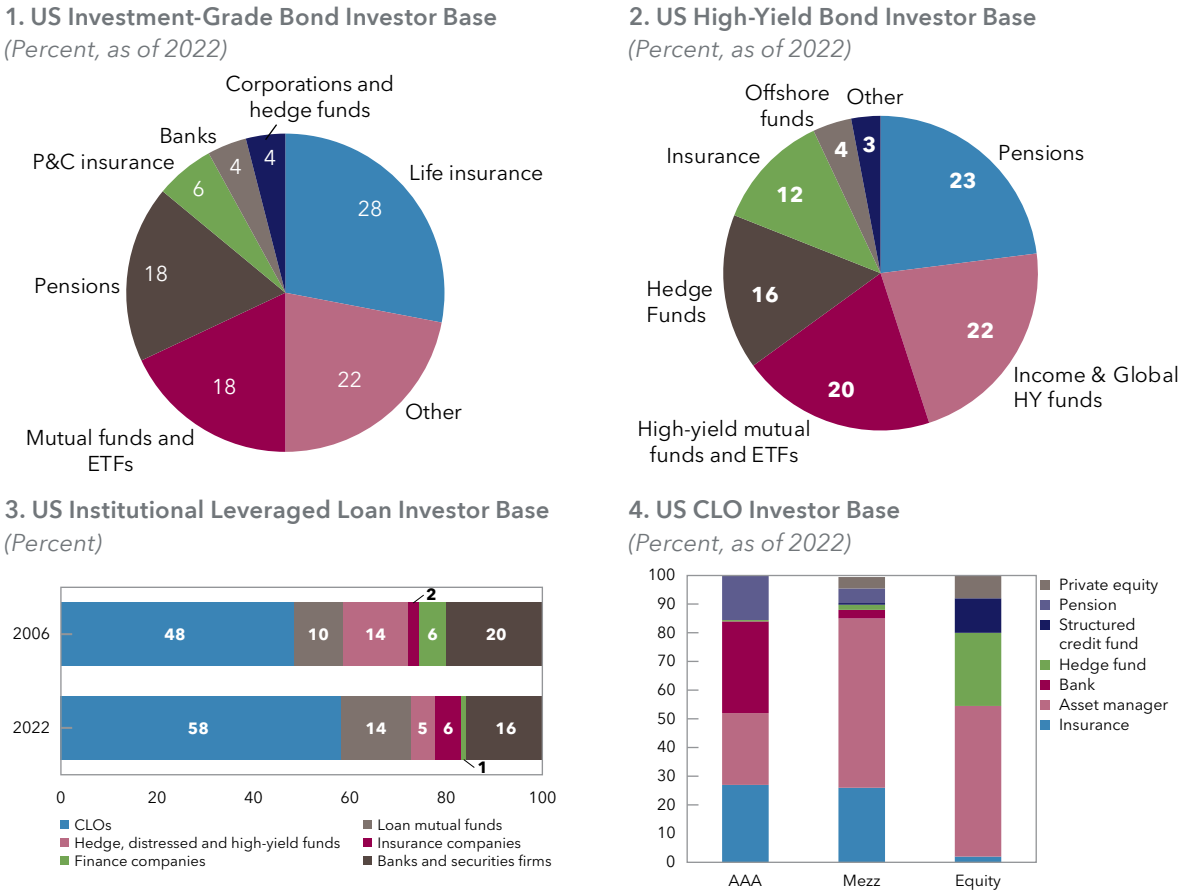
[22] A "capital call line" is a line of credit typically provided by a bank to a private equity firm that can be used to enhance debt fund returns or to provide bridge financing for limited partnership capital.

past few decades has contributed to the distribution of exposures to a wider set of creditors, particularly NBFIs, with varying risk profiles. This has likely reduced some risks to the banking system, but it has also increased the complexity and opacity of credit markets, possibly introducing new risks and shock transmission channels.

Zooming in on the US corporate debt market, both pension funds and insurance companies play a key role in the investment-grade and high-yield corporate bond markets (Figure 19). Mutual funds and ETFs also account for a large share of corporate bond holdings. As for high-yield bonds, investment funds and ETFs account for about half the demand in this segment while also supporting the strong growth in the leveraged loan market. However, open-ended investment funds may face liquidity mismatches, often offering investors daily redemption, despite the relatively illiquid nature of the underlying instruments (IMF 2022). With the leveraged loan market experiencing impressive growth over the past decade, the buyer base has shifted further toward institutional investors. Structured financial products, such as collateralized loan obligations (CLOs), are an important source of demand for low-quality credit, and CLOs now purchase close to two-thirds of total issuance of leveraged loans, which compares with a bit less than half in 2006 (Figure 19).[23]

Figure 19. Investors in US Bond and Institutional Leveraged Loan Markets

Nonbank financial institutions are key sources of financing across bond and leveraged loan markets



Sources: Barclays Capital; Bloomberg Finance L.P.; Citi; EPFR; Federal Reserve; NAIC; PitchBook Data, Inc.; SNL Financial; and IMF staff calculations.

Note: In panel 1, *Other* includes endowments, foundations, sovereign wealth funds, offshore funds, direct holdings by households, and bonds held by foreign buyers. CLO = collateralized loan obligation; ETF = exchange-traded fund; P&C = property and casualty.

[23] A CLO is a structured finance product collateralized predominantly by broadly syndicated leveraged loans.

In the US market, banks are exposed to CLOs primarily through AAA tranches, whereas asset managers and insurance companies, by contrast, invest more in the riskiest tranches. Investors in the CLO equity and mezzanine debt tranches are a more diverse group, also comprising hedge funds and other structured credit funds.

The increasing shift from bank to nonbank credit intermediation to nonfinancial corporations creates new challenges for financial stability along several dimensions. First, nonbanks tend to exhibit greater vulnerabilities, including mismatches related to liquidity. Second, nonbanks are subject to less robust regulatory and supervisory scrutiny than banks and are not able to access central bank liquidity facilities, especially important during periods of large financial shocks (IMF 2023c). Third, nonbank lending is substantially more procyclical than bank lending, whereby nonbanks cut lending by more than banks during periods of large shocks (such as during banking crises), potentially amplifying the ongoing economic downturn (Fleckenstein and others 2021; Aldasoro, Doerr, and Zhou 2023; Albuquerque and Becker 2024). The higher nonbank cyclicality seems to reflect the inherent funding model of nonbanks, which is more unstable and typically characterized by greater friction (Fleckenstein and others 2021). Fourth, more stringent regulatory constraints on bank lending tend to push smaller and more financially vulnerable firms to borrow from nonbanks and at less favorable credit terms (Chernenko, Erel, and Prilmeier 2022).

The importance of nonbanks in credit intermediation is expected to continue because high interest rates typically lead to a leakage of bank credit supply to the nonbanking sector. With high interest rates, lending tends to shift from banks to nonbanks because funding friction and the widening in the spread between the policy rate and the deposit rate leads to deposits flowing out of the banking sector (Drechsler, Savov, and Schnabl 2017; Nelson, Pinter, and Theodoridis 2018; Xiao 2020; Elliott and others 2021; Cucic and Gorea 2022; Elliott, Meisenzah, and Peydró 2023). Furthermore, high interest rates have been found to promote a shift in mortgage and consumer lending away from the traditional banking sector toward the more fragile and less supervised nonbanking sector (Den Haan and Sterk 2011; Drechsler, Savov, and Schnabl 2022). Overall, the current environment of high interest rates—despite recent cuts in the policy rate by several central banks—coupled with signs of increasing distress in the nonfinancial corporate sector, may fuel a negative feedback loop between corporations and nonbanks, which ultimately may spread to the rest of the financial sector.

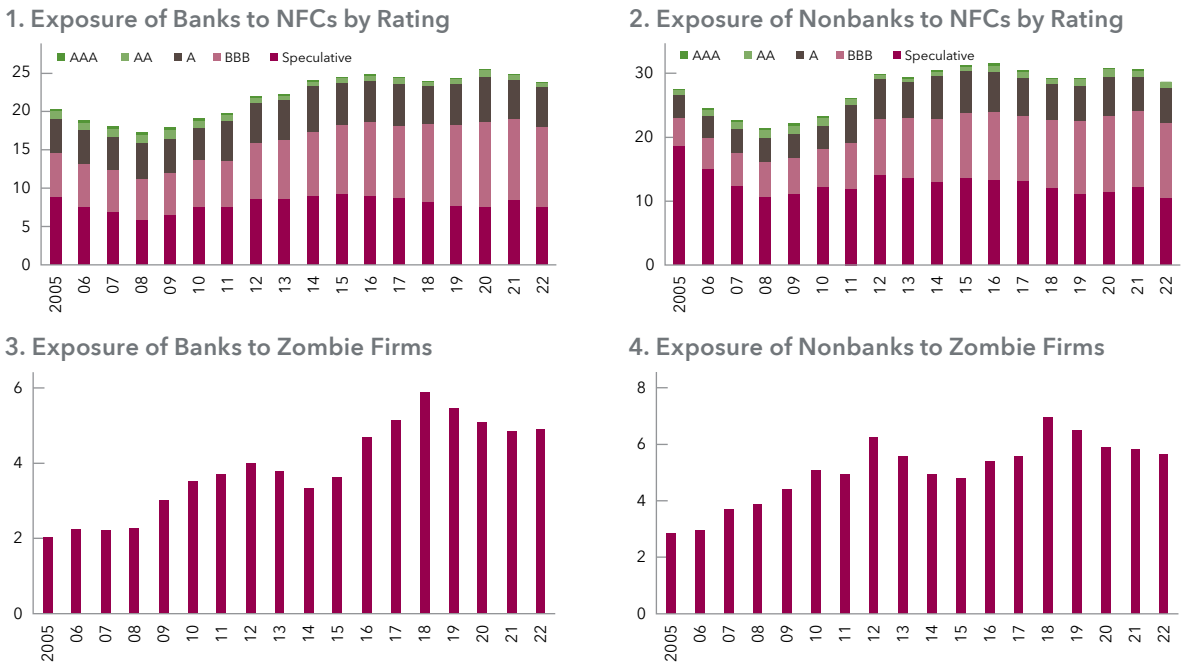
Data gaps have so far prevented a complete identification of the exposure of nonbanks (and banks) to corporate sector vulnerabilities. The rest of this section sheds more light on this issue to better monitor the extent of risks and vulnerabilities in the less regulated parts of the financial system. This is a novel exercise that combines information on all syndicated loan deals from Dealogic with nonfinancial listed firms' balance sheet data from Compustat.[24]

The underlying riskiness of banks' and nonbanks' syndicated lending portfolio to nonfinancial firms has been gradually shifting to the riskiest segment. Figure 20, panels 1 and 2, shows that banks and nonbanks have increased their exposure to riskier firms since the global financial crisis, as illustrated by the increasing lending to speculative-rated firms (shown in the red bars) and to BBB-rated firms (pink bars). Moreover, Figure 20, panels 3 and 4, documents that both banks and nonbanks have been lending more to the less productive segments of the economy—that is, zombie firms—although the shares seem to have stabilized more recently. High levels of capital in the banking sector in several jurisdictions constitute an important buffer to mitigate potential stresses from the most vulnerable firms. But questions remain about the underlying resilience of the nonbank financial sector should vulnerabilities in the corporate sector materialize.

[24] Because of the lack of a common identifier for firms between Dealogic and Compustat, this section resorts to a fuzzy match algorithm based on the borrower's name, country, and industry. This leads to an imperfect matching, covering about half the firms with loans in Dealogic.

Figure 20. Exposure of Banks and Nonbanks to Nonfinancial Corporate Borrowers

The underlying riskiness of banks' and nonbanks' lending to nonfinancial firms remains below the global financial crisis, but important vulnerabilities remain
(Percent of total portfolio)



Sources: Compustat; Dealogic; and authors' calculations.

Note: Panels 1 and 2 show the lenders' exposure to nonfinancial firms by S&P credit rating. *Speculative* rating refers to nonfinancial firms with a rating of BB+ or below. *Zombies* in panels 3 and 4 are defined as in Albuquerque and Iyer (2024): firms with an interest coverage ratio below one, leverage ratio above the median firm in the same country and industry, and with negative real sales growth. These indicators need to persist for at least two consecutive years to minimize misclassification from cyclical fluctuations. NFC = nonfinancial corporation.

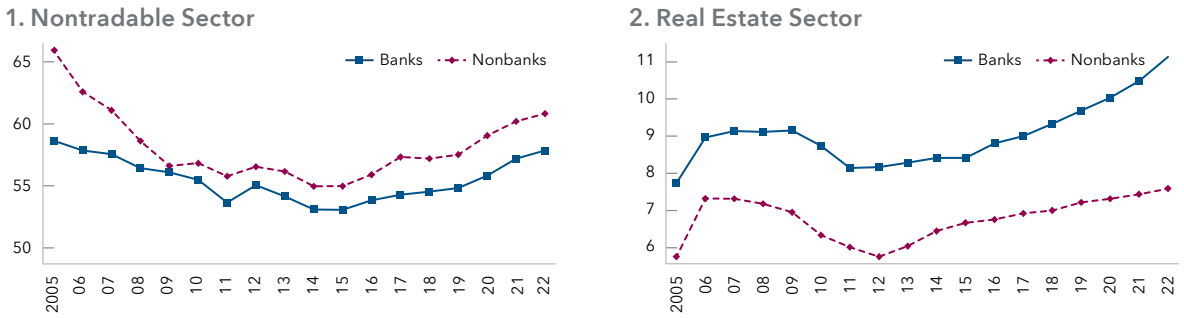
In addition, an area of concern is the increasing exposure of banks and nonbanks to the nontradable sector, whose firms are typically less productive, more leveraged, and financially vulnerable while also being more prone to credit-fueled booms (Albuquerque 2024; Müller and Verner 2024).[25] In addition, nontradable firms tend to face weaker growth opportunities—a corollary of being less exposed to competition—which increases the probability of future financial distress. After the decline in lending to this sector during the global financial crisis, lending to nontradable firms has picked up noticeably since 2015, particularly from nonbanks (Figure 21, panel 1). Lending trends to the real estate and construction sector, including real estate investment trusts—a sector with elevated leverage and subject to large swings in demand—are particularly concerning. Although total lending to the real estate sector still remains relatively small, recent data show that it has been gradually increasing (Figure 21, panel 2). It is also worth mentioning that risks to lenders from their exposure to the nontradable sector may be mitigated for those lenders more exposed to the services sector, which has seen a swift postpandemic recovery in the United States. In addition, a world of increased geoeconomic shocks may imply that the nontradable sector is less prone to trade tensions and fragmentation risks compared with the tradable sector.

[25] The tradable sector includes firms in manufacturing, agriculture, or mining. Nontradable sectors refer to firms in construction and real estate, wholesale and retail trade (including materials and consumer discretionary), transportation, services, energy, and information technology.

To sum up, these descriptive statistics raise concerns about the potential propagation of risks to the rest of the financial system, stemming from nonbanks in a prolonged default cycle scenario from corporations. In addition, nonbanks could face losses that ultimately would impair credit provision to corporations and make an economic downturn more severe.

Figure 21. Exposure of Banks and Nonbanks to Nontradable Firms

Increasing exposure of lenders to the nontradable sector
(Percent of total lending portfolio)



Sources: Compustat; Dealogic; and authors' calculations.

Note: Banks' and nonbanks' lending to the nontradable sector (panel 1) and real estate and construction firms (panel 2) as a share of total lending for banks and nonbanks.

5. The Status of Insolvency Frameworks

The economic situation described in the previous sections requires an analysis of the status of insolvency frameworks because their efficient operation would be needed to respond to increasing pressure in the corporate sector.

During the pandemic, there were widespread concerns about a "tsunami" of insolvencies in the corporate sector with severe macroeconomic effects (Blanchard, Philippon, and Pisani-Ferry 2020; Liu, Garrido, and DeLong 2020; Bauer and others 2021). However, the massive wave of insolvencies did not materialize during the pandemic and even went down in many countries. The consensus was that the multipronged support policies deployed by states around the world were able to avoid the collapse of enterprises, particularly in those economic sectors most affected by restrictions and supply-chain disruptions. The unprecedented monetary and fiscal support, which included, in some countries, grants, subsidized loans, guarantee programs, and loan moratoria, indeed helped firms to navigate the COVID-19 crisis, especially the most vulnerable ones. This resulted in the transfer of losses from the balance sheets of enterprises to the state (Arena and others 2021). The cost borne by firms and households became, in most countries, a fiscal cost. In some regions, such as Europe and in other AEs, successive support programs have created elevated expectations of public support among private enterprises. For this reason, it is especially important that support programs are targeted and that distortions to processes and markets are contained to minimize the effects of zombification. An undesired collateral effect of the emphasis on support programs has been the relative lack of attention to restructuring and insolvency measures. In addition, the deployment of support programs also implied that in many countries the state took a creditor position versus the firms that were supported either through the provision of direct loans or through guarantees. Guarantee programs were deployed by AEs for unprecedented amounts—the value of the combined envelope of the guarantee programs for seven large economies was over $4 trillion (Hong and Lucas 2023). This development raises new policy issues in the implementation of restructuring and insolvency policies.

The lack of a wave of insolvencies, as evidenced by the small number of insolvency cases during the pandemic, does not really correspond with the extent that enterprises suffered the consequences of the pandemic and its associated effects. A full assessment of the destruction of firms and the productive fabric in economies around the world cannot be based entirely on the number of enterprises that underwent judicial insolvency proceedings. Micro and small enterprises, because of their weaker balance sheets and the shortage of liquidity and credit during the pandemic, exited the market in large numbers and, in most cases, without any judicial insolvency proceedings.[26]

Another factor that must be considered in the assessment of the damage to the productive fabric is that dynamism and entrepreneurialism revitalized business sectors in many countries, reducing the scarring caused by the pandemic. Country cases include the United Kingdom and the United States, where business creation reached elevated levels after the initial effect of the pandemic (Haltiwanger 2021; Bahaj and others 2022b). However, the long-term effects of creation of new businesses during the pandemic, just as the long-term effects of the survival of enterprises because of the public support programs, still remain to be fully assessed.

As outlined earlier, the effect of the pandemic on corporate restructuring activity could be characterized as the "COVID-19 paradox." Thanks to the policy support programs deployed by countries around the world, insolvency activity actually decreased at a time when there were widespread concerns about a wave of insolvencies triggered by pandemic-related lockdowns and supply-chain issues that could result

[26] For instance, in the United States, in the first six months of the pandemic in 2020, 3.3 million small businesses exited the market, out of 30 million small businesses. At the same time, there were fewer than 1,000 cases of the new judicial procedure for small businesses' reorganization. In China, 3,908 firms were liquidated through judicial insolvency proceedings, whereas 2.9 million firms exited the market.

in the congestion of the courts. The decline in the number of insolvency cases filed during the pandemic prompted the discussion on the existence of a "bankruptcy gap"—that is, a gap between previously reliable predictors of bankruptcy rates based on economic activity and actual bankruptcies (Banerjee, Noss, and Vidal Pastor 2021). However, as documented in Section 2, insolvency activity is back to prepandemic levels in many countries, and there are several economies where the increase in insolvency cases is noticeable (for example, Canada, Japan, Sweden, the United Kingdom, and the United States).

In these circumstances, where companies with elevated levels of debt are experiencing the pressure of increased interest rates because of monetary policy tightening, insolvency and restructuring systems can play a significant role. In fact, insolvency regimes affect the corporate sector in multiple ways, and it is possible to distinguish ex ante and ex post effects: an effective insolvency regime facilitates access to credit by firms, and the treatment of entrepreneurs in insolvency has clear implications for economic dynamism (Armour and Cumming 2008). In situations of elevated levels of corporate debt distress, the quality of the insolvency regime becomes crucial for both the liquidation of unviable enterprises and the preservation of those enterprises that can return to viability, minimizing losses to creditors and the economy.

A. Crisis Preparedness

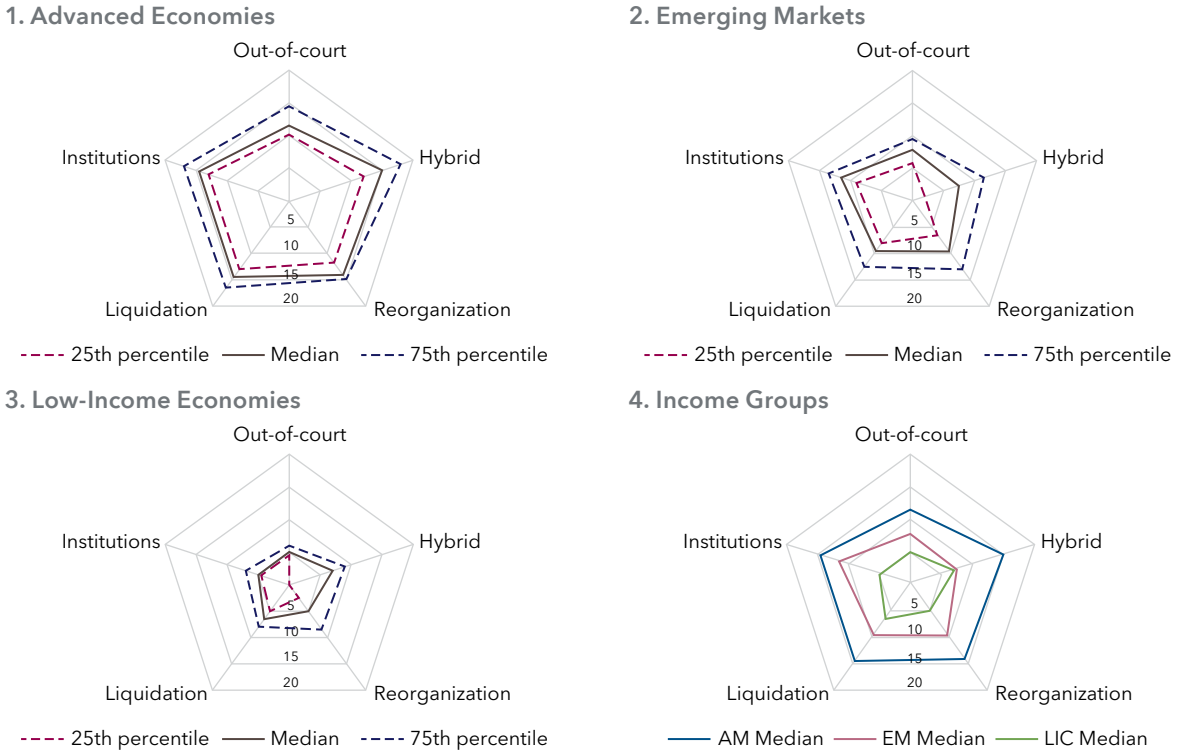
This section assesses the insolvency and restructuring regimes of 60 countries around the world, representative of various income levels, regions, and legal traditions. The crisis preparedness indicator, first developed in Araujo and others (2022), focuses on aspects of the insolvency and restructuring regimes that are most relevant in a corporate debt crisis. The indicator is purely based on the analysis of the laws and regulations in force at the time of their assessment by IMF staff. The indicator collects information relative to 60 countries, including countries from all regions and income levels, and representing more than 91 percent of global GDP and 84 percent of world population. The substantive coverage of the indicator is broad and can serve as a proxy for the overall quality of the insolvency and restructuring regime also in noncrisis situations (see Annex 2 for the methodology and Annex Tables 2.1 and 2.2 for the indicator values by country for 2023 and 2021).

The context for crisis preparedness has changed significantly. During the pandemic, the advice to countries differentiated certain aspects of the crisis preparedness framework according to the existing circumstances of those countries (Araujo and others 2022). Countries with insufficient policy tools or ineffective legal and institutional frameworks to restructure, reorganize, and liquidate enterprises needed to urgently address those shortcomings. Given the time it takes to effectively implement complex legal and institutional reforms of the insolvency regime, improvements in out-of-court debt restructuring and in hybrid restructuring procedures were recommended, which can be made relatively quickly and support (at least in the short term) both the needs of enterprises and the performance of the insolvency framework. Hybrid restructuring is a generic term that encompasses several ways in which out-of-court debt restructuring is assisted by limited judicial intervention. The combination of informal restructuring techniques with limited court intervention (typically, to support a stay of creditor actions or to confirm a restructuring agreement) makes hybrid restructuring particularly effective in the context of corporate debt crises.

The priorities of countries around the world are significantly diverse: AEs have an advantage in the quality of their insolvency framework, particularly because the law is applied by strong institutions, and many AEs are increasing the use of hybrid restructuring. However, they could simplify their liquidation proceedings; adjust the technical aspects of their reorganization proceedings, including for small enterprises; make better use of out-of-court restructuring; continue adopting modern technologies in insolvency proceedings; and create a legal environment more conducive to restructuring. In EMs, there have been improvements in insolvency legislation, and although many technical aspects can improve further, the priority should be to strengthen the court system and insolvency administration. Low-income countries face important challenges in their institutional frameworks and the operation of insolvency laws. For this reason, improvements in out-of-court restructuring and hybrid restructuring would increase crisis preparedness faster (Figure 22).

Countries are now facing various challenges, and the level of corporate debt distress and insolvency activity diverges. However, it would be advisable for countries to continue improving their insolvency frameworks. The analysis in this section updates the original crisis preparedness indicator (Araujo and others 2022), which measured the levels of crisis preparedness of 60 national insolvency regimes with 2021 data. The 2023 indicator shows small variations, which is unsurprising, considering the time it takes to implement meaningful insolvency reforms. There are countries that have registered improvements, many of them because of the implementation of the EU Restructuring Directive (Belgium, Italy, Spain, Sweden), but others have implemented broad reforms (Nigeria) or specific improvements to their regime or institutions (Philippines, United Arab Emirates).

Figure 22. Crisis Preparedness Indicator



Source: Authors' calculations.

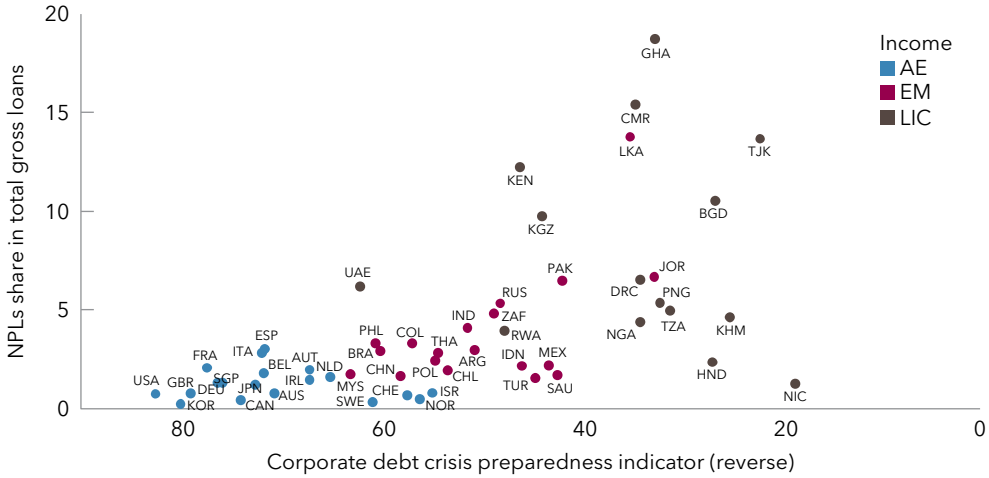
Note: The further away from the center, the higher the value of the subindicator, and therefore, the level of crisis preparedness is higher. Dotted lines show the lower and upper quartile, respectively, and the colored lines give the median. AE = advanced economies; EM = emerging market; LIC = low-income country.

The levels of crisis preparedness correlate with the overall quality of the insolvency and restructuring framework. Figures 23 and 24 show crisis preparedness and the level of NPLs, including changes between 2021 and 2023. The figure does not imply correlation—it merely points to the relative challenges that countries face in bringing NPL levels down, which can also give an indication of potential issues in cases when corporate sector vulnerabilities increase. A combination of high levels of NPLs and a low score in crisis preparedness indicates that the country will probably spend more time bringing down NPL levels and would fare worse in the case of a crisis.

The main developments in crisis preparedness and ongoing trends since 2021 are as follows:

- *Increased adoption of hybrid restructuring techniques:* Several countries have improved their hybrid restructuring techniques, particularly EU countries. The implementation of the 2019 Restructuring Directive has given EU members the opportunity to revisit their insolvency and restructuring regimes,

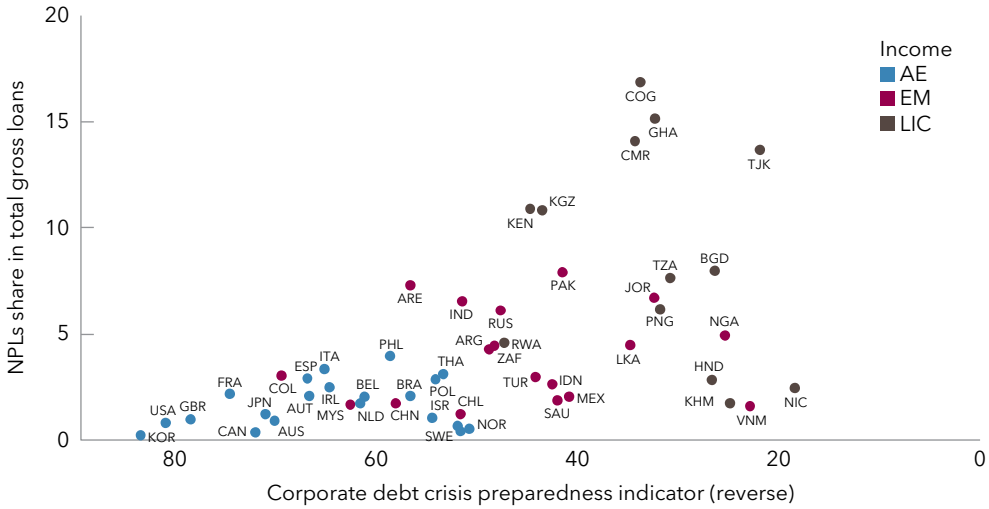
Figure 23. Levels of Nonperforming Loans and Crisis Preparedness, 2023



Sources: IMF, Financial Soundness Indicators database; and authors' calculations.

Note: Data labels in the figure use International Organization for Standardization (ISO) country codes. AE = advanced economy; EM = emerging market; LIC = low-income country.

Figure 24. Levels of Nonperforming Loans and Crisis Preparedness, 2021



Sources: IMF, Financial Soundness Indicators database; and authors' calculations.

Note: Data labels in the figure use International Organization for Standardization (ISO) country codes. AE = advanced economy; EM = emerging market; LIC = low-income country.

although the numerous options for the implementation of the directive have resulted in a diversity of restructuring and reorganization tools being incorporated in many European regimes (Garrido and others 2021).[27] There is wide scope for the adoption of flexible restructuring techniques in several economies (Andre and Demmou 2022).

[27] In fact, some countries have incorporated the directive as a revision of their reorganization frameworks (Latvia, Sweden). Others have included a restructuring procedure and have abolished reorganization (Greece). Other countries have revised their restructuring procedures but have not modified accordingly their reorganization procedures (Spain).

- *Sale of enterprises as a going concern:* Some countries are adopting measures to facilitate the sale of enterprises as a going concern. This is a critical technique that often faces legal obstacles, sometimes compounded by the lack of a market for enterprises. The sale of the enterprise can be done as part of an ordinary liquidation process or as part of an accelerated insolvency process, often called a "prepack" (particularly in the United Kingdom), in which contacts with a possible buyer are initiated before the start of the insolvency process, whose main goal is the approval and execution of the prearranged sale of the business.
- *Use of technology:* The use of modern technologies in case management, case processing, and even in virtual hearings and virtual creditor meetings accelerated in many countries during the pandemic because of the restrictions imposed for public health reasons. There are multiple advantages to the incorporation of modern technologies for the conduct of complex judicial proceedings. It is foreseeable that the use of technology will further increase in all countries. One of the technological innovations with immediate effects is the deployment of systems for e-auctions and portals for the sale of assets in insolvency and debt enforcement cases. New uses of technology can include artificial intelligence systems for the courts, early warning systems to detect financial stress in enterprises, and consolidated databases for the identification of claims and assets of insolvent debtors.
- *Court specialization:* One of the most important elements in the insolvency framework is the judiciary. Specialization in insolvency law, or at least in commercial and corporate matters, represents a major increase in the quality of the regime. Certain countries (for example, Nigeria) have recently joined the trend of establishing courts or judges specialized in insolvency law and commercial matters.

There are other relevant elements for crisis preparedness where shortcomings persist. For instance, out-of-court mechanisms have not been introduced in most countries, and reforms improving the quality of liquidation regimes, or the regulation of insolvency professionals, are sparse. In some specific cases, there are even slippages or a deterioration of existing conditions. In some cases, countries have removed special regimes: Korea let lapse the out-of-court corporate restructuring regime, and in Colombia, the special hybrid procedures introduced during the pandemic have also expired. Lack of resources of the courts in charge of insolvency cases is also a relevant issue in several countries (for example, India and Spain).

B. Insolvency Frameworks and Effects of Monetary Policy

The development of insolvency and restructuring frameworks can have real effects on the health of the corporate sector. Using a similar local projection model as presented in Section 3.A, the objective is to test how the tightening in monetary policy can affect healthy firms—that is, firms with a low probability of default—conditional on the level of crisis preparedness in a particular country. Countries are sorted based on the relative ranking of the crisis preparedness indicator in 2023. Countries with "less developed insolvency frameworks" fall in the first quartile of the crisis preparedness indicator, whereas the remaining countries are labeled "well-developed insolvency frameworks."[28]

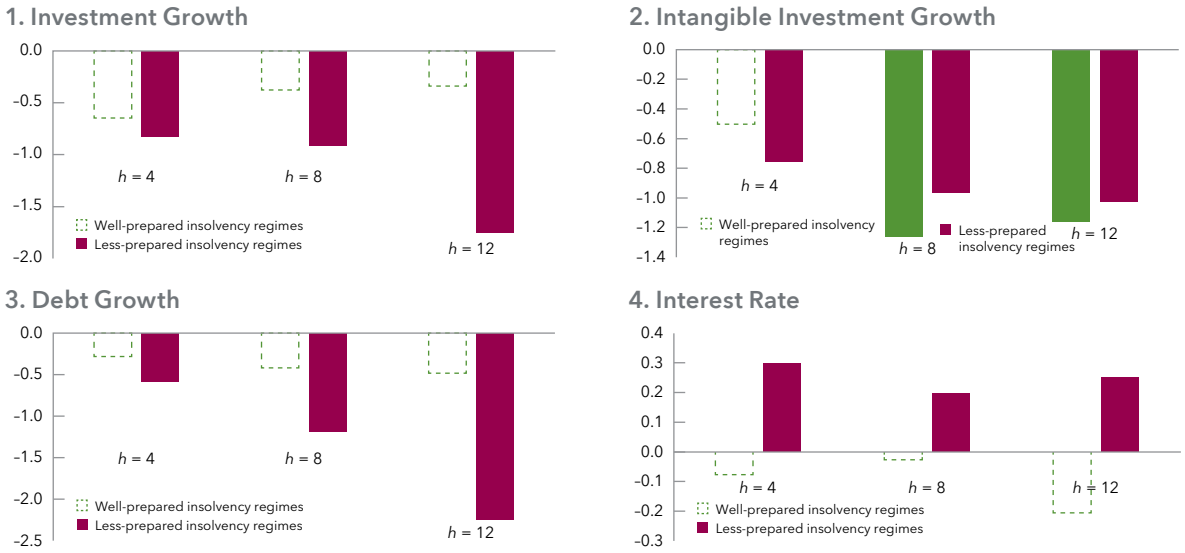
The picture that emerges from Figure 25 clearly supports the view that nondistressed firms in countries with less-developed insolvency regimes would be hardest hit by contractionary monetary policy, as depicted by the red bars. Their investment and debt fall substantially more, and interest rates increase more, compared with healthy firms in countries with more developed insolvency regimes. This reduced-form model has limitations in offering a structural explanation for these results. However, the findings here align well with the view that countries with more deficient insolvency frameworks experience challenges in the efficient resolution of distressed firms: for instance, either because it is costly, it takes a long time, or the recovery rate is low. This ultimately affects healthy firms operating in the same sector through a misallocation of capital

[28] Countries with less developed insolvency frameworks that are part of the regression analysis include Egypt, Indonesia, Jordan, Mexico, Nigeria, Pakistan, Russia, Saudi Arabia, Türkiye, and Vietnam.

or crowding-out effects. In sum, this exercise illustrates what can happen if insolvency frameworks are not well prepared to deal with a wave of corporate defaults. It is possible that distressed firms remain alive for longer, potentially becoming zombie firms—thus, delaying a necessary creative destruction process that would allow more productive firms to enter the market.

Figure 25. Effect of Monetary Policy on Healthy Firms Conditional on Corporate Insolvency Regimes

Healthy firms in countries with less developed insolvency frameworks are more affected by monetary policy (Percentage point change, quarters)



Source: Compustat and authors' calculations.

Note: Cumulative impulse responses for healthy firms (below the upper quartile of the country-specific probability of default distribution) to a monetary policy shock that increases the country-specific one-year sovereign bond yield by 100 basis points. Red bars refer to the effects for countries with less developed insolvency frameworks (first quartile of the crisis preparedness indicator). Green bars refer to the remaining countries in the sample. The *x*-axis represents the effects over horizons 4, 8, or 12 quarters ahead. Full bars refer to statistically significant coefficients at the 90 percent confidence level, whereas statistically insignificant coefficients are represented by hollow bars.

6. Needed Policies

A. The Role of Financial Policies

This paper has emphasized that corporate sector vulnerabilities could pose systemic risks if not adequately addressed. This risk is even more heightened in an environment of high interest rates, tighter credit conditions, and economic uncertainty. Excessive leverage; interconnectedness with financial and nonfinancial institutions because many corporations rely heavily on debt to finance their operations; risk of formation of asset price bubbles, given the disconnect between valuation and fundamentals in some sectors; and higher credit risk are many of the threats to the macrofinancial stability that policymakers should assess carefully. Authorities should deploy both micro- and macroprudential tools to mitigate these risks. For instance, policymakers should require stringent stress tests to estimate the potential effects of rising interest rates on firms' repayment capacity in a context of eroding buffers.

Financial supervisors must continue to be vigilant and monitor vulnerabilities in some sectors of the economy that have been hit hard by the pandemic and the monetary policy tightening cycle. Moreover, prospects for the CRE sector remain challenging. Rising delinquencies and defaults in the sector could restrict lending and trigger a vicious cycle of tighter funding conditions, falling commercial property prices, and losses for financial intermediaries, with adverse spillovers to the rest of the economy. Ongoing monitoring and management of risks related to the sector will be important to mitigate potential risks to macrofinancial stability. To ensure resilience in banking and inform decisions regarding the adequacy of capital buffers for CRE exposures, stress-testing exercises that embed large CRE price declines should be considered. Supervisors should also review banks' CRE valuation assumptions and ensure that provisions are adequate.

As lending standards have tightened substantially, the role of nonbank financials has also increased substantially in the credit provision for the corporate sector. Authorities should have sufficient and reliable data to analyze vulnerabilities stemming from origination practices and chains of bank and nonbank intermediation in the corporate debt market. Given the potential risk to financial stability posed by this fast-growing and interconnected asset class, authorities could consider a more proactive supervisory and regulatory approach to private credit. Although the regulation and supervision of private funds was strengthened significantly after the global financial crisis, the rapid growth and structural shift of borrowing to private credit requires a further comprehensive review of the regulatory requirements and supervisory practices in those countries where private credit market or their exposure to private credit is becoming material (IMF 2024c).

Financial policies must carefully account for the necessity of corporate debt restructuring and insolvency, especially given their significant role in addressing heightened corporate vulnerability. During the pandemic, the support to enterprises by way of financial and fiscal measures was unprecedented, to a point where commenters have questioned whether insolvency and restructuring are a proper policy response for crises and instead "bailouts" should be considered more appropriate (van Zwieten, Eidenmüller, and Sussman 2020; Eidenmüller and Paz Valbuena 2021). However, it is unclear whether a generalized bailout policy has negative effects in the medium and long term, and it is also unclear that such a response would be justified beyond the extraordinary circumstances of the pandemic.

The orthodox view remains that the critical function of a bankruptcy or insolvency systems is to help insulate or rescue domestic financial systems, especially the banking system, from destabilizing overindebtedness in the economy (Feibelman 2022). The policy advice in insolvency and restructuring matters was based on the progressive reduction of broad support measures and its replacement with firm-specific support for viable firms facing liquidity or solvency risks (IMF 2021; Araujo and others 2022). Once support measures have

been removed, or have been replaced by other programs of lesser significance, and the risk of a general corporate debt crisis has subsided, the policy lines that refer to financial and operational restructuring should be pursued, particularly because they are relevant for the prevention and treatment of sectoral corporate crises and the containment of their effect on the financial sector (Dobler, Moretti, and Piris 2020), especially by establishing an assertive supervision of financial creditors in their handling of problem loans. This may include requirements to set up workout units and special scrutiny of actions to resolve NPLs, including resolution targets, the general improvement of insolvency and restructuring regimes (see Section 6.B), and the development of distressed debt and NPL markets, to reduce the cost of corporate restructuring.

B. Restructuring and Insolvency

The risk of a general corporate crisis, which was tied to the extraordinary circumstances of the COVID-19 pandemic, has subsided. The stress in the corporate sector is now caused by a set of specific circumstances, such as the combination of high corporate debt, increasing interest rates, and inflationary pressures, which may be addressed through financial restructuring. Other issues, such as technological transformation and changes in industrial policy motivated by climate change, require operational restructuring or liquidation. In particular, risks of zombification demand not only strong supervisory action by financial supervisors but also a functional insolvency regime that adequately processes the liquidation of zombie firms (see Box 2).

The improvements to insolvency and restructuring regimes should continue. Countries should augment the capacity of the court system with out-of-court restructuring and hybrid restructuring alternatives, which combine the flexibility of informal negotiations with limited judicial intervention to protect assets and bind dissenting creditors. More complex cases may need operational restructuring through a judicial reorganization. Liquidation of unviable firms is essential for the removal of noncompetitive firms, especially zombie enterprises, from the market and promote a better allocation of economic and fiscal resources.[29]

Progress in crisis preparedness, as measured in the crisis preparedness indicator (see Section 5), should continue. National policymakers would benefit from a better understanding of the various elements that comprise the crisis preparedness framework. There is a frequent misunderstanding related to the lack of use of some of the procedures or techniques in a given national system. The tools in the framework (out-of-court debt restructuring, hybrid restructuring, reorganization, liquidation) perform distinct functions and complement each other. In some countries, there may have been a misimpression that some of these tools are in competition, and the relative lack of use of some of them (for instance, reorganization or out-of-court debt restructuring) has led to the perception that these techniques are no longer used. However, it is important that all the main tools are available to distressed enterprises and creditors, irrespective of their relative use. The development of a restructuring culture among economic actors is also a major contributor to a more intensive use of the various legal techniques.

Analytical work on insolvency and restructuring frameworks would benefit from the introduction of data-gathering systems. These systems can provide specific information on key variables such as the duration of proceedings (and of each procedural step) and the actual recovery of claims, which are the main variables to assess the efficiency of insolvency proceedings. Other data points can also be useful in the assessment of insolvency reforms (see Garrido and others 2019).

[29] The unattractiveness of insolvency proceedings plays a role in zombification: it is often the case that insolvency proceedings are opened too late because of their perceived inefficiency and high costs, and the lack of enforcement of rules on directors' duties also contributes to the survival of zombie firms.

There are risks in specific sectors and specific countries, which may warrant a distinct set of responses in terms of restructuring and insolvency policies. Sectoral crises in the corporate sector may have serious consequences for financial institutions. In this regard, there are certain developments that can be highlighted, both on the side of the affected sectors' firms and on the creditors' side (see Annex 3 for more details):

- *Commercial real estate*. This economic sector has shown signs of distress in numerous countries, and to resolve distress, there is a need for a functioning mortgage enforcement regime and a full toolkit of restructuring and insolvency options. Introducing accelerated enforcement for CRE can help address crises in the sector.
- *Bond restructuring*. NBFIs often provide financing through bonds. Restructuring of bonds raises special issues, such as the role of trustees and bondholders' meetings, and the integration of bondholders as a class in insolvency proceedings. These points need to be addressed for the effective restructuring of bond debt.
- *The role of the state as a creditor*. As a legacy of the pandemic, the role of the state as a creditor has increased in restructuring and insolvency. States need to deploy resources to contribute to the restructuring of companies by adopting approaches similar to those of private creditors, playing a role that is consistent with the preservation of a market economy, avoiding the continuation of zombie enterprises, and making economically justifiable decisions. The approaches of states vary considerably, and the priority status of public claims (particularly tax and social security claims) may present more complications for restructuring (see Aw, Crowley, and Garrido, forthcoming).

7. Conclusion

This paper has stressed that the recent monetary policy tightening, coupled with the withdrawal of policy support deployed during the pandemic, may translate into liquidity and solvency difficulties for many corporations, which ultimately will affect lenders. A postpandemic higher cost of funding for several corporations is uncovering vulnerabilities in some sectors of the economy. These vulnerabilities may be exacerbated by worsening credit quality in corporate loans that ultimately may affect the health of the financial sector. How systemic this will be, which lenders may be affected, and how to manage this risk remain important policy questions. Corporate debt vulnerabilities will therefore continue to weigh on the outlook for global financial stability as firms face pressures from higher and volatile interest rates, higher input costs, weakening economic activity, and tighter bank and nonbank lending standards.

Although there has been important progress on insolvency and restructuring regimes since the pandemic, countries will need to continue improving their crisis preparedness systems to deal with a potential scenario of an intensification of corporate distress. For instance, shortcomings still persist in out-of-court mechanisms, which have not been introduced in most countries, and reforms that improve the quality of liquidation regimes, or the regulation of insolvency professionals, also remain limited.

Annex 1. Empirical Frameworks

A. Sample and Econometric Specification

Section 3.A uses quarterly balance sheet data from S&P Compustat North America and Compustat Global on nonfinancial listed firms for 48 countries (23 EMs and 25 AEs) from the first quarter of 2000 to the fourth quarter of 2019 (Annex Table 1.1 shows the country coverage). The sample excludes financial firms (that is, banks, diversified financials, and insurance firms). Nominal variables are deflated with the respective country consumer price index deflator.

To estimate the effect of monetary policy shocks $R_{c,t}$ on firms' financial performance, the authors use local projection methods (Jordà 2005), which involve running a series of regressions of firm-specific outcomes on country-specific monetary policy shocks for horizons 0, 1, … 20. More specifically:

$$\Delta_h Y_{i,t+h} = \alpha_i^h + \alpha_{c,s,t}^h + Distressed_{i,t-1} \times \left(\beta^h \hat{R}_{c,t} + \delta_h Z_{i,t-1}\right) + \gamma_h Distressed_{i,t-1} + \Gamma_h Z_{i,t-1} + \varepsilon_{i,t}^h,$$

where the cumulative growth rate of the dependent variables ΔY is computed as the cumulative percentage change in the logarithm of investment in physical and intangible assets and in total debt from period h to $t + h$. The implicit interest, computed as total interest payments over lagged total debt, takes instead the first difference in the level of the variable. The empirical framework controls for firm fixed effects α_i and includes four lags of the dependent variable and of several firm-specific characteristics $Z_{i,t-1}$: the logarithm of total assets to proxy for firm size; the debt-to-asset ratio to control for firm leverage; and the net liquid asset ratio, computed as current assets net of current liabilities over total assets, to control for firm liquidity. The term $\alpha_{c,s,t}$ represents country–sector–time fixed effects to control for all sources of shocks that may affect firms differently depending on time-varying country and industry shocks. The coefficient of interest is β, which is the differential response to monetary policy shocks of distressed firms relative to nondistressed firms within the same country, industry, and quarter.

To estimate the differential effect of monetary policy shocks on the average firm operating in countries with a high share of distressed firms (Figure 12), the authors estimate the following model:

$$\Delta_h Y_{i,t+h} = \alpha_i^h + \alpha_t^h + \beta^h \text{Distressed share}_{i,t-1} \times \hat{R}_{e,t} + \delta_h Z_{i,t-1} + \varepsilon_{i,t}^h,$$

where the coefficient of interest β indicates the effect of monetary policy shocks on the performance of the average firm in countries with a one standard deviation increase in the share of distressed firms.

Annex Table 1.1. Country/Region Coverage in Compustat

Advanced Economies	Emerging Market and Developing Economies
Australia	Argentina
Austria	Brazil
Belgium	Bulgaria
Canada	Chile
Cyprus	China
Denmark	Egypt
Finland	Indonesia
France	India
Germany	Jordan
Greece	Malaysia
Hong Kong SAR	Mexico
Ireland	Nigeria
Italy	Pakistan
Japan	Peru
Republic of Korea	Philippines
The Netherlands	Poland
New Zealand	Romania
Norway	Russia
Portugal	Saudi Arabia
Singapore	Thailand
Spain	Türkiye
Sweden	Vietnam
Switzerland	South Africa
Taiwan Province of China	
United Kingdom	

Source: Compustat and authors' calculations.

B. Monetary Policy Shocks

The country-specific monetary policy shocks are sourced from Albuquerque and Mao (2023), who identify exogenous variation in local monetary conditions through the effect of US monetary policy shocks on each country. First, US monetary policy shocks are extracted from financial market data, particularly by computing interest rate surprises using the movement in three-month Federal Funds Futures within a 30-minute window around Federal Open Market Committee policy announcements. Second, the authors estimate the following model for each country at a time:

$$R_{c,t} = \alpha_c + \delta_c S_t + \Gamma'_c X_{c,t-1} + u_{c,t}, \qquad \text{for each c}$$

where $R_{c,t}$ is the one-year government bond yield in each country c at time t, and S_t denotes the US high-frequency monetary policy surprises. The framework also includes controls in X_{t-1}: namely, four lags of real domestic and US GDP growth, domestic consumer price index, domestic current account balances as a percentage of GDP, and the real effective exchange rate. The country-specific monetary policy shocks are given by the predicted value of $R_{c,t}$.

C. Regression Analysis of Event Study

Annex Table 1.2. OLS Regressions of ECB's Corporate Sector Purchase Programme (CSPP) Announcement and Implementation

Independent variables	(1) 1	(2) 2	(3) 3	(4) baseline	(5) Baseline w/ announcement	(6) Baseline w/ announcement and CS event	*(7)* ***Baseline w/ announcement and IT***
ECB deposit rate	0.124***	0.0704***	0.0139***	0.0641***	0.0630***	0.0685***	***0.0624***
Probability of recession		0.648***	0.624***	0.325***	0.298***	0.315***	***0.299***
US IG corp spreads				0.696***	0.706***	0.682***	***0.705***
Announcement 1 - CSPP press release on April 21, 2016					−10.20***	−8.808***	***−10.19***
Announcement 2 - CSPP implementation on June 1, 2016					−1.883	−0.622	***−1.871***
Announcement 4 - Announced reduction of reinvestments on December 15, 2022					10.12***		
Announcement 5 - Implemented discontinuation of repurchase on July 3, 2023					−0.321	−1.530	
US FCI (GS)			20.31***				
Announcement 3 - Announced stopage of purchase of new assets and undertake only reinvestments on June 9, 2022						40.82***	
Credit Suisse collapse event, March 16, 2023						1.482	
Interaction between announcement reduction of reinvestments on December 15, 2022, and probability of default							***0.128***
Interaction between announcement 5 and probability of default							***−0.00753***
Interaction between Credit Suisse event and probability of default							***0.0423***
Constant	122.6***	104.3***	−1,908***	37.17***	36.97***	38.29***	***36.98***
Observations	2,073	2,073	2,047	2,072	2,072	2,072	***2,072***
R-squared	0.197	0.365	0.645	0.794	0.797	0.825	***0.797***

Sources: Bloomberg LP, European Central Bank, Haver Analytics, and authors' calculations.

Note: *$p < 0.10$; **$p < 0.05$; ***$p < 0.01$. CS = Credit Suisse; CSPP = Corporate Sector Purchase Programme; ECB = European Central Bank; IG = investment grade; GS = Goldman Sachs; IT = Interaction term.

Annex 2. Crisis Preparedness Indicator

A. Introduction—The International Standard: Quality, Effectiveness, and Efficiency of Insolvency Systems

There are comprehensive standards for the regulation of insolvency systems. The international standard for insolvency and creditor rights is a composite standard formed by the World Bank Principles and the UN Commission on International Trade Law recommendations in the Legislative Guide on Insolvency Law.[30] This international standard is prepared in consultation with the IMF and is included in the Financial Stability Board's compendium of standards because of its importance for the proper functioning of the financial sector. Because of multiple practical obstacles in conducting evaluations, there is no comprehensive assessment of compliance with the standard that would cover a wide range of countries simultaneously.

A full assessment of compliance with the standard could offer a proper measurement of the "quality" of an insolvency system because it represents a snapshot of the situation of the insolvency system as compared with the best international practices and in each of its components. However, measuring "quality" is inherently difficult because it requires not only an assessment "element by element" against the standard but also an evaluation of the quality of the insolvency system as a whole. Metrics such as the number of areas where the system is compliant or noncompliant may not offer a fair characterization because different elements may vary in importance and affect the functionality of the system to a larger or lesser degree. From a broader perspective, it is noted that the quality of insolvency regimes is an elusive concept, and it is more precise to refer to "efficiency and effectiveness" of insolvency systems.[31] An *effective* insolvency system is one that achieves its goals: namely, preserving viable enterprises and liquidating unviable enterprises. An *efficient* system achieves the same objectives but does it at a minimum cost (Garrido and others 2019). Ideally, an assessment of effectiveness and efficiency should be done on the basis of empirical data, but data on the performance of insolvency issues are still scarce, and there are issues of comparability across systems.

B. The Capacity of Insolvency Systems

An essential element that affects the effectiveness of an insolvency system is its capacity. "Quality," as indicated before, could be indicatively measured by the adherence to the international standard, but a "high-quality" regime may not be effective at preserving viable enterprises and liquidating unviable enterprises if it lacks the necessary resources for its application. On the other hand, measuring the capacity of the system to deal with insolvency cases is exceedingly difficult, mainly because the information available is incomplete, at best.

Insolvency systems tend to deal with a certain flow of cases, which increases and decreases depending on economic developments affecting specific sectors or the economy. Within this predictable range of cases, *effective* systems produce results in reasonable time periods, whereas *ineffective* systems will accumulate delays and backlogs. *Inefficient* systems do not make an optimal use of the resources at their disposal, and therefore, delays, backlogs, and suboptimal outcomes in general can occur more often.

[30] The UN Commission on International Trade Law Legislative Guide comprises several parts. Parts I and II were adopted in 2004. Part III, on the insolvency of enterprise groups, was adopted in 2010, and Part IV, on directors' liabilities, was adopted in 2014 (2019, second edition). Additional guidance on the insolvency of micro and small enterprises will be added in the near future.

[31] The World Bank principles also include a reference to effectiveness in its own title.

Importantly, even for effective and efficient systems, a sudden increase of insolvency cases represents a challenge. The capacity of insolvency systems cannot be increased overnight because insolvency systems tend to be rigid, and capacity increases are only feasible over the medium or long term. Based on studies of past crises,[32] an annual increase of 200 percent of insolvency cases or more tends to create serious issues and severely affects the functioning of the insolvency system.

C. Existing Indicators of Efficiency or Quality of Insolvency Systems

There are some indicators that seek to provide a measurement of the efficiency and the quality of insolvency systems. However, existing indicators focus on some selected aspects of the ordinary functioning of the insolvency regime and not on how insolvency regimes may react in case of a crisis. The selected aspects of insolvency regimes seek to offer a general impression of the overall quality of an insolvency system and its suitability for performing its fundamental economic functions. The selection of some aspects and the omission of others, as well as the overall methodology, are open to discussion and debate among specialists. In any event, these indicators offer a more nuanced picture than analyses that merely take the distinction between common law and civil law as a proxy for the quality of insolvency systems (La Porta and others 1998; Jordà and others 2022).

D. An Indicator to Measure the Crisis Preparedness of Insolvency Systems

Given the limitations of existing indicators, and the lack of adaptation to the specific challenges posed by corporate debt crises, it is useful to design an indicator that captures the features in an insolvency system that increase the ability of such systems to address a corporate debt crisis.

Based on the experience with previous corporate debt crises, a system responds best when a complete set of tools is deployed to address widespread distress situations in enterprises. For this reason, an indicator can measure the existence and availability of a set of tools that is most useful in a crisis, thereby providing a measure of the crisis preparedness of the insolvency system. The indicator focuses on the existence and availability of techniques, features, and institutions that are generally relevant in conducting restructuring and insolvency activities and are particularly useful in the response to systemic crises.

When a corporate debt crisis occurs, there is a sudden surge of insolvencies that need to be addressed with restructuring and insolvency tools. Past episodes show that a 200 percent increase of insolvency cases within one year creates stress in the insolvency system and results in serious negative economic effects by delaying insolvency cases and frustrating corporate reorganizations. We argue that an indicator that selects aspects of the insolvency and restructuring regime that are particularly relevant for corporate debt crises can provide a better sense of the strengths and weaknesses of insolvency systems.

E. Technical Description of the Indicator

The crisis preparedness indicator examines the legal tools and institutions that are most relevant for the treatment of widespread corporate debt distress. The indicator, originally proposed in Araujo and others (2022), includes five different subindicators, which, in turn, are composed of a variable number of elements. The indicator does not purport to offer a general assessment of the quality of the insolvency regime or of the effectiveness and efficiency of the insolvency regime under normal economic circumstances. Naturally, many of the elements selected for the indicator are also relevant for the ordinary functioning of the insolvency

[32] See Bauer and others (2021) and Díez and others (2021) for cases of past insolvency waves in Japan, Korea, Spain, and the United States.

regime. The indicator highlights the existence of elements that are not only at the core of the effectiveness of the insolvency system but that also increase its flexibility and improve its response during corporate debt crises. Conversely, there are areas of the insolvency regime that are not covered by this indicator: directors' liabilities, avoidance actions, some procedural aspects, cross-border insolvency, or the insolvency of enterprise groups. These are relevant issues for any insolvency system, but their importance is not necessarily higher in crisis situations.

The indicator produces a composite maximum score of 100. This measures the general capacity of the insolvency system to tackle a corporate debt crisis. As with all indicators, this indicator includes implicit recommendations to strengthen the crisis preparedness of insolvency systems, and these implicit recommendations are aligned with the legal and policy analysis included in this paper. The indicator not only offers a general assessment of crisis preparedness but also a disaggregation of results and more granular information about the areas that insolvency systems should consider strengthening to perform better, specifically, in corporate debt crises.

F. Components: Subindicators

The components for the indicator combine several subindicators that represent fundamental areas of the insolvency system. The selection of subindicators and their components is based on experience with past crises, including the most recent ones. Each subindicator has the same weight (20) in the total score (100) of the indicator. The subindicators cover the following five areas:

- Enhancements to out-of-court debt restructuring
- Hybrid restructuring
- Reorganization
- Liquidation
- Institutional framework

In principle, these five areas correspond to fundamental parts of the insolvency and restructuring regime. In this regard, the indicator is aligned with the contents of the international standard.

The analysis is based on the legal and institutional status of all surveyed countries by November 1, 2023. The indicator is based on the analysis of the laws in force at the time of the cut-off date, and the assessment is conducted by staff from the IMF Legal Department, who are specialized in insolvency and creditor rights law.

The indicator offers a broad and representative perspective of crisis preparedness across the membership because it covers 60 countries, including AEs, EMs, and low-income countries. These countries represent 91 percent of the world's GDP and 84 percent of the global population and cover all regions.

Within every subindicator, there are several elements that provide the score. The number of these elements is variable. Although this approach increases the complexity of the elaboration, it also increases the accuracy of the indicator. Each aspect is graded according to the Regional Operational Security Coordination methodology (four grades: 0–25, 25–50, 50–75, and 75–100). This gives a numerical value for each subindicator.

G. Enhancements to Out-of-Court Debt Restructuring

Out-of-court debt restructuring is the standard response in cases of corporate debt crises, particularly in situations where the insolvency regime is inefficient and the caseload exceeds the capacity of the formal insolvency system. Out-of-court restructuring (also known as "informal restructuring") is less costly and

more efficient and does not depend on the quality or capacity of the judicial infrastructure, so its use can be scaled up in response to a crisis. Out-of-court restructuring can work in any country as long as creditors and the debtor are able to negotiate and reach an agreement. In practice, however, several problems affect the operation of out-of-court debt restructuring: coordination problems among creditors, lack of incentives for the debtor, and lack of support for the debtor in the negotiation and preparation of restructuring plans (particularly, in the case of SMEs). A number of enhancements can address these problems and facilitate the operation of informal restructuring—and these represent the elements on which this subindicator is based:

- *Out-of-court restructuring frameworks:* Frameworks that facilitate out-of-court debt restructuring are especially significant in corporate debt crises. The different elements included here vary in terms of their level of detail and prescriptiveness.
- *Guidelines or codes of best practice:* Debt restructuring principles, in the shape of guidelines or voluntary codes of best practice, for financial institutions represent a useful step toward promoting effective negotiations among creditors and debtors. This element refers to debt restructuring principles along the lines of the "London Approach" and the INSOL Principles for multicreditor workouts—which are generally designed for large enterprises with multiple financial creditors—but also to other guidelines or codes of best practice designed for enterprise debt restructuring. These principles are nonbinding, but they set expectations for the behavior of parties in debt restructuring negotiations (standstill clauses, steering committees, role of lead creditors, burden sharing in restructuring). In some cases, the basic principles have been internalized by financial institutions in their workout practice.
- *Master restructuring agreements:* A further step in facilitating restructuring of enterprise debt is the existence of a master restructuring agreement, signed by financial institutions with significant operations in the country. The master restructuring agreement embodies best practice principles and provides additional detail and specific steps to reach restructuring agreements by the prescribed majorities.
- *Administrative restructuring programs*: An additional step consists of an administrative procedure for debt restructuring. These procedures also embody generally accepted restructuring principles and may complement master restructuring agreements or exist separately. The focus of these programs is on the procedures to follow to achieve debt restructurings.

These four elements produce a joint score of 55 percent of the subindicator. An administrative procedure can contain both the contents of master restructuring agreements and embody debt restructuring principles. A master restructuring agreement also embodies debt restructuring principles. The administrative procedure can reach a maximum score of 50 percent; master restructuring agreements can reach a maximum of 45 percent; and debt restructuring principles, on their own, can reach a maximum of 30 percent. The maximum score of 55 percent (or 11 points of 100) can only be achieved by a combination of the elements included. Overall, these factors produce a general image of the techniques to enhance informal out-of-court restructuring in a particular system.

H. Auxiliary Elements for Out-of-Court Debt Restructuring

The following three elements account for the remaining 45 percent of the subindicator, with each element accounting for 15 percent. These elements represent important legal and institutional elements that support out-of-court debt restructuring, especially in a crisis environment:

- *Enabling environment for restructuring:* The legal and regulatory environment can create incentives and disincentives to restructuring. Special debt restructuring frameworks can incorporate "carrots and sticks" for debtors and creditors as a way to promote restructuring. Among the main aspects that influence restructuring activity, the most important one is the existence of a functional debt enforcement regime that pushes debtors to negotiate (6 percent). Other aspects include the following: tax rules that do not

penalize debt restructurings and debt reductions for debtors and creditors (3 percent), the absence of a threat of civil or criminal liability for bank officials (or public officials) who grant concessions to debtors, and strict liability on corporate directors who do not commence formal insolvency proceedings, which can also negatively affect the capacity to negotiate an out-of-court restructuring (3 percent). Other incentives for restructuring, such as regulatory incentives for restructuring agreements, are also considered (3 percent).

- *Support for SME restructuring:* This element measures the existence of support programs for debt restructuring, which are particularly relevant for SMEs. Support programs include legal, business, and financial advice in the development of restructuring plans for businesses, as well as financial support for restructuring.
- *Alternative dispute resolution (ADR) techniques:* Out-of-court debt restructuring greatly benefits from the use of ADR techniques. Mediation, arbitration, or conciliation can be used to resolve controversies among creditors and between creditors and debtors. The legal system may ensure the general availability of these techniques. In addition, debt restructuring frameworks may incorporate ADR solutions. The indicator measures the availability and regulation of ADR techniques and its applicability to creditor–debtor and intercreditor disputes. Specific use within existing debt restructuring mechanisms provides a higher score.

I. Hybrid Restructuring

Hybrid restructuring is a generic term that encompasses several ways in which out-of-court debt restructuring is assisted by limited judicial intervention. Hybrid restructuring is especially important in corporate debt crises because it allows the restructuring of many enterprises quickly while rationalizing and minimizing the use of scarce judicial resources. The possibilities of hybrid restructuring are varied because there are multiple combinations of judicial action and informal restructuring that can yield positive results. The best-known tool for hybrid restructuring is prepackaged insolvency—that is, the possibility of obtaining the swift confirmation of a reorganization plan that has been negotiated informally. In addition, the legal system may provide for a judicial stay of creditor actions that protect the restructuring negotiations. Finally, it is possible that the legal system offers both a stay and a confirmation of a restructuring agreement, providing combined judicial measures to a restructuring procedure that nevertheless should be mainly based on a negotiation between the debtor and its creditors. These hybrid procedures, usually called "preinsolvency procedures" or "preventive insolvency procedures," can achieve a superior result, but they also run the risk of becoming too similar to full formal judicial reorganizations, losing the advantage of swiftness and lack of procedural complexity.

The interaction of the different techniques in hybrid restructuring requires a specific way of elaborating the score. Effective prepackaged insolvency may reach up to 75 percent of the score for this subindicator (15 points), whereas the possibility of a stay supporting informal restructuring negotiations would offer 25 percent of the score (5 points). The existence of a preinsolvency procedure combines features of both a prepack and a supporting stay but does not entirely replace the function performed by these techniques separately, particularly the prepackaged insolvency. A preinsolvency procedure can reach, at best, 90 percent of the score awarded to hybrid restructuring (18 points). The three elements included in this subindicator can potentially coexist, and their relation is complex because they can offer complementary or alternative solutions for restructuring needs:

- *Prepackaged insolvency:* Existence of a swift prepackaged option for the approval of restructuring plans by the courts. As indicated before, this is the most important element in hybrid restructuring.
- *Stay to facilitate negotiations:* The courts can support the negotiations between debtors and creditors by granting a stay on creditor actions. This stay should be limited to the goal of supporting the restructuring negotiations, which can then result in an informal agreement or in an agreement that can be confirmed by the courts. This tool is less consequential than prepackaged insolvency or hybrid procedures.

- *Hybrid restructuring procedures (preinsolvency or preventive insolvency procedures):* Hybrid restructuring procedures include limited judicial action, geared toward the restructuring of viable enterprises. These procedures are a relatively new development and are part of an emerging trend, developed as a response to long and cumbersome judicial reorganization processes and as a reaction to the problem of overloaded courts in recent crises. These procedures can achieve, in theory, a high degree of effectiveness by limiting court involvement to the instances that are necessary to achieve the restructuring (stay of creditor actions to avoid that negotiations are frustrated by individual debt enforcement started by noncooperative creditors, and confirmation of restructuring plans supported by a majority of creditors to make those plans binding on the holdout creditors). These procedures can support large-scale restructuring by rationalizing the use of judicial resources. However, their design can make them similar to judicial reorganizations in terms of procedural steps and the intervention of judges and insolvency administrators. In such cases, these hybrid restructuring procedures become functional alternatives to judicial reorganization proceedings and can reintroduce the problems of procedural complexity and delay they were intended to address.

J. Reorganization

Reorganization is a fundamental component of modern insolvency regimes and vital in corporate debt crises. Reorganization allows enterprises with a high going-concern value to be preserved, which benefits creditors as well as employees. There are several features of reorganization proceedings that are particularly useful in times of crisis, and this subindicator is composed of elements that have proven to be especially effective. These six elements have equal weight (one-sixth each) toward the score that corresponds to this subindicator:

- *Debtor-in-possession management:* According to international standards, there are various possible arrangements for the governance of reorganization proceedings. In a crisis, the option of leaving the debtor in possession produces better results because it absorbs less institutional resources (insolvency professionals acting as managers or examiners in the reorganization) and represents a powerful incentive for the debtor, who may address problems at an early stage, therefore increasing the chances of success of the reorganization. Debtor in possession, under the control of an insolvency professional acting as an examiner, also achieves the objective of providing a more effective framework for a crisis.
- *Stay of creditor actions:* Reorganizations can only be successful if the going-concern value of enterprises is preserved while the proceedings are ongoing. This is achieved thanks to a comprehensive stay of creditor actions, applicable to unsecured creditors, preferential creditors, and secured creditors. However, the stay needs to be balanced with adequate protection of secured creditors: the value of security interests must be protected, and secured creditors should be able to request that the stay is lifted when their collateral is compromised (for instance, where collateral is subject to depreciation) or is not necessary for the reorganization efforts. Another possibility is that the stay is automatically lifted after a certain period, thereby balancing the rights of secured creditors and those of the insolvency estate.
- *Treatment of executory contracts:* Reorganizations can achieve not only financial restructuring of enterprises but also operational restructuring. For operational restructuring, it is essential that enterprises maintain the contractual relationships that are necessary for their continuous operation and that enterprises can disclaim those contracts that are generating losses for the business. The parties to those contracts can only claim damages classified as ordinary unsecured claims.
- *Postpetition finance:* The continuation of business activities normally requires additional finance (postpetition finance, also known as "debtor-in-possession finance"). The law should include rules to facilitate financing while providing safeguards for existing creditors. New finance needs to be awarded priority and be protected from potential challenges. In cases where there are no free assets, priority for postpetition financing (priming lien) can be provided, but the rights of existing secured creditors need to be safeguarded.

- *Mechanisms and safeguards for the approval of reorganization plans:* A successful reorganization is based on a plan that addresses the sources of enterprise distress. As a minimum, the law must include a mechanism to allow a majority of creditors to bind minority creditors, avoiding holdouts. A more advanced mechanism for the approval of reorganization plans combines safeguards for the protection of minority creditors, with increased possibilities of adopting a reorganization plan for the benefit of creditors, the debtor, and the economy more generally. Safeguards include voting by classes and the possibility of approving plans even if not all classes are in favor of the plan ("cramdown"), provided that other safeguards apply: namely, the best interests of creditors' test (no creditor receives less than it would in a liquidation) and the absolute priority rule (junior classes cannot receive any payment if the plan is approved against the vote of a senior dissenting class). These rules create a complex system of checks and balances to favor the approval of reorganization plans.
- *Simplified reorganization for micro and small enterprises:* Reorganizations tend to be complex judicial proceedings that can be lengthy and costly. This means that most micro and small enterprises rarely benefit from these proceedings. Although it is less frequent that micro and SMEs have a high going-concern value, there may be a percentage of distressed firms that would benefit from a low-cost reorganization procedure to achieve operational restructuring. This need may have increased in the context of the COVID-19 crisis, which affected smaller firms disproportionately. The key feature of simplified reorganization is that it offers a better chance to micro and small enterprises to reorganize by reducing the time and costs of the procedure.

K. Liquidation

Crises often cause deep transformations of the corporate sector because companies that are unable to recover their viability will need to be liquidated. Liquidation can be spaced out over a longer period than reorganization, but this does not mean that liquidation is less important. Liquidation reallocates assets to more productive uses and can minimize the losses of creditors. This subindicator includes elements that have proven their importance in achieving the economic goals of liquidation in the context of crises. Each element accounts for 25 percent of the score:

- *Effectiveness and procedural simplicity:* One of the main problems of liquidation proceedings is that procedural complexity may delay the sale of the assets and the payment to creditors. There are some sources of complexity, such as issues in verifying claims and appeals against decisions within the insolvency process, which tend to delay liquidations. Decoupling the sale of assets from verification of claims and insolvency litigation helps in increasing the speed of liquidation proceedings. The procedure should be as speedy as possible and one of the main factors to assess the involvement of the court. Ideally, the liquidator should take a leading role, and the court should minimize its intervention in the process.
- *Sale of businesses as a going concern:* To maximize creditor recovery, the liquidation framework should offer the possibility of selling the enterprise as a going concern. This requires a short stay of creditor actions (including secured creditors' actions) to give an opportunity to the insolvency representative to sell the whole business. If the sale of the whole business is not successful, it should still be possible to sell certain productive units (the last resort is the piecemeal sale of assets, which typically results in higher losses for creditors). If the reorganization proceeding also offers the possibility to sell the business as a going concern, this is also included in the indicator. The last possibility is that the law allows a general security interest over enterprise assets, which gives the secured creditor benefiting from it the possibility of selling the business as a going concern, although that would occur outside insolvency proceedings.
- *Sale of collateral:* Liquidation should not interfere with the sale of collateral, subject to security interests. As indicated before, the law can include a short stay to facilitate a sale of the business as a going concern, or the sale of productive units, but after that brief period expires, it should be possible for secured creditors to sell assets, subject to security interests, without further delay, while ensuring adequate protection for the interests of the insolvency estate (namely, the interests of other creditors and the debtor).

- *Technology and flexibility in liquidation:* This element refers to the liquidation of the assets included in the insolvency estate. Recent experience has shown that using digital technology produces much more efficient results in the sale of assets, both outside and within insolvency processes. Technology can improve both the advertising of judicial sales, which can be done through dedicated portals, and the auction mechanism itself. The so-called e-auctions allow for wider participation of bidders and reduce the risk of fraud and collusion among participants. The flexibility in the methods used for the sale of assets is also assessed. The possibility of organizing private sales, rather than observing the formalities of auction, is recognized, as well as the possibility of attributing ownership of assets to creditors or allowing credit-bids by creditors.

L. Institutional Framework

The institutional framework for insolvency affects the functioning of the insolvency system, and it has an indirect influence on restructuring activities. Assessing the quality of the institutional framework of the insolvency system is a complex task; this indicator only aims at assessing aspects that may be particularly useful in the event of a corporate debt crisis and which correspond with positive features of the institutions in charge of applying the insolvency regime. This subindicator consists of four elements: the second and third elements are each assigned a weight of 25 percent of the score. The role of the courts is given more importance (30 percent of the score), whereas support professionals represent 20 percent of the score:

- *Specialized courts:* The performance of courts increases substantially when the judges have specialized knowledge of the applicable legal regime. Specialized insolvency courts may only be a reasonable option in large countries, where the volume of cases justifies their creation. In other countries, the best option is to have judges specialize in commercial cases, which provide a solid foundation for a specialization in insolvency law, or to combine specialized insolvency courts or benches in the most important commercial districts with courts with broader jurisdiction in other districts. The assessment also integrates the flexibility of the system in creating and filling new positions for judges within an abbreviated period.
- *Use of technology at the courts:* The other factor that improves the functioning of the courts is the introduction of technology for insolvency cases, particularly electronic case management, but also to conduct other steps of the process, such as e-filing, e-notices, the collection of data, publishing information relative to insolvency cases, the organization of court hearings, and the conduct of creditor votes.
- *Regulation of the insolvency profession:* Insolvency administrators are essential for the conduct of liquidation proceedings, and they can also play an important supporting role in reorganization proceedings. A regulation of insolvency professionals according to the requirements of the international standards contributes to the optimization of the capacity of the insolvency system by ensuring that insolvency administrators have the proper qualifications and conduct their activities with integrity. A capable cadre of insolvency professionals allows the judiciary to concentrate on the resolution of disputes and the oversight of the insolvency process, whereas many of the insolvency operations are conducted directly by insolvency administrators.
- *Support professionals:* Insolvency activities are conducted more effectively where there is an ecosystem of professionals who can support various aspects of the insolvency process. There is a need for regulation, qualifications, supervision, and general availability of professionals such as accountants, lawyers, and appraisers.

Annex Table 2.1. Indicator for Crisis Preparedness, 2023

Country	Enhancements to Out-of-Court Debt Restructuring	Hybrid Restructuring	Reorganization	Liquidation	Institutional Framework	Total
Argentina	9	11	9.1	10.5	11	**50.6**
Australia	14.5	15	10.1	15	16	**70.6**
Austria	9	18	14.1	12	14	**67.1**
Bangladesh	5	7	2.5	5	7	**26.5**
Belgium	13.5	12	19.2	15	12	**71.7**
Brazil	8	16	14	13	9	**60**
Cambodia	3	0	10	7.5	4.5	**25**
Cameroon	5.5	9	8.5	6.5	5	**34.5**
Canada	10.5	15	14	17.5	17	**74**
Chile	7	8	13.3	9.5	15.5	**53.3**
China	9.5	13.5	13	9	13	**58**
Colombia	14	1	14.8	12.5	14.5	**56.8**
Democratic Republic of the Congo	6	9	8.5	6.5	4	**34**
Egypt	9	9	8.6	8.5	7	**42.1**
France	15.5	18	14.4	12.5	17	**77.4**
Germany	14.5	18	16.3	13.5	14	**76.3**
Ghana	6	7	4	8	7.5	**32.5**
Haiti	4.5	0	1	2	3.5	**11**
Honduras	7	0	7.8	8	4	**26.8**
India	11.5	7	8.3	13.5	11	**51.3**
Indonesia	7.5	9	8.3	9.5	11.5	**45.8**
Iran	5	0	1	3	5	**14**
Ireland	10	14	14.1	14.5	14.5	**67.1**
Israel	7	14	11.3	10	12.5	**54.8**
Italy	17	15	14.9	13	12	**71.9**
Japan	18	10	14.5	15	15	**72.5**
Jordan	9	0	10.1	6	7.5	**32.6**
Kenya	8.5	11	8.5	9	9	**46**
Korea	16	15	20	13	16	**80**
Kyrgyz Republic	11	10	6.3	9	7.5	**43.8**

Country	Enhancements to Out-of-Court Debt Restructuring	Hybrid Restructuring	Reorganization	Liquidation	Institutional Framework	Total
Malaysia	18	15	2.5	15	12.5	**63**
Mexico	6	8	10.1	8.5	10.5	**43.1**
Myanmar	3	7	11.8	6.5	4.5	**32.8**
The Netherlands	9.5	18	12	13.5	12	**65**
New Zealand	12.5	12	5.8	13	13	**56.3**
Nicaragua	5	0	2	6.5	5	**18.5**
Nigeria	6.5	7	4.5	8.5	7.5	**34**
Norway	11	5	11.6	13.5	15	**56.1**
Pakistan	4.5	7	10.3	11	9	**41.8**
Papua New Guinea	5	9	5	8	5	**32**
Philippines	14.5	12	14.5	8	11.5	**60.5**
Poland	9.5	13	9.5	12.5	10	**54.5**
Russia	6.5	2	13.5	12.5	13.5	**48**
Rwanda	5	11.5	11.6	9.5	10	**47.6**
Saudi Arabia	3.5	13	8.8	3	14	**42.3**
Singapore	14.5	16	14.3	13	18	**75.8**
South Africa	8.5	9	9.6	10	11.5	**48.6**
Spain	12	18	14.6	14	13	**71.6**
Sri Lanka	5	7	4.5	11.5	7	**35**
Sweden	11	5	15.3	16.5	13	**60.8**
Switzerland	11.5	10	11.8	12	12	**57.3**
Tajikistan	4.5	0	6.5	6.5	4.5	**22**
Tanzania	5	7	5	8	6	**31**
Thailand	10	5	15.2	10	14	**54.2**
Türkiye	16.5	0	6.5	9	12.5	**44.5**
United Arab Emirates	16	13	13	6	14	**62**
United Kingdom	17.5	18	8	17	18.5	**79**
United States	11.5	15	20	18	18	**82.5**
Venezuela	4.5	0	2	6	5	**17.5**
Vietnam	8	0	5	5	5	**23**

Source: Authors' calculations.

Annex Table 2.2. Indicator for Crisis Preparedness, 2021

Country	Enhancements to Out-of-Court Debt Restructuring	Hybrid Restructuring	Reorganization	Liquidation	Institutional Framework	Total
Argentina	9	11	9	9	11	**49**
Australia	15	15	10	15	16	**71**
Austria	9	18	14	12	14	**67**
Bangladesh	5	7	3	5	7	**27**
Belgium	13	10	13	14	12	**62**
Brazil	8	14	14	12	9	**57**
Cambodia	3	0	10	8	5	**26**
Cameroon	6	9	9	7	5	**36**
Canada	11	15	14	16	17	**73**
Chile	7	10	10	10	16	**53**
China	10	14	13	9	14	**60**
Colombia	14	15	15	13	14	**71**
Republic of Congo	6	9	9	7	4	**35**
Egypt	9	9	9	9	7	**43**
France	16	18	12	13	17	**76**
Germany	15	18	16	14	14	**77**
Ghana	6	7	4	8	8	**33**
Haiti	5	0	1	2	4	**12**
Honduras	7	0	8	8	4	**27**
India	12	7	8	14	12	**53**
Indonesia	8	9	8	9	10	**44**
Iran	5	0	1	3	5	**14**
Ireland	10	14	14	15	13	**66**
Israel	7	14	11	10	13	**55**
Italy	11	15	14	13	13	**66**
Japan	17	10	15	15	15	**72**
Jordan	9	0	10	6	8	**33**
Kenya	8	11	9	9	9	**46**
Korea	19	16	20	13	16	**84**
Kyrgyz Republic	11	10	6	9	8	**44**
Malaysia	18	15	3	15	13	**64**

Country	Enhancements to Out-of-Court Debt Restructuring	Hybrid Restructuring	Reorganization	Liquidation	Institutional Framework	Total
Mexico	6	8	10	9	9	**42**
Myanmar	3	7	12	7	5	**34**
The Netherlands	7	18	12	14	12	**63**
New Zealand	13	12	6	13	13	**57**
Nicaragua	5	0	2	7	5	**19**
Nigeria	7	4	3	9	4	**27**
Norway	11	0	12	14	15	**52**
Pakistan	5	7	10	11	9	**42**
Papua New Guinea	5	9	5	8	5	**32**
Philippines	15	12	15	8	10	**60**
Poland	10	13	10	13	10	**56**
Russia	7	2	14	13	14	**50**
Rwanda	5	12	12	10	10	**49**
Saudi Arabia	4	13	9	3	14	**43**
Singapore	13	16	14	13	18	**74**
South Africa	9	9	10	10	12	**50**
Spain	13	16	11	14	14	**68**
Sri Lanka	5	7	5	12	7	**36**
Sweden	11	0	12	17	13	**53**
Switzerland	10	10	12	9	12	**53**
Tajikistan	5	0	7	7	5	**24**
Tanzania	5	7	5	8	6	**31**
Thailand	10	5	15	10	14	**54**
Türkiye	17	0	7	9	13	**46**
United Arab Emirates	11	13	13	6	14	**57**
United Kingdom	18	18	8	17	19	**80**
United States	11	15	20	18	18	**82**
Venezuela	5	0	2	6	5	**18**
Vietnam	8	0	5	5	5	**23**

Source: Araujo and others (2022).

Annex 3. Specific Insolvency and Restructuring Issues

The economic situation described in this paper indicates that, rather than dealing with general corporate debt crises, the probability is the occurrence of crises in certain economic sectors. Nonetheless, sectoral crises in the corporate sector may have serious consequences for financial institutions. In this regard, there are certain issues and policy developments that can be highlighted, both on the side of the affected sectors' firms and on the creditors' side:

1. *Commercial real estate:* Among the vulnerable sectors, real estate is one of those that could be most concerning. Real estate crises have a direct connection with the financial sector because of the considerable financial resources that real estate requires. In particular, CRE represents an area that could generate stress in numerous economies.

    - *Mortgage regime and insolvency regime:* To resolve CRE distress, there are certain preconditions: a functioning mortgage regime and a full set of options to restructure, liquidate, and reorganize entities that conduct CRE business. Reorganization can be very useful for complex enterprises that require an overhaul of their business model to recover viability under new financial and operational conditions.

    - *Accelerated enforcement for CRE:* Splitting the legal regime for mortgage enforcement can be considered to facilitate the resolution of debt distress. Whereas mortgage enforcement regimes require built-in protections for households, when dealing with the enforcement of mortgages over primary residences, the issue is that mortgages over CRE are entirely diverse. In fact, it would be most beneficial to have a fast-track regime for the enforcement of mortgages over CRE or even, where possible, out-of-court enforcement of such mortgages. Several countries have introduced mechanisms for the accelerated enforcement of loans secured by real estate, and the European Union formulated a proposal for an "accelerated extra judicial collateral enforcement" (European Council 2018), although there is considerable resistance among member states to the harmonization of collateral enforcement measures that remove judicial protections. However, the reduction in the time for enforcement of mortgages over CRE reduces the risk for lenders and could improve access to credit for developers. Improvements in the efficiency of the enforcement of mortgages can be done with adequate respect of the basic safeguards protecting borrowers.

2. *Bond restructuring:* NBFIs often provide financing through bond purchases, so it is necessary to strengthen the mechanisms for the restructuring of market debt. This is a priority because NBFIs are investing in the riskier segments of the corporate sector, as evidenced in the analysis in Section 4. There are several legislative and regulatory areas that countries should assess and improve to facilitate restructurings in bond markets (OECD 2023).

    - *Regulation of trustees:* A proper regulation of bond trustees is an essential element for the protection of bondholders. Trustees should have coordinating functions and should be able to communicate with bondholders and consult with them regarding legal actions to be taken against the issuer in case of default. Some countries, such as China and Vietnam, have recently introduced reforms to strengthen the role of trustees and allow a more effective treatment of bond defaults.

    - *Regulation of bondholder meetings:* Bondholder meetings should have key responsibilities in taking decisions in the relationship with a distressed issuer. Bondholder meetings help organize bondholders as a group, help share information among them, and resolve collective action problems.

- *Out-of-court restructuring:* Bond restructuring outside the courts is the preferred option in most cases of distress because of the lower costs and reduced reputational versus judicial proceedings. To facilitate restructuring, it is necessary that the law and the rules for bondholder meetings allow majority decision making in rescheduling or reducing the debt burden of the issuer. The United States has seen proposals for the introduction of a new Chapter 16 of the Bankruptcy Code for the restructuring of bonds (Wetlitzky 2021).[33]

- *Participation of bondholders in insolvency proceedings:* The connection between the governance mechanisms of bonds and the governance of insolvency proceedings could also be relevant for the treatment of distress in bond issuers. It is necessary to assign a role to the trustee (for instance, as member of the creditors' committee) and also ensure that bondholders can participate in insolvency proceedings but without interfering with the functioning of the process. Establishing a creditor class for bondholders is thus key because it allows for the proper protection of bondholders within the ordinary operation of insolvency proceedings.

3. *The role of the state as creditor:* The resolution of corporate debt distress after the pandemic needs to recognize the role of the state as a major creditor to enterprises, given the level of support extended (Araujo and others 2022). In the event of widespread corporate debt distress, the presence of the state as a significant creditor can complicate the debt resolution process. First, it is necessary to assess the fiscal space available to take losses on loan defaults and guarantees, which varies between countries. This is a difficult balance that states will need to strike between supporting economic activity by restructuring viable firms and minimizing the costs to the taxpayer. As economies start to recover from the pandemic shock, the state needs to play a role that is consistent with the preservation of a market economy, avoiding the continuation of zombie enterprises and making economically justifiable decisions.

   There are two cases in which the resolution of guarantees may become quite challenging: in Italy and Spain, the volume of the guarantee programs was significant, and these countries have prepared for a potential uptick in defaults. Cross-country experience suggests that when the state is a significant creditor, certain challenges in insolvency and debt restructuring are amplified. In particular, the following concerns could arise:

   - *Write-downs:* States may have to comply with special requirements or restrictions when writing down public debt. The regime of public claims may be diverse, and tax and social security claims may be more challenging to restructure.

   - *Need for early intervention:* Restructuring requires early identification of issues and decisive action before the deterioration of finances makes corporate rescue impossible. The state is a less agile actor than private creditors and can delay the initiation of restructuring.

   - *Priority of state claims:* In some countries, all public claims enjoy a priority. In the case of tax and social security claims, most countries grant priorities to these claims (for example, China, France, and the United States), but only in rare cases do those priorities prevail over secured creditors' claims (that is, "super-priorities," as in Honduras or Venezuela). Other countries have abolished tax priorities (Australia, Austria, Denmark, Germany), although one of the pioneers in the abolition of tax priorities (United Kingdom) has recently reintroduced some priorities for withholding taxes. Priorities complicate restructuring negotiations because concessions made by private creditors may end up benefiting the position of the state. The position of the state may be more complex with the claims connected with policy support programs that may have their own specific rules. It is easier for the state to provide haircuts on public claims that have unsecured status.

[33] Restructuring of bonds in the United States is notoriously difficult because Section 316(b) of the Trust Indenture Act of 1939 requires unanimous approval from bondholders in a restructuring.

- *Decision making, participation, and voting on a plan:* The participation of the state in restructuring negotiations is generally complex. The state does not tend to negotiate as a private creditor or assess restructuring offers in a similar fashion to private creditors. In some countries, public officials refrain from participating in any negotiations because of concerns about potential criminal liability (for example, under anticorruption laws related to "dissipation of state assets"). It could be understood that officials are forgiving part of the public claims owed by an enterprise and then are held liable for having provided such enterprise an advantage that goes against the principle of equal treatment. Even in the context of hybrid restructuring or reorganization, public officials tend to be remiss and take a passive approach. Concerns regarding the liability of public officials can be addressed by reforms in criminal law (Türkiye), by providing guidance to public officials on their role in insolvency proceedings (Germany, Spain), or by the introduction of mechanisms that limit the discretion of public officials (Greece approved the use of an algorithm for the support of public creditors to restructuring proposals).
- *Coordination:* The aftermath of the pandemic presents situations in which several government agencies may be responsible for the collection of various claims (tax, social security, claims from support programs), and this will require coordination among the various agencies involved. In this regard, it is useful to designate a single legal representative to act on behalf of all public creditors in insolvency litigation (for example, Spain).

Liquidation of corporations with the state as a significant creditor may also raise complex challenges. Where it exists, the priority of state claims (tax, social security, other public claims) can result in reduced recoveries for unsecured creditors. However, the main issue with liquidation is the reluctance of the state to use these proceedings: liquidation is seen as the last resort not only by debtors and creditors but also by the state. Starting liquidation proceedings is equivalent to admitting the failure of the support measures and represents an unpopular approach because of its negative effects on entrepreneurs and workers. In practice, the state tends to leave the initiative to private creditors or the debtor itself. But it is important that the state supports and participates in liquidation proceedings: although recoveries in liquidations tend to be small, the main function of these proceedings is to facilitate the exit of inefficient enterprises from the market, allowing for the allocation of resources to more productive uses. A policy based on the avoidance of liquidation at all costs may result in zombification.

The state needs to act as a "private creditor," implying that states should take decisions based on the most productive outcome: this may imply restructuring, reorganization, or liquidation. The actions of the state should limit moral hazard, remain competition neutral, follow good governance practices, and preserve the efficiency of the insolvency process.

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