CHAPTER 1

GLOBAL FINANCIAL MARKETS CONFRONT THE WAR IN THE MIDDLE EAST AND AMPLIFICATION RISKS

Chapter 1 at a Glance

Global financial stability risks are elevated. The global financial system is confronting the ongoing war in the Middle East, potential inflationary pressures, rising risks of further tightening in financial conditions, and several amplification channels that could lead from market turmoil to financial instability.

Since late February, global equity prices have declined while bond yields have risen sharply, driven by a jump in energy prices and market expectations of higher inflation. Emerging market assets have been strongly impacted, especially in commodity-importing and more vulnerable countries. While markets have functioned in an orderly manner so far, risks are asymmetric going forward. The longer the conflict continues, the greater the risk that global financial conditions could tighten further and more abruptly. Amplification forces could trigger vulnerabilities, leading to financial stability risks:

- High debt levels and greater rollover risks in core sovereign bond markets could accelerate the rise in bond yields, while greater volatility in bond markets could tighten funding markets and revive the sovereign–bank nexus.
- Emerging markets may face currency and capital outflow pressures as carry trades unwind and terms of trade worsen.
- Forced selling by nonbank financial intermediaries (NBFIs) that have expanded through leverage could increase volatility further and add liquidity pressures through margin calls and investor redemptions. Equity market volatility could be amplified by option sellers and leveraged exchange-traded funds, while bond market volatility could be impacted by hedge funds.
- Although liquidity mismatches in private credit appear limited to semiliquid structures, suggesting contained systemic impact, signs of more borrower defaults ahead could cascade into broader concerns about corporate credit.
- Investment in artificial intelligence (AI) could slow significantly if the conflict persists, weighing on the enterprise value of some firms along the AI value chain that have increasingly relied on circular financing, although the impact on financial stability appears modest currently.
- More frequent supply shocks in recent years have eroded the equity–bond hedging relationship, further raising risks of simultaneous deleveraging in both asset classes.
- This chapter also assesses medium vulnerabilities, including the banking sector given its systemic nature, and challenges faced by frontier markets.

In all, global financial stability risks are elevated. Policymakers should therefore act decisively to bolster resilience:

- They should be prepared in case of market dysfunction by ensuring that liquidity and funding facilities are accessible and operationally ready. Enhancing bilateral and regional currency swap lines is crucial to preserve stability in funding and foreign exchange markets amid unforeseen ramifications of geopolitical events.
- Central banks should be ready to act decisively in line with their mandates and be attuned to spillovers from actual inflation to inflation expectations. If monetary policy was already properly calibrated before the current shock, monetary authorities may benefit from waiting for more clarity about its likely impact. Transparent communication, central bank operational independence, and robust accountability are critical for policy credibility and public trust.

- Emerging market authorities should continue to strengthen policy frameworks. Where tightening global financial conditions, carry trade reversals, and higher energy price volatility pose risks of disorderly foreign exchange movements, the IMF Integrated Policy Framework offers guidance on appropriate foreign exchange intervention and capital flow management measures, provided they support credible macroeconomic policies and necessary adjustments.
- Increased fragility in sovereign bond markets underscores the need to shift fiscal stances toward appropriately tighter settings and place public debt on a stable path in the coming years. In the meantime, discretionary fiscal support to protect vulnerable groups from the energy shock should be explicitly temporary and tightly targeted.
- Completing Basel III implementation is essential, as is avoiding an uncoordinated review of regulations that could increase arbitrage and weaken prudential standards. Reviews aimed at reducing undue complexity and ensuring consistency with financial institutions' systemic importance and risk profiles could be beneficial.
- As NBFIs grow more leveraged and more connected to banks, closing data gaps, improving cross-jurisdictional data sharing, and enhancing oversight are critical. The potential for strains in short-term funding markets call for expansion of central clearing for government bond repos and broadening of access to central counterparties.
- Stress tests or scenario analyses should be applied to banks and, where possible, to NBFIs to assess the impact of a potential rise in illiquidity and corporate credit distress. As retail and semiliquid structures gain market share within private credit, the timely recognition of losses in loan valuations becomes increasingly important.

Financial Market Developments

This report assesses global financial stability risks against a backdrop of the war in the Middle East. Financial markets have faced significant challenges since late February. The conflict has interrupted the rally in global equity markets over the past half year, which had been supported by a surge in profitability of firms in many sectors, a substantial boost to capital expenditure by large global technology firms in artificial intelligence (AI) known as "hyperscalers," and buoyant investor sentiment (Figure 1.1, panel 1).[1] Measures of implied volatility in equity and bond markets have spiked (Chicago Board Options Exchange Volatility Index [VIX] and Merrill Lynch Option Volatility Estimate [MOVE] index, respectively) (Figure 1.1, panel 2). With the dollar also stronger, emerging market assets and currencies have been particularly affected, especially in commodity-importers.

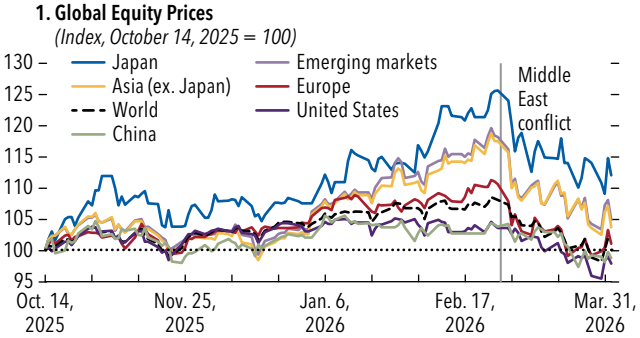
Rising energy prices have raised the expected average inflation over the next two years by 0.3 to 0.8 percentage points, as implied by inflation swap contracts in several advanced and emerging market economies (Figure 1.1, panel 3). Expected paths of monetary policy rates have moved higher, in some cases flipping from cuts to hikes, indicating that investors see central banks potentially tightening policies to stem rising prices (Figure 1.1, panel 4). As short-term rates have risen, so have expected longer-term sovereign bond yields, as renewed inflationary forces are added to higher term premiums reflecting ongoing fiscal concerns (Figure 1.1, panel 5). The concurrent sell-off in equities and longer-term bonds in G4 economies (Japan, the euro area, the United Kingdom, and the United States) demonstrates the ongoing erosion of the safe-haven properties of these bonds, amid a higher prevalence of supply shocks seen over the postpandemic period (see Adrian, Kramer, and Malik 2026).

Following the correction across asset classes since the conflict, global financial conditions have tightened, although by less than in previous global shocks, while

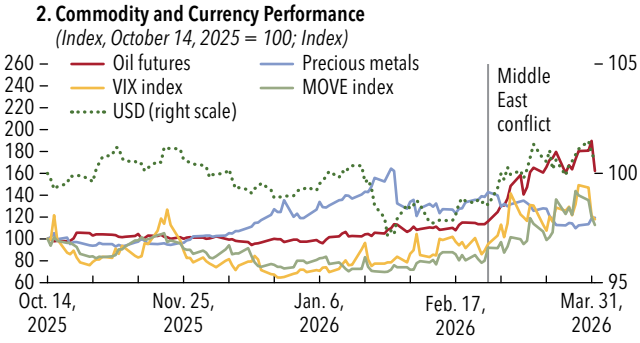
[1]Some projections suggest that investment could top $3.4 trillion by 2030. Although definitions for hyperscalers tend to vary, analysts typically classify these firms collectively as large-scale cloud service providers that operate with massive data center infrastructure; see footnote 29 for the list of hyperscalers used in the analyses of this chapter. In addition to financing capital expenditure using cash buffers, these firms have also progressively obtained funds from public and private debt markets, as discussed later.

Figure 1.1. Monetary Policy and Asset Prices

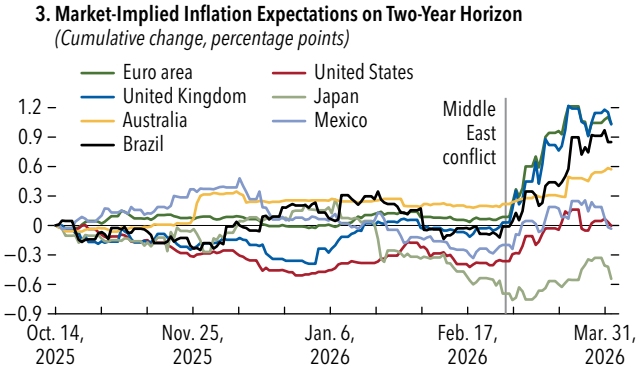
Equity market correction since the onset of the conflict in the Middle East has stopped robust momentum.



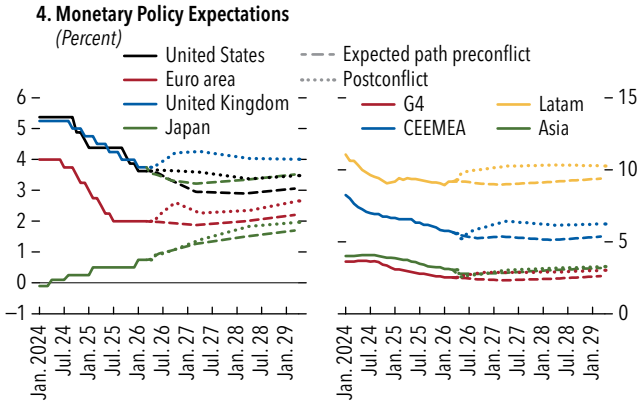
Energy prices have spiked amid supply disruptions, alongside volatility measures and the US dollar.



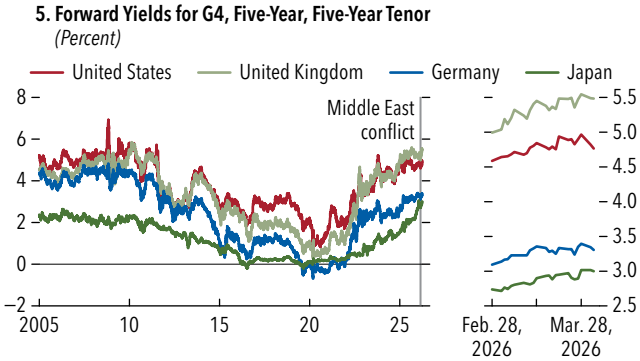
Market-implied expectations of inflation have edged up in response to rising energy prices ...



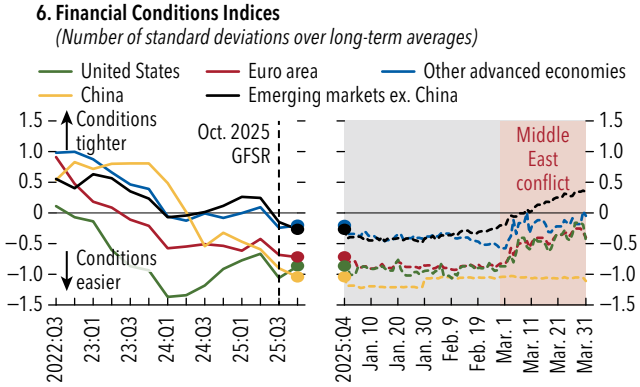
... with policy rate paths repriced upward.



Long-term bond yields subject to upward pressure from fiscal concerns.



Global financial conditions have tightened since October 2025 but remain historically accommodative.



Sources: Bloomberg Finance L.P.; Dealogic; EUROPACE AG/Haver Analytics; national data sources; and IMF staff calculations.

Note: Panel 1 uses Nikkei 225 for Japan, MSCI Emerging Market Index for Emerging markets, MSCI All Country Asia excluding Japan for Asia (ex. Japan), Euro Stoxx 50 for Europe, MSCI All Country World Index for World, S&P 500 Index for the United States, and the Shanghai Shenzhen CSI 300 Index for China. In panel 2, precious metals include gold, silver, palladium, and platinum. Oil futures include the generic front-month futures contracts of Brent and West Texas Intermediate crude oil. Market implied inflation expectations in panel 3 are based on two-year inflation swap rates. In panel 4, solid lines are actual central bank policy rates. Dotted lines are expected future policy rates derived from swap curves. G4 is the average of the United States, Euro Area, United Kingdom, and Japan. Latam is the average of Brazil, Chile, Colombia, and Mexico. CEEMEA is the average of Hungary, Poland, and South Africa. Asia is the average of China, India, Indonesia, Malaysia, the Philippines, Taiwan Province of China, and Thailand. The expected prewar path is as of February 27, 2026. In panel 5, G4 economies are Germany, Japan, the United Kingdom, and the United States. Panel 6 shows the IMF's Financial Conditions Indices (FCIs), which are designed to capture the price of risk. Financial Conditions Indices incorporate various pricing indicators, including real house prices. Balance sheet or credit growth metrics are not included. Lower FCI implies easier financial conditions and vice versa. For details, see Online Annex 1.1 of the October 2018 *Global Financial Stability Report*. The shaded area shows the daily FCIs starting January 1, 2026. These daily FCIs are approximate values estimated using available high-frequnecy market data, whereas the long-term standard deviations and averages are calculated over the first quarter of 1990 and the first quarter of 2026. CEEMEA = Central and Eastern Europe, Middle East, and Africa; ex. = excluding; FCI = Financial Conditions Index; GFSR = *Global Financial Stability Report*.

they remain accommodative by historical standards (Figure 1.1, panel 6). Market functioning has been orderly thus far, as measures of market liquidity in equities, bonds, and foreign exchange markets, such as bid-ask spreads, have not deteriorated significantly. Trading volumes in sovereign bond markets have declined, albeit modestly. The deterioration of investor sentiment, though abrupt, has been ameliorated by a still-favorable macroeconomic backdrop.

However, the longer the conflict, the more likely global financial conditions could tighten, increasing risks further. Financial stability risks would depend on the adverse feedback loop between tighter financial conditions and channels that can amplify asset price moves into broader stress among investors and financial institutions.

This chapter presents analyses of the most salient amplification channels. Spikes in bond yields could be amplified by increased rollover risks and potential funding market stress, with spillovers to credit markets. Pressures on emerging market economies could be exacerbated by the unwinding of currency carry trades and portfolio debt outflows. Equity price declines could accelerate, with potential deleveraging in option and leveraged exchange-traded fund (ETF) markets—which have become much larger and important in recent years—increasing volatility further. Simultaneous sell-off of bonds and equities, reflecting more frequent supply shocks, could further raise risks of deleveraging in both asset classes. The chapter also documents certain medium-term but nonetheless important financial system vulnerabilities. The chapter closes with the IMF's policy recommendations during these volatile times.

Bond Markets More Vulnerable to Rollover Risks amid High Debt

The conflict in the Middle East has left a strong imprint on core bond markets, as higher energy prices have raised inflation expectations and uncertainty, culminating in higher and more volatile bond yields. This has two important implications for financial stability. First, sharp spikes in bond yields could lead to strains in other asset classes, given the role of G4 bonds as global safe assets and financial benchmarks.[2] Second, market discipline may limit the use of fiscal stimulus to ameliorate economic downturns in economies with large fiscal imbalances, creating risks of a stronger feedback loop between deteriorating economic conditions and financial stability.

Even before the conflict, expanding fiscal deficits and rising government debt had exerted upward pressure on term premiums. Advanced economies with higher government debt-to-GDP ratios (net of central bank holdings) have higher long-term forward yields and higher term premiums. Another indication that investors have become more sensitive to fiscal risks is the increasing sensitivity of yields on sovereign bond auction days (Figure 1.2, panel 1). At the 90th percentile, the 10-year US Treasury yield has moved by 11 basis points on auction days since 2023, compared with just 6 basis points in the 2020–22 period. Strikingly, bid-to-cover ratios during auctions have not materially changed—for example, the average bid-to-cover ratio for the relevant 30-year US Treasury auctions has stayed almost constant at 2.5 in the periods of 2015–19, 2020–22, and 2023 to now. This indicates that investors now require a higher yield to buy the same quantity of government bonds, adjusted for issuance size. The end of central bank quantitative easing (as well as quantitative tightening in some cases) also contributed to the rise in sovereign yields and made them more sensitive to shifts in market sentiment.

An inflationary environment would not be favorable to bond markets that are now more concentrated in shorter-term securities and depend more on price-sensitive investors. Rollover risk is distinctly higher, as short-term debt needs to be rolled over at higher interest rates, increasing sovereigns' interest expenses and debt burden. Demand from price-sensitive investors could waver, also reinforcing rollover risks. In G4 economies, governments have reduced the weighted average maturities of debt issuances over the past three years by 0.1 to 2.6 years, depending on the jurisdiction, in response to steepening term premiums. Price-sensitive investors, namely investment funds, foreign investors, and households, hold at least half the G4 sovereign debt (Figure 1.2, panel 2; see Box 1.1 for the case of Japan).[3]

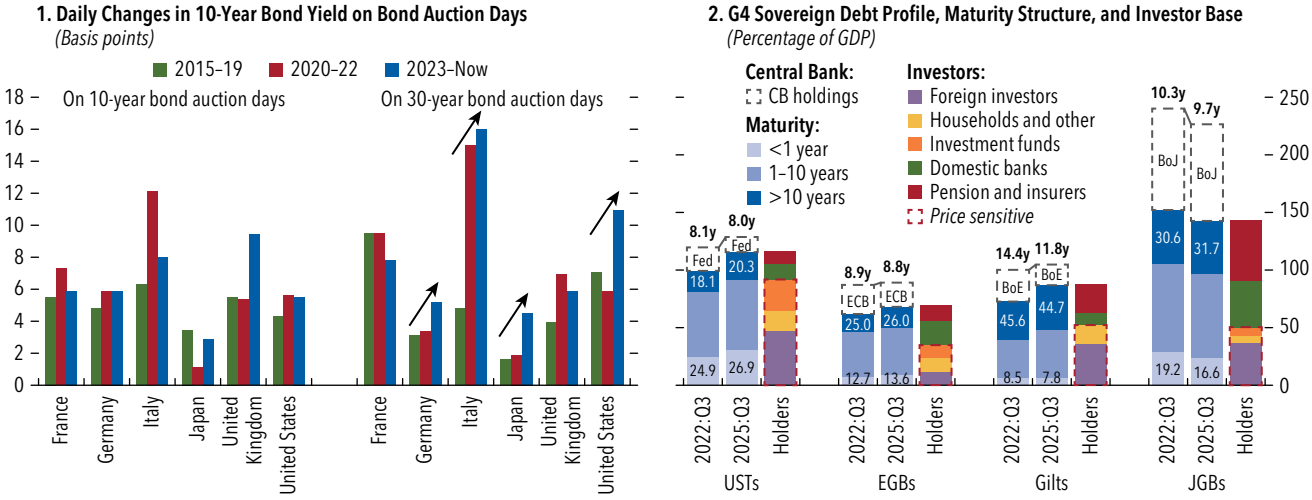
[2]Recent episodes also highlight that crowded trades in alternative safe assets like precious metals can unwind abruptly when margin and risk limits bind. This can generate price corrections far larger than those typically observed in traditional fixed-income assets.

[3]Cross-country differences in forward yields and term premiums reflect global financial conditions and country-specific fundamentals, including not only fiscal positions and investor base composition but also differences in expected policy paths and compensation for inflation uncertainty, which can be amplified by market structure and cross-border hedging costs.

Figure 1.2. Core Sovereign Bond Markets: Higher Bond Supply and a More Price-Sensitive Buyer Base

Sovereign bond yields increasingly gyrate on auction days.

Bonds have shorter maturities and buyers are more price sensitive, increasing rollover risks in inflationary scenarios.



Sources: Bank of England; Bank of Japan; Bloomberg Finance L.P.; EUROPACE AG/Haver Analytics; European Central Bank; London Stock Exchange Group; national debt management offices; US Federal Reserve; and IMF staff calculations.

Note: The yield reactions in panel 1 do not account for the different levels of rates across the periods. Panel 2 shows outstanding local-currency sovereign debt and its holder composition, expressed as percentage of GDP. Labels above bars report the weighted average maturity of outstanding debt. Labels inside bars show the shares with remaining maturity above 10 years and below 1 year, respectively. The investor base denoted as "Holders" refers to the latest jointly available snapshot across the G4 sovereign issuers, corresponding to the third quarter of 2025. BoE = Bank of England; BoJ = Bank of Japan; CB = central bank; ECB = European Central Bank; EGBs = European government bonds; ex. = excluding; JGBs = Japanese government bonds; Fed = US Federal Reserve; USTs = US Treasuries.

Strains in bond markets may reignite concerns about the so-called sovereign–bank nexus. A sharp decline in the value of sovereign bonds could affect bank balance sheets at a time when the sovereign is in a weaker financial position to assist troubled banks. In emerging market economies, overall bank holdings of sovereign debt have remained broadly stable, but for weaker economies—the bottom quartile of CCC or below by ratings, or unrated—bank holdings of local-currency government debt have increased from 15 percent of banking system assets before the pandemic to 20 percent in 2025 (Figure 1.3, panel 1).

For weaker emerging markets, rising bank holdings of sovereign debt likely reflect constrained access to external financing and the need to rely on domestic banks to absorb fiscal issuance. Elevated financing needs in lower-rated emerging markets and frontier economies are likely to further reinforce this trend, particularly in low-income countries and fragile and conflict-affected states more likely to be at high risk of, or already in, debt distress, where banks hold larger shares of sovereign debt.

To gauge the implications of such a rising nexus, IMF staff have assessed the impact of domestic debt restructuring on bank capital in emerging markets. Banking systems in nearly half the countries rated BB/B, CCC, or lower, or not rated, are estimated to require recapitalization under a severe loss scenario, because their regulatory capital ratios fall below 10 percent in a scenario in which domestic debt restructuring shaves 40 percent off both sovereign bond and loan values (Figure 1.3, panel 2). Higher global inflation makes debt distress more likely and could increase the risk of strains in both sovereigns and banks, resulting in a contraction of lending to households and businesses that would weaken the economy.[4]

Emerging Markets under Pressure

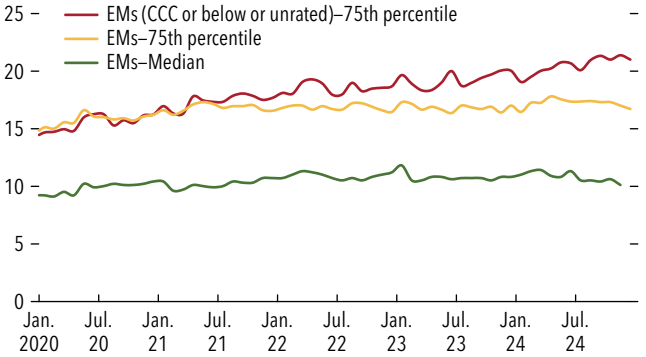
Emerging market asset prices have adjusted the most to the outbreak of the conflict in the Middle East. Hard- and local-currency government bond spreads

[4]See Chapter 2 of the April 2022 *Global Financial Stability Report* for further discussion on the secondary impact of sovereign credit deterioration on banking sector credit growth.

Figure 1.3. Emerging Market Banks Are Absorbing Rising Sovereign Issuances

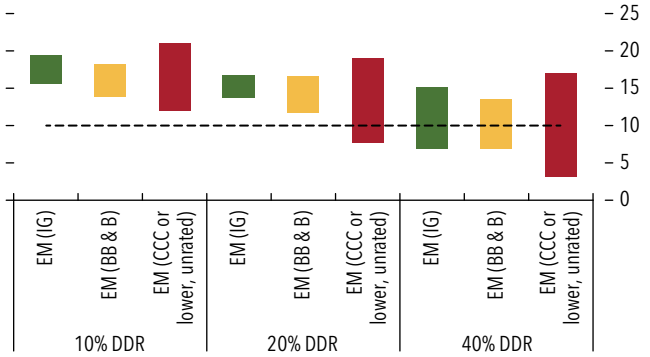
Banks in lower-rated emerging markets have increasingly absorbed local government debt.

1. Banking Systems' Exposure to Central Government in Emerging Markets
(Percentage of total assets)



In emerging markets, domestic debt restructuring could require sizable recapitalization.

2. Simulated Banking System Capital under Selected Domestic Debt Restructuring Scenarios
(Interquartile range for rating categories)



Sources: Barrail, Dehmej, and Wezel (forthcoming); IMF, Monetary and Financial Statistics database; and IMF staff calculations.

Notes: Exposures refer to domestic currency loans and bonds refer only to the central government. Panel 1 includes banking systems in 116 emerging markets. In panel 2, emerging markets' sovereign credit ratings are the average of ratings from three major international agencies as of December 31, 2025. These panels are based on a reduced sample of 89 emerging markets as a result of data availability limitations for banking system regulatory ratios and exposure to the central government. The simulated DDR episodes assume a 10 percent, 20 percent, and 40 percent loss realization on banks' holdings on central government exposure in domestic currency from a face-value haircut. This reduced form simulation assumes a uniform loss across all maturity buckets and across both loans and bonds. DDR = domestic debt restructuring; EMs = emerging markets; IG = investment-grade.

over US Treasuries have increased, although they remain tight by historical standards (Figure 1.4, panel 1). Upgrades to sovereign credit ratings, contained inflationary pressures, and supportive external balances have been providing fundamental support to asset prices over the past year, but these are being challenged by the consequences of the conflict. Moreover, capital flows to emerging markets appear increasingly imbalanced and dominated by carry-trade-driven debt portfolio flows (Figure 1.4, panel 2), which could sharply reverse should global risk appetite weaken further. While the initial correction in asset prices is still modest at an aggregate index level compared with the rally from the second quarter of 2025 (Figure 1.4, panel 3), high-frequency data indicate that portfolio outflows have already been sharper compared with other recent geopolitical risk events (Figure 1.4, panel 4).

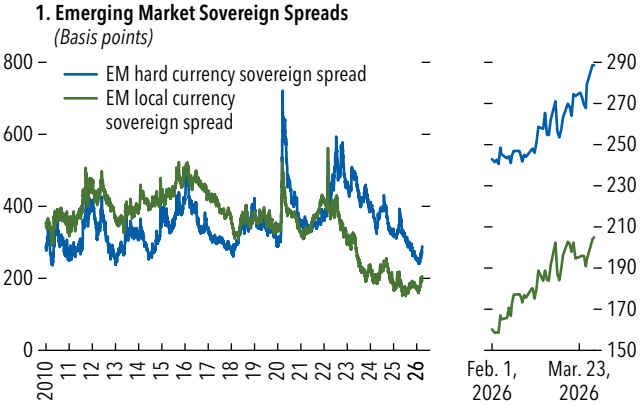
Rising hedge funds and crossover investor participation in emerging markets may have increased the risk of sharp carry trade unwinds. The sensitivity of hedge fund returns to emerging market carry factors has risen over the past few years, particularly for discretionary and multistrategy funds (Figure 1.5, panel 1), suggesting a potential overhang in the positioning of hedge funds' carry trades.[5] Moreover, portfolio debt flows recorded in the balance of payments have become less correlated with those based on debt ETF and mutual fund flows in recent years, suggesting a greater role for other, nondedicated investors in driving cross-border capital flows (Figure 1.5, panel 2).[6] In addition, some evidence suggests greater nonbank financial intermediaries (NBFIs) exposure to domestic local markets through derivatives, for liquidity or leverage reasons. Swap rates in emerging markets have responded more to changes in the 10-year US Treasury yield than to their government bond yields, a gap that has been growing over time (Figure 1.5, panel 3). Swap rates tend to demonstrate similar or greater sensitivity than bond yields to global volatility, proxied by the VIX, with sensitivity generally increasing at the higher

[5]This finding is consistent with well-known surveys of investor positioning conducted by global investment banks.

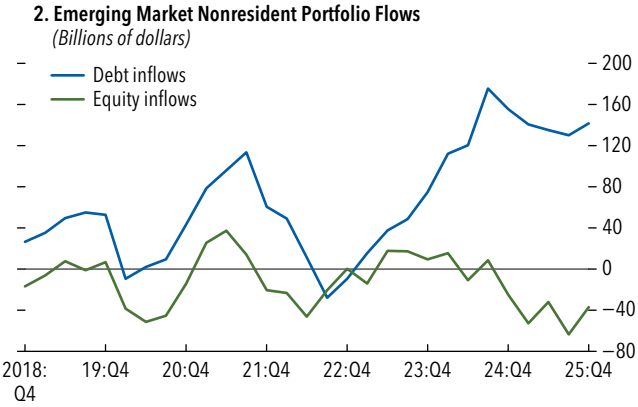
[6]This is because ETF- and mutual-fund-based data do not include hedge funds and other types of nondedicated investors. The decline in correlation holds true even when excluding domestically domiciled funds and China-focused fund flows, both of which account for a large share of topline publicly reported emerging market fund flows.

Figure 1.4. Emerging Market Spreads and Flows

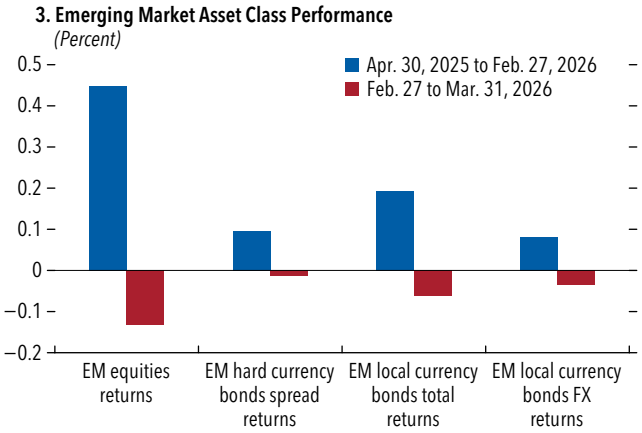
Sovereign and local bond yield spreads to US Treasuries continue to tighten.



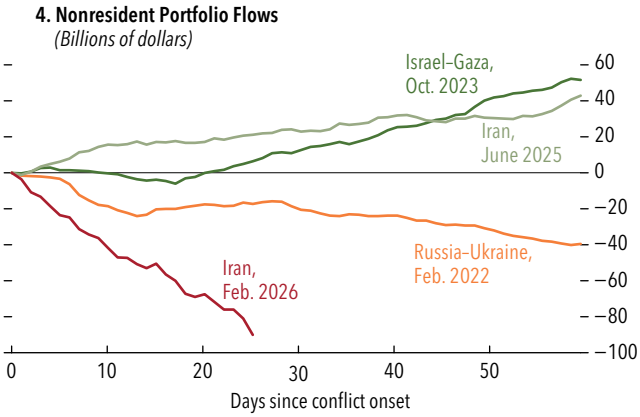
Capital flows are increasingly skewed toward debt.



Emerging market assets retrace some recent strong gains amid escalating geopolitical tensions in the Middle East ...



... with risk of further deterioration if the conflict escalates.



Sources: Bloomberg Finance L.P.; EUROPACE AG/Haver Analytics; JPMorgan, national authorities; IMF World Economic Outlook database; and IMF staff estimates.

Note: In panel 1, the local-currency sovereign spread is defined as JPMorgan's Government Bond Index yield to maturity minus the US 10-year Treasury yield. In panel 2, national balance of payments data exclude China and are calculated as a 12-month moving total. In panel 3, EM equity index is from MSCI while EM hard and local currencies bond indices are from JPMorgan. EM = emerging market; FX = foreign exchange.

quintiles of VIX (Figure 1.5, panel 4). This suggests investors' use of derivatives to obtain leverage could leave emerging markets more vulnerable to global shocks than in the past.

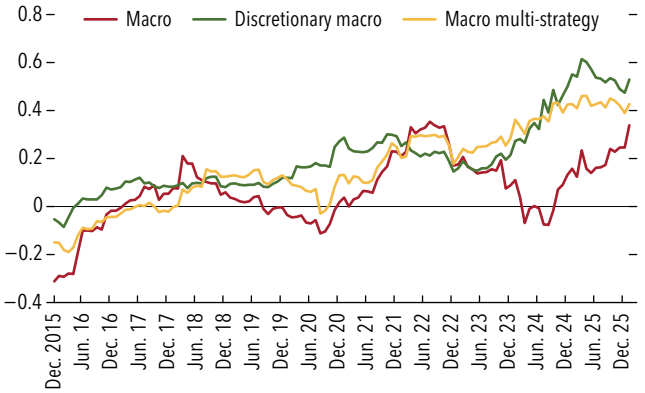
Ahead of the outbreak of the conflict in the Middle East, global investors' desire for greater diversification and improvements in macroeconomic fundamentals supported appetite for emerging market assets, raising valuations and compressing risk premiums across interest rates, corporate credit, and equities (Figure 1.6, panel 1). A sharp increase in risk premiums is historically commonplace under the current conditions, triggered by dollar appreciation, rising global interest rates, or equity downturns (Figure 1.6, panel 2), raising the scope for rapid repricing.

The escalation of geopolitical tensions in the Middle East has triggered a sharp sell-off in emerging market currencies, reversing part of the strong rally since early 2025. Relative foreign exchange performance since the start of the conflict has increasingly reflected differences in energy exposure. Currencies of more oil-import-dependent economies have generally underperformed as markets price in terms of trade pressures and higher inflation risks (Figure 1.6, panel 3), while several earlier outperformers have experienced sharper reversals amid positioning

Figure 1.5. Impact of Nondedicated Investors and Hedge Funds on Emerging Markets

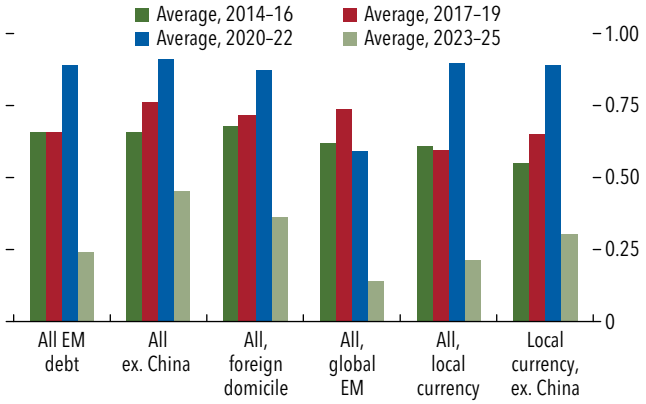
Hedge fund returns have shown a significant and expanding relationship with carry factors.

1. Regression Betas of Hedge Fund Returns by Style on Emerging Market Carry Factors
(Rolling 24-month beta, monthly return indices since 2013)



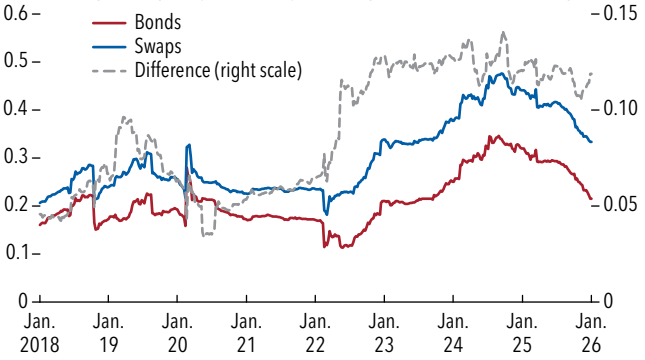
The correlation between dedicated emerging market debt fund flows and portfolio flows has been low in recent years.

2. Correlation between Dedicated Emerging Market Debt Fund Flows and Balance of Payment Debt Portfolio Flows
(Two-year rolling correlation on quarterly data)



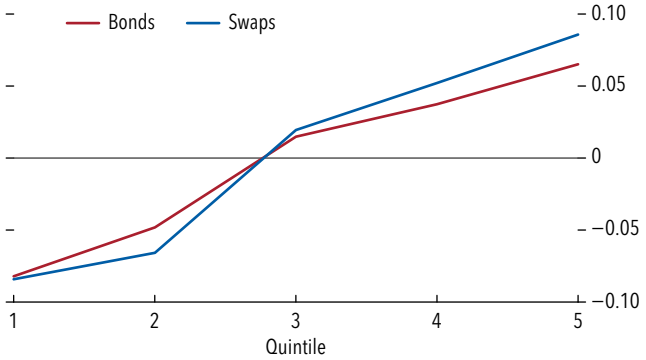
Swap rates in local markets respond more strongly than bond yields to external conditions, including US rates ...

3. Emerging Market Interest Rate Beta to 10-Year US Treasuries
(Average rolling two-year beta of yield changes, left scale; difference, right scale)



... and the VIX, at higher levels of volatility.

4. Quantile Regression of Emerging Market Interest Rates to the VIX
(Beta)



Sources: Arslanalp and Tsuda (2014) database; Bloomberg Finance L.P.; Emerging Portfolio Fund Research; EUROPACE AG/Haver Analytics; national sources; and IMF staff calculations.

Note: Panel 1 is based on Bloomberg hedge fund return indices by strategy, taking the average beta of these returns on three dollar-funded carry indices, controlling for US equity returns. Panel 2 calculates the two-year rolling correlations between total quarterly portfolio debt flows for a sample of 20 emerging markets and dedicated emerging market exchange-traded fund and mutual fund debt flows, with varying domiciles and debt types. EM = emerging market; ex. = excluding; VIX = Chicago Board Options Exchange Volatility Index.

unwinds. This sharp reversal suggests that the earlier rally since a year ago had been primarily shaped by dollar dynamics rather than fundamentals (Figure 1.6, panel 4). The carry environment has now become less supportive, as interest rate differentials have narrowed in some cases and the recent surge in volatility has compressed carry-to-volatility ratios to less attractive levels (Figure 1.6, panel 5).

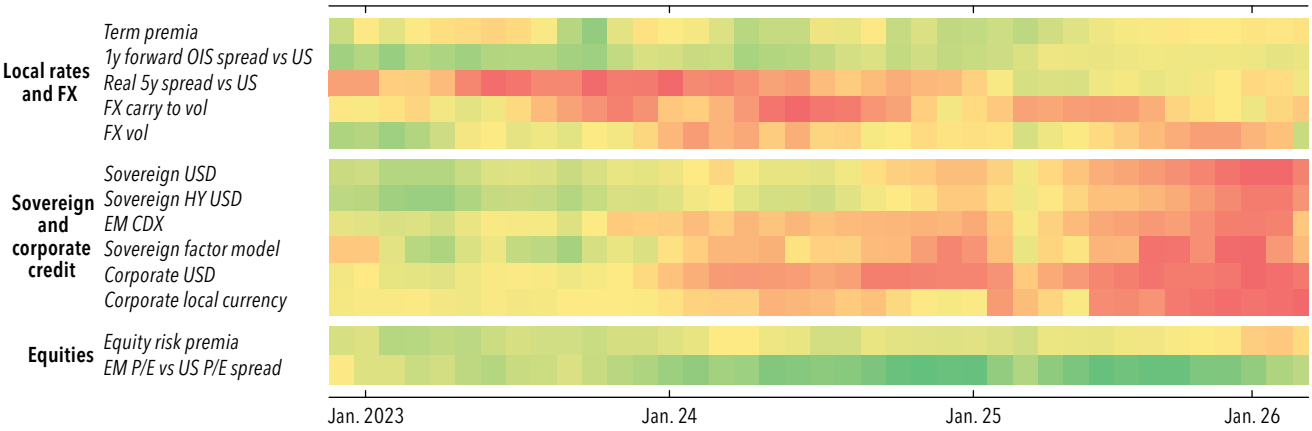
Contained Equity Market Correction amid High Concentration

Before the conflict in the Middle East, risk sentiment was strong, with global equity prices fluctuating around all-time highs. Forward price-to-earnings ratios were approaching close to historically high levels in many countries and regions. Concentration was elevated, with a small number of companies

Figure 1.6. Emerging Market Valuations, Risk, and Returns

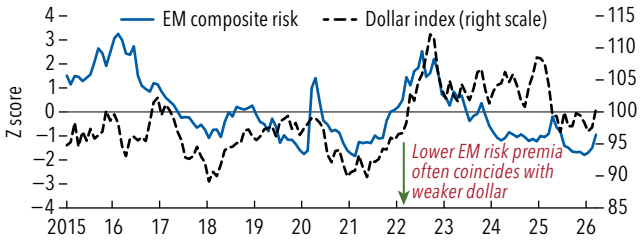
External spreads remain compressed, while equity valuations appear modest relative to the United States.

1. Heat Map of Emerging Market Risk Premiums
(Red represents lower risk premiums or higher valuation; based on monthly data since 2015)



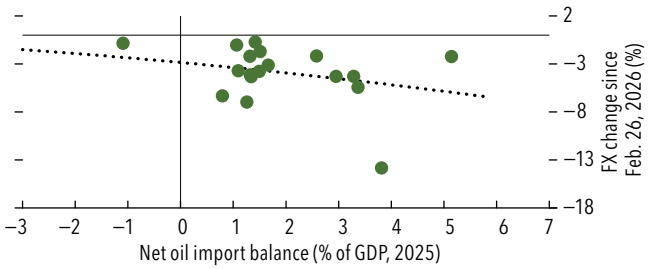
Emerging market risk sentiment had been supported by improved fundamentals and a weaker dollar prior to recent market turbulence.

2. Emerging Market Composite Risk and Dollar Index
(Z-score, left scale; dollar index, right scale, through March 2026)



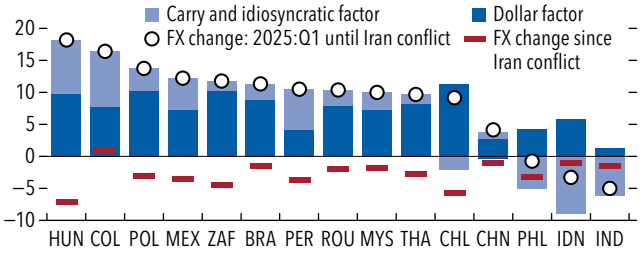
Commodity exposure has played a role in driving currency moves during the conflict in the Middle East.

3. Foreign Exchange Performance since the Iran Conflict and Oil Import Dependency, 2025:Q1
(Percent)



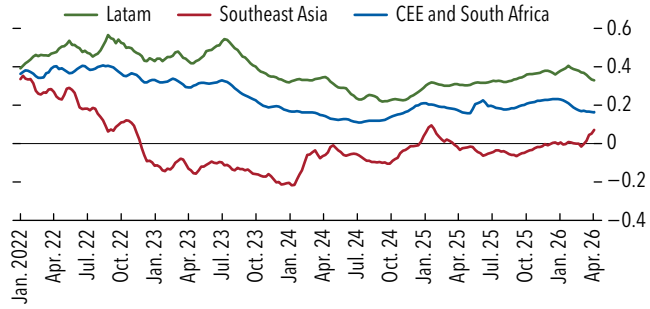
The weaker dollar drove emerging market currency gains in 2025, but the conflict in the Middle East has triggered the largest sell-offs in prior outperformers.

4. Decomposition of Currency Returns before and after the Iran Conflict
(Percentage points)



The attractiveness of carry trades is sensitive to market volatility, which has increased somewhat amid the conflict.

5. Risk-Adjusted Foreign Exchange Carry-to-Volatility Ratios
(Ratio; average per region)



Sources: Bloomberg; JPMorgan; ICE BofA; LSEG; and IMF staff calculations.

Note: For the heat map, most indicators are standardized within the country, then averaged across an unbalanced 14-country sample. The sovereign factor model is a panel regression on dollar sovereign spreads, incorporating fundamentals and market indicators, across an unbalanced sample of 70 emerging markets. In panel 2, the composite risk indicator represents the first principal component of an average standardized risk metric for each category found in the heat map. In panel 4, the carry factor includes both interest rate differentials and a global carry factor. The construction of the global carry and the dollar factors follows Verdelhan (2018), using a portfolio of emerging markets and nine advanced economy currencies. The decomposition is based on a rolling regression over 18 months. Panel 5 uses three-month FX-implied yields against dollar funding rates, adjusted for implied volatility from option markets. Data labels in the figure use International Organization for Standardization (ISO) country codes. CDX = Credit Default Swap Index; CEE = Central and Eastern Europe; EM = emerging market; EMEA = Europe, Middle East, and Africa; FX = foreign exchange; Latam = Latin America; OIS = overnight index swap; P/E = price-to-earnings; Vol = volatility.

increasingly driving stock markets. Investor optimism about the long-term prospects of AI-related technologies was a key driver, in particular. Equity market gains in advanced economies were underpinned primarily by improved earnings expectations, while compression of equity risk premiums played a large role in the rise of emerging market stocks (Figure 1.7, panel 1).[7] IMF staff analysis suggests valuations were above model-implied fair-value estimates across most advanced economies.[8] That said, the difference between realized valuations and corresponding fair value was well below historical peaks (Figure 1.7, panel 3).

The market correction during the conflict has been relatively contained in most cases, but risks are asymmetric. The longer the conflict continues, the greater the risk that global financial conditions could tighten further and more abruptly. Stock prices have fallen the most in emerging markets, particularly in energy importers, followed by European advanced economies and the United States, broadly consistent with the terms of trade shock and repricing of central bank monetary policies. However, markets so far have fallen, and volatility has increased by less than during recent global shocks, such as the increase in US tariffs in April 2025, the war in Ukraine in February 2022, and the COVID pandemic in February 2020. The current correction seems more consistent with a squeeze of long investor positioning than with a switch to short positioning and could suggest optimism for a relatively short duration of the conflict. This, in turn, points to asymmetric risks from a more prolonged shock, including through persistently high energy prices (see Box 1.2).

High concentration continues suggesting risks in two distinct ways. First, a small set of firms increasingly drive equity markets. The Herfindahl–Hirschman Index for two out of six major equity markets currently exceeds its 95th historical percentile (Figure 1.7, panel 4), reflecting the dominance of a few large firms in market valuations. Second, the rest of the world has become increasingly exposed to US equity markets, as equities-related valuation gains in net international investment positions have reached nearly $6 trillion; by contrast, the United States appears to have provided these valuation gains. The first form of concentration implies sell-offs in a small number of firms could cascade into broader market declines. In particular, against the backdrop of substantial AI-related investments, the possibility of mega-cap stocks failing to generate expected returns to justify current valuations could worsen broader investor sentiment.[9] The second could propagate equity market stress across borders through strong wealth effects.

Amplification Channels from Market Turmoil to Financial Instability

Resilient Funding Markets Could Be Tested by Higher Bond Yields and Rising Rollover Risks

With debt-to-GDP ratios at all-time high levels in core sovereign bond markets and higher energy prices and inflationary forces applying pressure on bond yields, funding markets—historically a locus of fragility during episodes of financial turmoil—could tighten. Gyration in bond markets could lower the collateral value in repurchase agreement (repo) transactions, raising repo rates and margins. Highly leveraged strategies like the cash-futures basis trade could unwind because higher bond yields push up repo rates, further raising yields. In addition, the move of sovereign debt issuance in G4 economies toward shorter weighted average maturities (Figure 1.8, panel 1) has made the link between bond and funding markets more acute. In the United States, money market funds have increasingly directed the inflows they received away from repos and toward US Treasury bills over the past year, reflecting Treasury bills' supply surge and attractive yields. This has coincided with the US

[7]Equity markets in Korea markedly outperformed, reflecting improvements in both realized earnings and expectations across short- and long-term horizons. These developments were supported by corporate governance reforms implemented earlier in 2025 alongside increased optimism surrounding AI, which has driven substantial gains in semiconductor stocks—a significant share of the benchmark equity index.

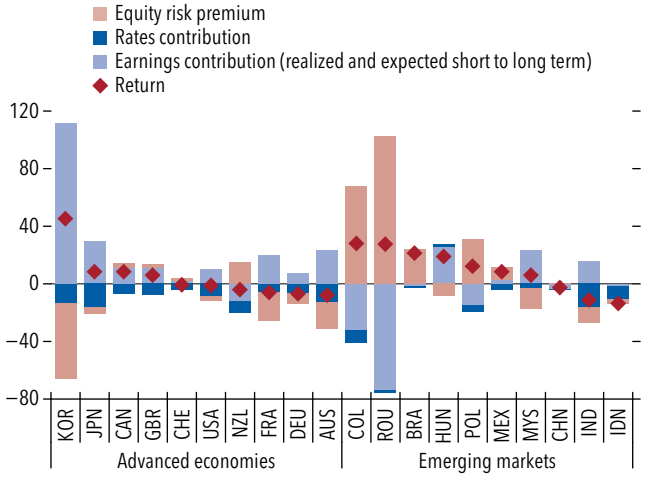
[8]An assessment of earnings growth required for price-to-earnings ratios to revert to their historical 10-year medians by 2027 provides similar conclusions. Before the conflict in the Middle East, earnings per share for the S&P 500 and Nasdaq would have to grow at compound annual rates of close to 30 percent and 35 percent, respectively, substantially exceeding current analyst expectations and remaining highly demanding on earnings growth.

[9]This high concentration comes alongside historically elevated US household exposure to equities (as a share of total household assets), currently about 30 percent and on an upward trajectory since the global financial crisis (see the April 2025 *Global Financial Stability Report* for a discussion). A major portion of rising household exposure is to benchmark indices, in particular the S&P 500 (largely in 401k retirement accounts and through passive investment vehicles and ETFs). This exposure makes household balance sheets vulnerable to sharp corrections and prolonged declines in the index, potentially more so currently, given the high concentration.

Figure 1.7. High Valuation and Concentration in Equity Markets

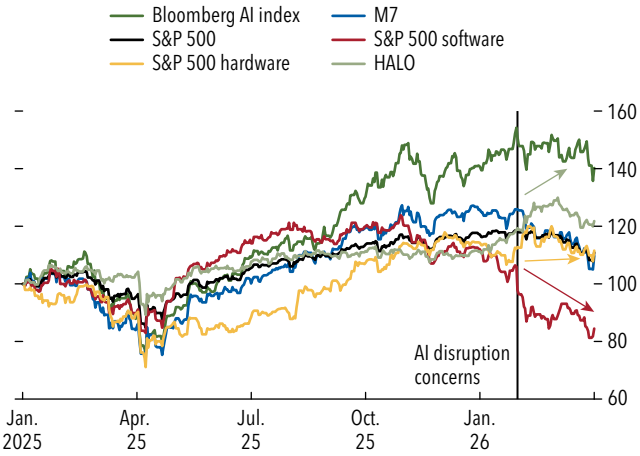
Global stocks have been bolstered by strong earnings and risk premiums compression since the October 2025 GFSR.

1. Return Decomposition
(Percent share since October 2025 GFSR)



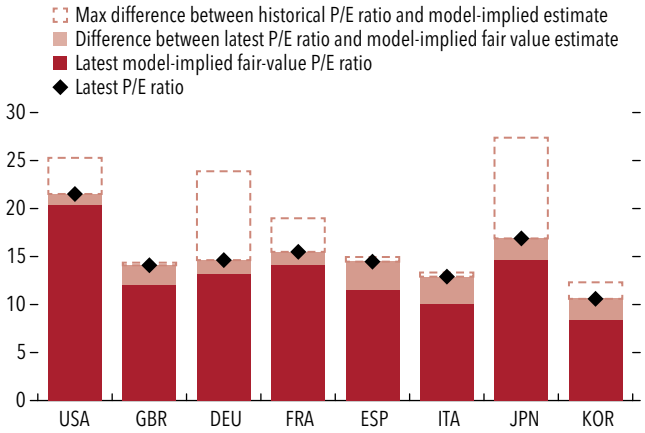
Equity markets have seen recent rotation out of software, toward tech stocks focused on AI-related hardware.

2. Returns on Selected Indices
(Index; January 2025 = 100)



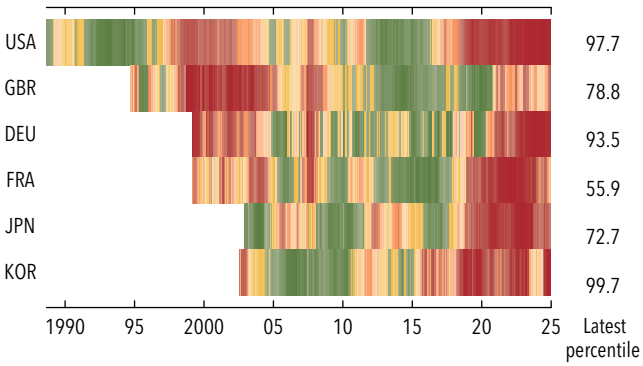
Valuations were high, staying somewhat above model-implied fair-value estimates before the conflict in the Middle East but below historical peaks.

3. Twelve-Month-Forward Price-to-Earnings Ratio versus Model-Implied Fair-Value Estimates
(Multiples)



Concentration risk is historically elevated in tech-heavy markets, especially in the United States.

4. Concentration Risk Heat Map
(Z-score of the Herfindahl–Hirschman Index)



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

Note: The decomposition in panel 1 is calculated using a three-step dividend discount model. Advanced economies use a main local equity index while emerging markets use MSCI country indices. In panel 2, the Bloomberg AI Index tracks the performance of the top 45 companies in cloud computing, semiconductors, and hardware focused on the next generation of computing. The Magnificent Seven (M7) is Alphabet, Amazon, Apple, Meta, Microsoft, Nvidia, and Tesla. S&P 500 software refers to the GICS Level 3 Software industry, and S&P 500 Hardware refers to the GICS Level 2 industry. HALO stands for "heavy assets, low obsolescence" and is the median of S&P 500 Materials, Energy, Utilities, and Industrials. Panel 3 compares the actual 12-month forward P/E ratio with a model-implied fair-value estimate based on the previous five years of weekly data. Model-implied estimation framework is described in the Online Annex 1.1 of the October 2019 GFSR, where fair-value prices are a function of various proxies for earnings growth, equity risk premium, and term premium. The final model-implied price estimate is divided by the 12-month forward expected earnings from IBES DataStream to arrive at the final 12-month forward P/E ratio. The heatmap in panel 4 is based on the historical percentile of the Herfindahl–Hirschman Index, a measure of concentration risk. Colors correspond to individual countries, with red indicating higher concentration and green indicating lower concentration. Data labels in the figure use International Organization for Standardization (ISO) country codes. AI = artificial intelligence; GFSR = *Global Financial Stability Report*; P/E = price-to-earnings.

Federal Reserve's quantitative tightening as well as the Treasury's episodic rebuilding of its cash balances at the Federal Reserve, which drained bank reserves. With the system's liquidity declining and money funds moving away from repos, repo rates came under pressure, and cash borrowers in repo markets had to rely on the Federal Reserve's Standing Repo Facility for funding (Figure 1.8, panel 2).[10]

These dynamics demonstrate the funding market's sensitivity to bond yields and rollover risks. In other G4 economies, the money market fund sector is much smaller, and the buyers of short-term government debt will likely be banks, security primary dealers, and other institutions (see the April 2025 *Global Financial Stability Report*).[11] The impact of stablecoin issuers on Treasury bills and repos has increased, while their commitment to these assets during times of stress remains untested. If bond yields rise and rollover risks increase, banks' balance sheets might become constrained from absorbing the additional short-term government securities, which could also result in funding market pressures.

Despite the turmoil, both domestic repo and cross-currency funding spreads have remained broadly stable in G4 economies thus far (Figure 1.8, panel 3; domestic repo spreads are constructed as a repo rate minus an overnight policy rate). Such stability may reflect central banks' proactive management practices, such as reserve management purchases, to smooth out volatility. Recent shifts toward centrally cleared and sponsored repos, moreover, can reduce repo intermediaries' balance sheet constraints. However, spreads can still widen if bond markets face higher and more volatile yields, more rollover risks, and heavy issuance.[12] As evidence that heavy issuance can increase funding pressure, the sensitivity of overnight repo rates in the United States to both Treasury and especially investment-grade corporate bond issuance has trended up in recent quarters (Figure 1.8, panel 4), coinciding with heavy corporate bond issuance.

Growing Hedge Fund Leverage Poses a Vulnerability to Bond Markets

The recent rise in volatility across assets, triggered by the war in the Middle East, heightens the risk that some hedge funds could face margin calls, forced deleveraging, and the unwinding of positions, which can significantly amplify market stress. Such dynamics unfolded in the bond market in the first quarter of 2020, when hedge funds sold an estimated $172 billion of Treasuries during an unwinding of leveraged cash-futures basis trades—contributing to the rapid rise in Treasury yields, and prompting the Federal Reserve to restart open-ended Treasury purchases for financial stability purposes.[13] More recently, US Treasury swap-spread trades by hedge funds declined by almost $80 billion as they deleveraged in the months after the April 2025 market turbulence.[14]

The overall footprint of hedge funds in fixed-income markets has expanded further in recent years. Gross notional exposure to interest rate derivatives and sovereign bonds has more than doubled, rising to over $18 trillion in 2025 from less than $9 trillion in 2020.[15] As the interest rate derivative market grew by only about one-half over the same period, hedge funds now play a much bigger role in the fixed-income market. In addition to the cash-futures basis trade, which has expanded to more than $1 trillion,

[10]Changes in government deposits at the central bank are a classic autonomous liquidity factor. Like banknote demand, government deposits are largely outside routine monetary policy operations but can shift the composition of central bank liabilities. Dao, Tan, and Zhou (2025) provide evidence linking fluctuations in the Treasury's cash balance at the US Federal Reserve (that is, the Treasury General Account) to movements in bank reserves and volatility in secured funding markets. When the Treasury General Account rises, reserves are mechanically drained as the residual balancing item on the central bank balance sheet, which can coincide with firmer repo conditions.

[11]Bank-dealers intermediate between bond issuers and end investors by temporarily holding inventory on their balance sheets. This activity is balance sheet intensive because it requires significant equity capital despite low profit margins per transaction, making intermediation capacity sensitive to regulatory constraints and funding costs. This can leave repo markets more vulnerable to funding stress during periods of heavy issuance or regulatory reporting snapshots (quarter-end, year-end).

[12]A larger share of client intermediation has shifted toward centrally cleared and sponsored repo. This allows dealers to offset matching transactions from cash providers and securities borrowers (such as hedge funds), reducing the overall amount of balance sheet capacity they need to commit to financing activities, thereby preserving market liquidity. While centrally cleared repo volumes have substantially grown, adoption still remains uneven with efficiency gains mostly visible during reporting snapshots rather than as a structural guarantee of smooth funding across all market conditions.

[13]See Banegas, Monin, and Petrasek (2021).

[14]During the April 2025 market turbulence, hedge funds were caught wrong-footed as US Treasury yields spiked, leading to the unwinding of swap-spread trades and a significant dislocation in the spread. See Ehlers and Todorov (2025).

[15]According to data from the Office of Financial Research, calculated from aggregated responses to the US Securities and Exchange Commission Form PF. Only responses from qualifying hedge funds are included.

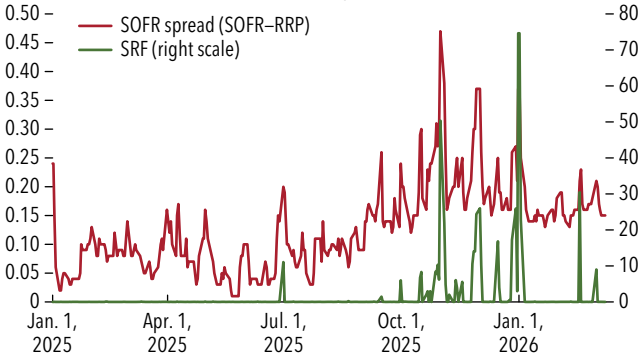
Figure 1.8. Higher Short-Term Sovereign and Corporate Bond Issuances Affecting Repo Markets

The weighted average maturity of newly issued debt has fallen.

1. Weighted Average Maturity of Newly Issued Debt across Jurisdictions
(Number of years)

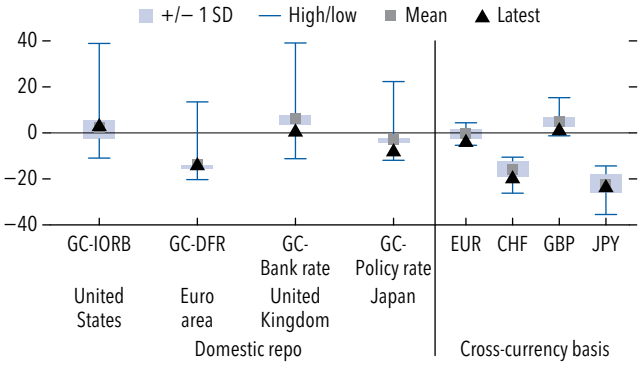
As a result, repo rates have been under pressure, leading to usage of the Standing Repo Facility.

2. Repo Market Spreads, Policy Rates, and the Standing Repo Facility
(Percent, left scale; billions of dollars, right scale)



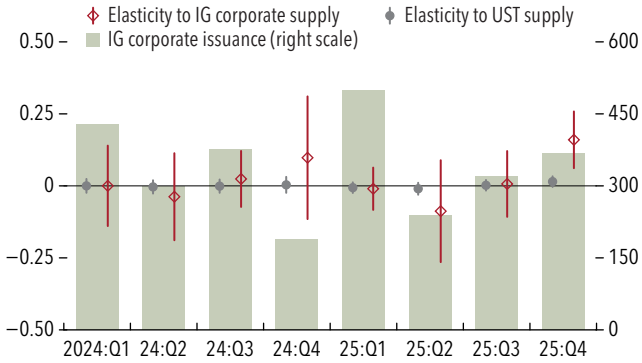
Both domestic and cross-currency funding markets have remained broadly stable in G4 economies ...

3. Global Short-Term Funding Spreads
(Basis points)



... but surging corporate issuance, including AI-related debt, could put upward pressure on repo spreads as dealers warehouse bond supply on constrained balance sheets.

4. US Repo Spread/Duration Supply Beta
(Basis points per $1 billion of 10-year equivalent bond supply, left scale; billions of dollars, right scale)

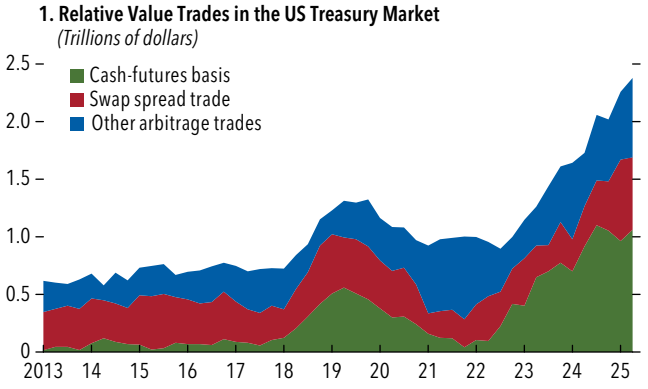


Sources: Bloomberg Finance L.P.; EUROPACE AG/Haver Analytics; JPMorgan; London Stock Exchange Group; US Federal Reserve Board; and IMF staff calculations.

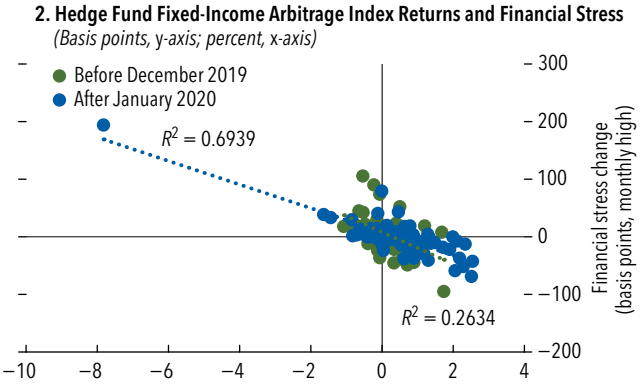
Note: In panel 1, weighted average maturity is computed as the cumulative new issuance over each year in each maturity bucket multiplied by an assumed midpoint maturity, divided by total new issuance in the year. Period averages are simple means of annual values over 2015–20 and 2021–25. Reserves are measured as a percentage of total bank assets. In panel 2, spreads are measured relative to the federal funds' lower target rate. Panel 3 is based on daily data from October 2, 2025, to April 2, 2026. The bottom and top edges of the boxes indicate the 25th and 75th percentiles. The whiskers extend to the most extreme data points not considered outliers. The cross-currency basis data captures individual crosses versus the dollar at the three-month tenor. Panel 4 shows the elasticity of the overnight repo-policy rate spread to US dollar duration supply, measured in 10-year equivalents per billion dollars. The UST-repo beta captures the sensitivity of this spread to Treasury issuance, and the IG, corporate-repo beta captures the sensitivity to IG corporate issuance, controlling for the Treasury supply. Following Cordes and Infante (2025), the panel regression includes quarterly coefficients with fixed effects for month-, quarter-, and year-end turns to account for regulatory reporting dates. Data labels in the figure use International Organization for Standardization (ISO) country codes. AI = artificial intelligence; bps = basis points; DFR = deposit facility rate; FFR = federal funds rate; GC = one-day general collateral repo rate; IG = investment grade; IOR/IORB = interest rate on reserve balances (administered by the Federal Reserve); SOFR = benchmark Secured Overnight Financing Rate; RRP = Reverse Repurchase Facility Rate; SRF = Standing Repo Facility; SD = standard deviation; UST = US Treasuries.

Figure 1.9. Rising Hedge Fund Leverage Poses Vulnerabilities

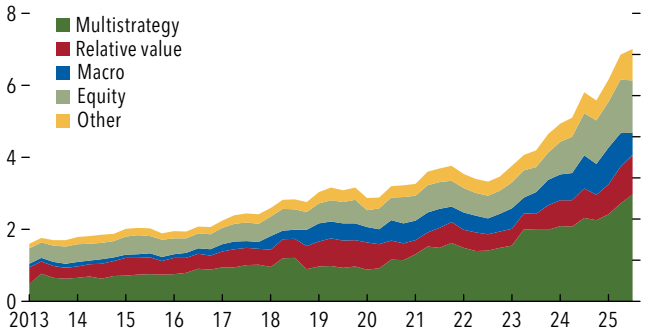
The size of leveraged fixed-income arbitrage trades, including cash-basis and swap-spread trades, has risen rapidly.



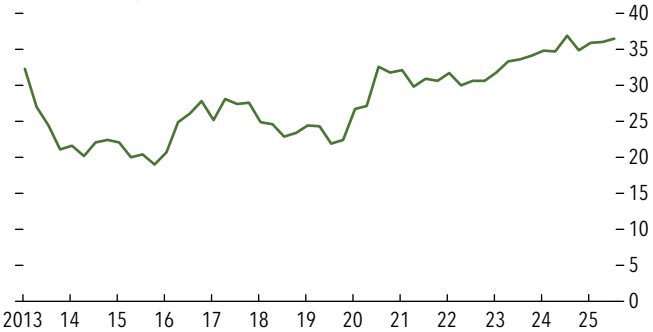
The returns of fixed-income arbitrage hedge funds have a significant relationship with periods of market stress.



Multistrategy, relative-value, and macro hedge funds have increased their prime brokerage and repo borrowing sharply ...



... and there are increasing concentration risks among the largest hedge funds and their share of gross notional exposure.



Sources: Bank for International Settlements; Bloomberg Finance L.P.; Commodity Futures Trading Commission; Office of Financial Research; US Securities and Exchange Commission; and IMF staff calculations.

Note: The calculations in panel 1 are based on Ehlers and Todorov (2025). Financial stress in panel 2 is proxied by the highest daily value every month in the Markit iTraxx Europe 5-Year Credit Default Swap Subordinated Financials Index. Periods of stress are accompanied by a rapid widening in CDS financial indices, as financial corporations are under pressure to pull back leverage and raise margins and haircuts to leveraged investors. The data in panels 3 and 4 are provided by the Office of Financial Research and come from aggregated responses to the US Securities and Exchange Commission's Form PF. Only responses from qualifying hedge funds are included. Data for the Bloomberg Fixed Income Arbitrage Hedge Fund Index begins in December 2013. CDS = credit default swap.

hedge funds also engage in swap spread and other fixed-income arbitrage trades (Figure 1.9, panel 1). Large leveraged exposures are also present in other government bond markets, including the euro area.[16]

Looking ahead, hedge funds could be particularly susceptible to spikes in repo rates, a key source of leverage, as such spikes can quickly render trades unprofitable or cause risk management constraints, such as value-at-risk, to be binding (see Online Annex 1.1). While risk management constraints may have helped keep hedge funds from failing during recent shocks, a key concern for financial stability is how the associated rapid unwinding of derivative positions and forced selling of bonds spill over to other markets. A measure of broader financial market stress has become more correlated with hedge fund losses since 2020 (Figure 1.9, panel 2). Multistrategy and macro funds that do not focus only on fixed income may nonetheless have a strong impact on bond markets, given the increased size of their borrowing (Figure 1.9, panel 3). These risks are exacerbated by industry concentration. The top 10 global hedge funds now account for more than one-third of the gross

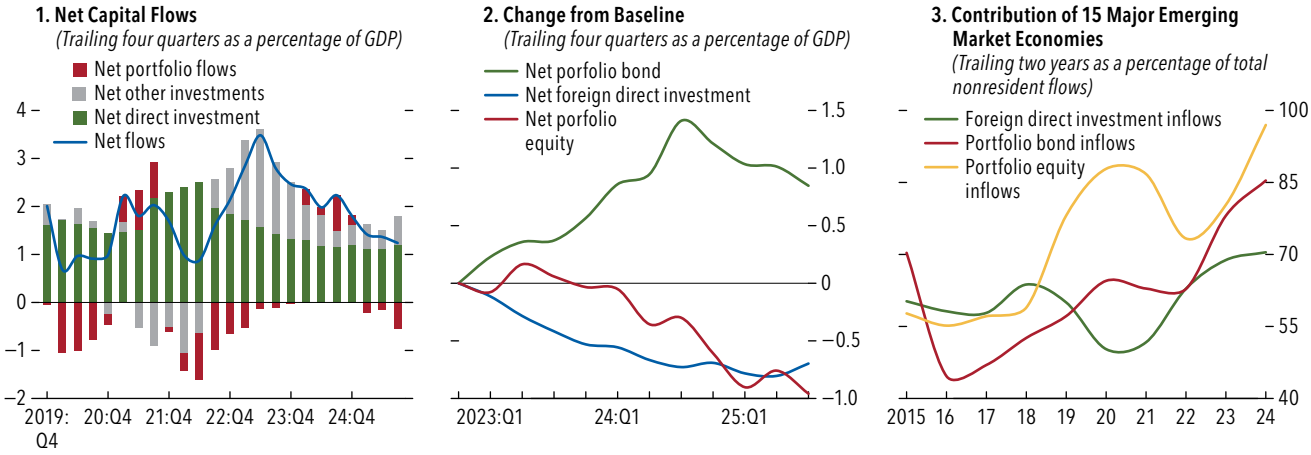
[16]Offshore hedge funds, believed to also be involved in basis trades in the United States, have become increasingly present in the euro area government bond repo market, increasing the risk of spillovers should these entities face liquidity strains in the US Treasury market (ECB 2024). Unlike in the United States, where the Securities and Exchange Commission and the Office of Financial Research publish data on aggregated hedge fund exposures, similar data in the euro area are not publicly available.

Figure 1.10. Emerging Market Capital Flows Are Subdued, Uneven, and Increasingly Concentrated

Net capital flows into emerging markets have been lackluster.

Net portfolio bond inflows continued, in contrast to weakening net foreign direct investment and portfolio equity flows.

Nonresident flows into emerging markets are concentrated in a small number of countries.



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

Note: In panels 1 and 2, the 15 major emerging markets are Brazil, Colombia, Chile, Hungary, India, Indonesia, Malaysia, Mexico, Peru, the Philippines, Poland, Romania, South Africa, Thailand, and Türkiye. In panel 2, the fourth quarter of 2022 is used as the baseline reference period. In panel 3, the data cover a broader sample of 153 emerging markets excluding China and Russia, with data points highlighting the contributions from the top 15 countries in each balance of payment category. In comparison, the 2024 GDP share represented by these top 15 countries amounts to 48 percent, 60 percent, and 61 percent for portfolio equity, portfolio bond, and foreign direct investment categories, respectively.

notional exposure across all hedge funds, up from just 20 percent a decade ago (Figure 1.9, panel 4). At the same time, the share of illiquid investments in hedge fund portfolios, proxied by Level 3 assets, has increased by over 50 percent. Although funds have tightened average liquidity terms to accommodate these exposures, less-liquid portfolios increase the risk of rapidly deteriorating liquidity mismatches during periods of stress.

K-Shaped Emerging Market Capital Flows Increase Vulnerabilities

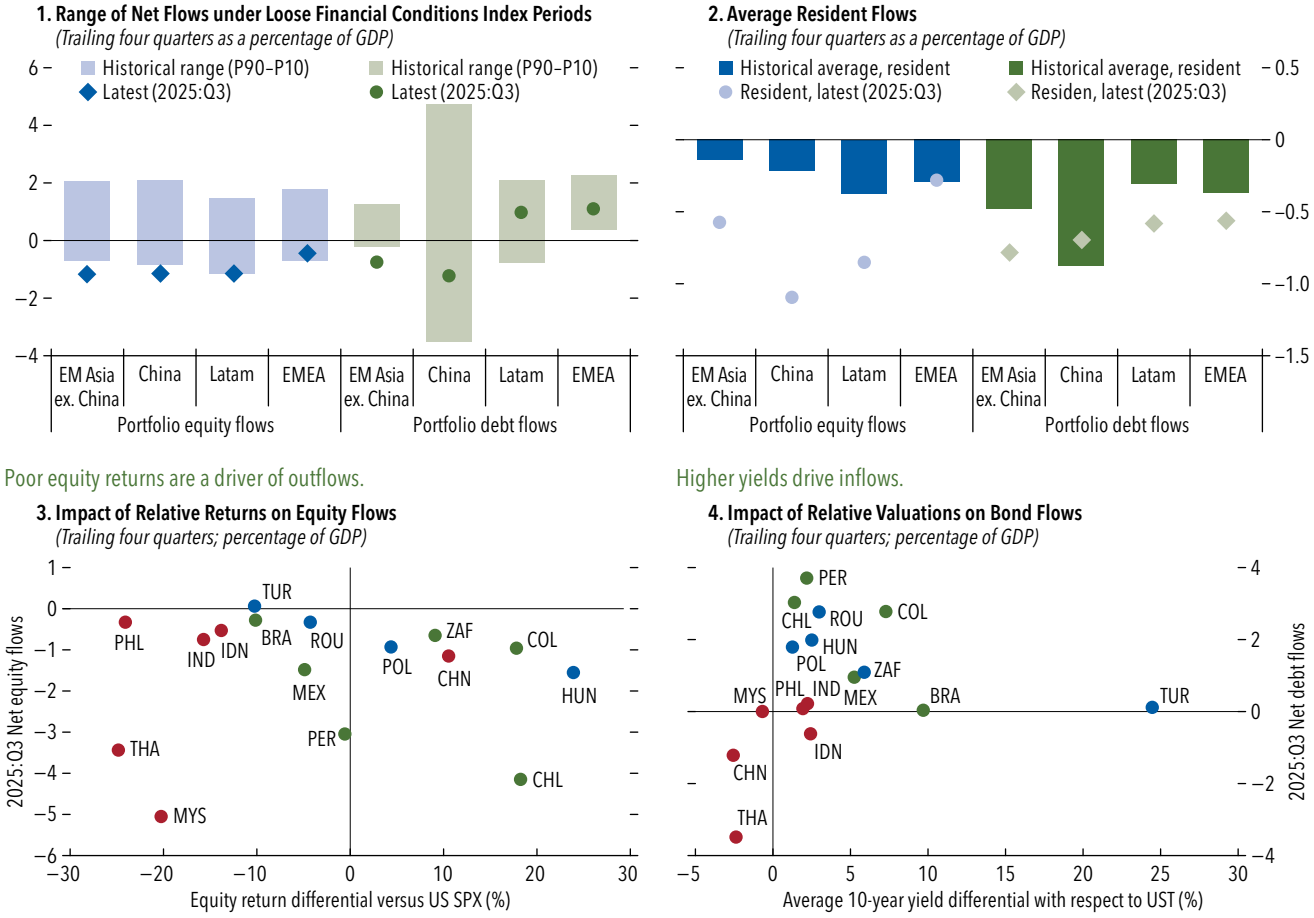
Shifts in the composition of capital inflows to emerging markets have been moving toward more uneven, cyclical, and potentially volatile forms of financing, leading to heightened vulnerabilities. Net capital flows have exhibited a K-shaped trend across the major balance of payment subcomponents in recent years (Figure 1.10, panels 1 and 2), clearly skewed toward debt, with much weaker net portfolio equity and FDI flows. Notably, nonresident portfolio flows are increasingly concentrated in a small set of 15 major emerging market economies, leaving others with more constrained external financing (Figure 1.10, panel 3). While a weaker US dollar and low global market volatility have supported carry trade flows, the absence of a sustained and broad-based improvement in medium-term emerging market growth expectations, alongside continued global tilt for technology-sector allocations, has weighed on equity and FDI flows. Net FDI, traditionally the most stable and dominant source of external financing for emerging markets, has continued to decline from its postpandemic peak, raising concerns about the lack of more durable, long-term financing.

Historically, loose financial conditions have been accompanied by strong net capital inflows to emerging markets. However, over the past year, net flows to emerging markets have been much weaker compared with past instances of loose global financial conditions, particularly for net equity portfolio flows (Figure 1.11, panel 1). In part, this is because recent resident outflows are more elevated compared with past periods of accommodative financial conditions (Figure 1.11, panel 2). In emerging market Asia (excluding China), current account surpluses over the past two years have been recycled as private resident outflows, given diminished home bias and underperformance of emerging Asian equity markets (Figure 1.11, panel 3). In bonds, jurisdictions with positive yield differentials in relation to the United States have generally seen net portfolio inflows (Figure 1.11, panel 4), suggesting heightened carry sensitivity (see Online Annex 1.2).

Figure 1.11. Emerging Market Portfolio Flows and Global Financial Conditions

Recent bond flows are average at best, and equity inflows are weak relative to past episodes.

Recent resident outflows are well above historical averages.



Poor equity returns are a driver of outflows.

Higher yields drive inflows.

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

Note: A period is classified as having loose financial conditions when its Financial Conditions Index (FCI) rating is below its 25th percentile threshold (−0.66). The global FCI value in the third quarter of 2025 was −1.04. The sample covers the first quarter of 2004 through the third quarter of 2025. Major emerging markets include Brazil, Chile, China, Colombia, Hungary, India, Indonesia, Malaysia, Mexico, Peru, the Philippines, Poland, Romania, South Africa, Thailand, and Türkiye. In panel 3, the equity return differential is measured as the local equity market return relative to the S&P 500 from the fourth quarter of 2024 to the third quarter of 2025. In panel 4, the yield differential is the average 10-year government yield relative to the 10-year US Treasury from the fourth quarter of 2024 to the third quarter of 2025. Data labels in the figure use International Organization for Standardization (ISO) country codes. EM Asia = emerging market Asia; EMEA = Europe, Middle East, and Africa; ex. = excluding; Latam = Latin America; SPX = S&P 500 Index; UST = US Treasuries.

FDI flows to emerging markets have been slowing and becoming more uneven, as a shift toward AI and tech sectors could leave some economies more dependent on volatile and cyclical forms of financing.[17] Since the pandemic, cross-border greenfield investment has shifted markedly toward energy- and technology-intensive sectors.[18] These sectors have accounted for more than 40 percent of the cumulative announced value of greenfield projects since 2015 (Figure 1.12, panel 1). Concurrently, emerging markets appear to be losing share in the overall value of announced projects.[19] This divergence suggests that the ongoing capital reallocation favors economies with stronger technological sectors (Figure 1.12, panel 2), with more traditional sectors receiving smaller shares. While FDI has historically been a more stable form of financing for emerging

[17]In a sample of 101 emerging markets, the top 25 recipients accounted for more than 90 percent of overall FDI inflows into emerging markets from 2022 to 2024, underscoring the concentration of capital in a narrow set of structurally stronger economies.

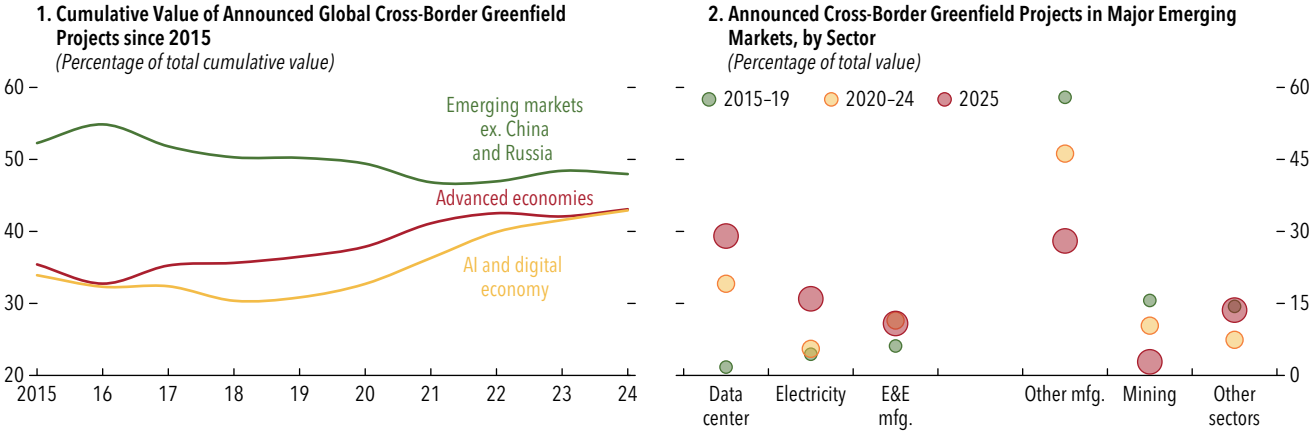
[18]These sectors are gas supply, electronics and electrical manufacturing, machinery and equipment, and information and communication services.

[19]Aggregated data from UN Trade and Development, excluding China and Russia.

Figure 1.12. Uneven Foreign Direct Investment Flows to Emerging Markets

Cross-border greenfield investment is shifting toward AI and digital sectors, with emerging markets losing ground.

Major emerging markets are beginning to position themselves to benefit from cross-border flow reallocation.



Sources: Orbis Crossborder Investment database; UN Trade and Development; and IMF staff calculations.

Note: In panel 2, the 15 major emerging markets are Brazil, Chile, Colombia, Hungary, India, Indonesia, Malaysia, Mexico, Peru, the Philippines, Poland, Romania, South Africa, Thailand, and Türkiye. AI = artificial intelligence; E&E = electrical and electronics; ex. = excluding; mfg = manufacturing.

markets, recent shifts indicate that economies with weaker technological ecosystems could be displaced and are vulnerable to rising dependence on less-stable financing over the medium term. This underscores the need for structural policies to enhance productivity gains and build on technological capability, including AI preparedness.

Exuberance in Equity Option Markets Suppresses Volatility and Risks Sharp Valuation Corrections

The run-up in asset prices has been accompanied by historically low market volatility, especially in equities. A possible reason is the sharp rise in equity option trading over the past five years. This rise can mechanically suppress equity volatility in normal times but can also make sell-offs more prone to amplification. A negative shock that lifts demand for protection while constraining volatility supply can flip dealers into procyclical hedging, exerting downward pressure on prices in a falling market. Moreover, the greater prevalence of option trading strategies geared toward generating income over increasingly short time intervals has increased the speed with which a significant amount of volatility supply could evaporate during shocks, potentially compounding the destabilizing impact of procyclical hedging flows.[20]

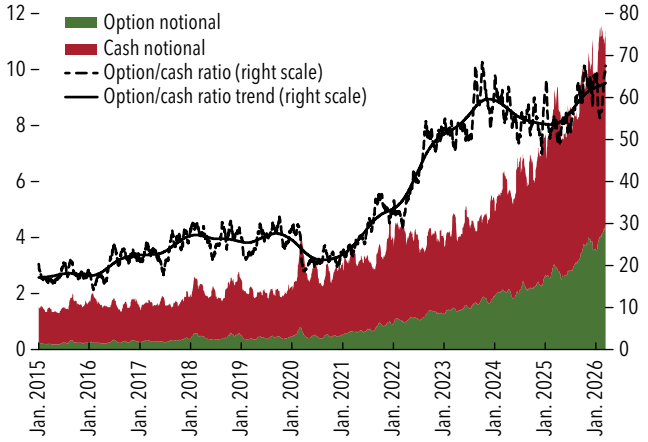
Trading of equity options has risen to close to 80 percent of the volumes in the underlying cash equity market (Figure 1.13, panel 1), having risen a staggering 60 percentage points from a decade ago. Options trading is effectively volatility trading involving three entities: volatility sellers, volatility buyers, and dealers (Figure 1.13, panel 2). Buyers are often end investors who use options to obtain levered equity exposures, hedge against volatile markets, or meet investment mandates. Sellers increasingly use strategies such as quantitative investment strategies and option-based ETFs. Dealers intermediate between buyers and sellers by providing liquidity. Dealers continuously hedge their option-related risks by buying or selling the underlying assets, which can meaningfully move prices, especially when liquidity is thin. Ultimately, the impact of options activity on equity prices operates predominantly

[20]Unlike cash equities, option contracts expire and are frequently rolled, and dealers adjust hedges as prices move. Because option payoffs are nonlinear, changes in demand for short-dated protection can translate into outsized, time-sensitive hedging flows in the underlying market. These dynamics have become more important as option volumes after 2020 have risen with trading shifting toward short-dated expiries in index and ETF options (see Box 1.3 in the April 2023 *Global Financial Stability Report*).

Figure 1.13. Equity Options at Near Cash-Market Scale with Heightened Likelihood of Volatility Amplification

US options trading volumes have risen to near cash-market scale.

1. Trading in Equity Options versus Underlying Cash Equity Market
(Trillions of dollars, left scale; percent, right scale)



Key players and their functional footprints suggest rising prevalence of trading strategies aimed at collecting option premiums (for example, QIS) rather than positioning for large price moves.

2. Stylized Overview of Options (Volatility) Trading Ecosystem

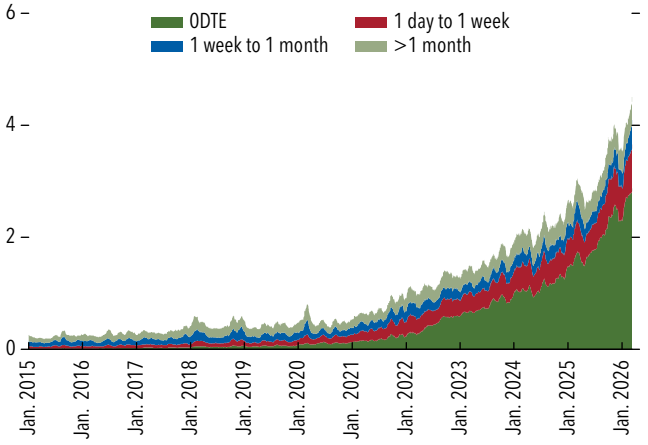
			Footprint			Vulnerabilities					
Market participant	Strategy/Function	AuM ($bn)	AuM trend	Retail share	0DTE share	Procycl.	Liq. impact	Tail risk	Intraday flip	Opacity	Risk limits
Seller	**Option-based ETFs** Premium collection (call overwriting)	225	↑								
	Defined outcome and buffer strategies*	280									
	QIS† Dynamic volatility and dispersion trades	600	↑↑								
Buyer	**End investors**† Hedge funds, pension funds, and insurance companies	n/a	↑↑								
Dealer	**Intermediaries**‡										

Low/dampening · Medium/conditional · High/procyclical under stress

* Primary activity † Vol. selling/buying, given regime ‡ Clears residual net

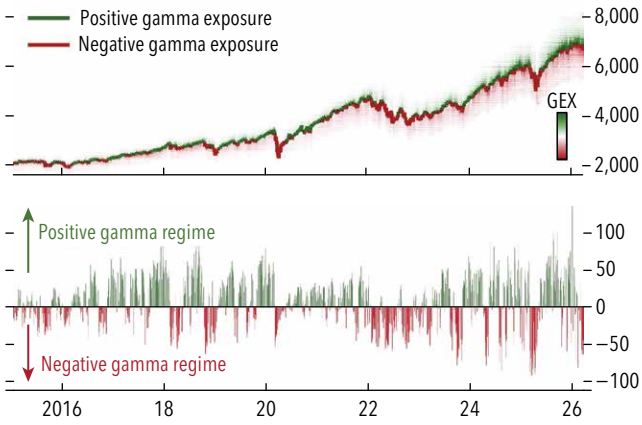
Alongside the rise in dynamic volume strategies, short-dated options have increasingly dominated options-trading volumes ...

3. Options Trading Volumes, by Maturity Bucket
(Trillions of dollars)



... rendering dealers increasingly likely to rapidly shift to short gamma regimes in which procyclical hedging activity could amplify volatility.

4. S&P 500 Spot Price and Dealer Gamma Exposure
(Index points, billions of dollars)



Sources: Bloomberg Finance L.P.; OptionMetrics; Chicago Board of Exchange; SIFMA; and IMF staff calculations.

Note: In panel 1, trading volumes are based on the four most liquid equity indices and ETFs with option contracts linked to these underlying assets. Option trading volumes are in terms of underlying notional value. Panel 2 documents the types of key players currently in the option market and AuM by type of trading strategy. Colors summarize the relative intensity across footprint vulnerabilities, ranging from limited presence and stabilizing influence (green) to regime-dependent effects that can flip as conditions tighten (amber), and large footprints with stress-amplifying, procyclical behavior (red). The overview is based on market microstructure analysis, complemented by IMF staff market outreach with major US-based dealers, hedge funds, asset managers, and systematic trading firms. Reported AuM reflects the median estimate across surveyed market participants. Retail share refers to the share of customer activity attributable to retail investors, which is not applicable to dealers. Dispersion trade is an option strategy aimed at profiting from the difference between the implied volatility of an index, and the implied (or realized) volatility of individual stocks within the index, effectively making it a trade on correlation, structured by buying single-stock volatility and selling index volatility or the reverse, depending on whether option-implied correlation is priced above or below realized correlation. Panel 3 shows notional options trading volumes by maturity bucket of contracts linked to the four most liquid indices and ETFs, with buckets defined by time to expiration. In panel 4, S&P 500 index levels shaded green (red) indicate positive (negative) aggregate dealer gamma, whereby hedging tends to lean against (with) price moves. The bottom graph of panel 4 shows the distribution of estimated dealer gamma exposure, highlighting where hedging pressure in the four most liquid indices and ETFs is concentrated across S&P 500 index levels. A larger magnitude of dealer gamma is associated with stronger stabilizing (green) or amplifying (red) hedging pressure. Positive and negative gamma regimes reflect aggregate net gamma positioning. 0DTE = zero-day-to-expiry option; AuM = assets under management; bn = billion; ETF = exchange-traded fund; GEX = Dealer Gamma Exposure; liq. = liquidity; QIS = quantitative investment strategies; vol. = volatility.

through these dealer hedging flows.[21] Although dealers aim to remain delta neutral, their delta must be adjusted as prices move, and whether those hedging trades dampen or amplify moves depends on dealers' net gamma exposure.

The likelihood of short gamma regimes can rise given the increasing presence of dynamic volatility sellers, such as quantitative investment strategies—often based on algorithms exhibiting procyclical behavior, and subject to binding risk limits—more prone to suddenly withdraw supply when the market is down (Figure 1.13, panel 2). Dynamic volatility strategies have grown rapidly, now accounting for a large share of options trading, with assets under management of around $600 billion. Option-based ETFs are static volatility strategies with less procyclical behavior (risk levels of the strategy are fixed at inception).

Dynamic volatility strategies have become very active in trading short-dated options, especially zero-day-to-expiry (0DTE) options, which now account for around 60 percent of S&P 500 options volume, up from approximately 40 percent two years ago (Figure 1.13, panel 3).[22] From a volatility buyer's perspective, 0DTE options provide protection on very near-term risk events, especially amid higher macroeconomic uncertainty. But given short time-to-expiry, options prices become more sensitive to small moves in the underlying equities, and sellers are more likely to withdraw rapidly, flipping dealer gamma regimes within minutes or even seconds, potentially multiple times in a day. Proxy-based measures based on daily dealer gamma exposures suggest short gamma regimes can occur frequently (Figure 1.13, panel 4), thereby exerting net downward pressure on equity prices on those days. Together with the prevalence of 0DTE options raising the specter of sharp intraday flips to negative gamma regimes, equity markets have been left increasingly vulnerable to instability, particularly at a time when concentration risk is historically elevated, valuations are hovering around historically high levels, and geopolitical risks are coming to the fore.

Expansion of Leveraged Exchange-Traded Funds Could Amplify Sell-Offs

As volatility rises across asset classes because of the recent conflict in the Middle East, leveraged ETFs—whose mechanical rebalancing requires procyclical buying in rising markets and forced selling during downturns—could meaningfully amplify price swings. Leveraged ETFs have grown quickly across the globe (Figure 1.14, panel 1), reflecting investor demand for leveraged exposures in an accessible form, and are popular in several jurisdictions. Although exposures appear limited so far relative to overall equity market capitalization (Figure 1.14, panel 2), leveraged ETFs can still have an outsized impact through mechanical, procyclical trading flows as marginal participants, particularly when overall trading volumes are thin in stressed market conditions. For example, leveraged ETFs reportedly contributed to the outsized sell-off in Korean equity markets during the early days of the conflict in the Middle East, when the KOSPI index lost 12 percent in a single day (Davis and Bartholomew 2026).

These dynamics underscore how leveraged ETFs can amplify an equity market sell-off through three main channels. First, investor flows are often procyclical, with retail investors increasing exposure after strong returns and reducing it after losses. For example, Sirri and Tufano (1998) find that consumers invest disproportionately more in equity funds that performed well in the period before. Through the creation and redemption mechanism, these flows translate into changes in fund size and exposure to the underlying asset.[23] Second, leveraged ETFs typically obtain exposure through derivatives rather than through direct holdings. They obtain

[21]A value of options position changes for small price moves of underlying assets, constituting the delta exposure of the dealer. The dealer offsets the delta by trading the underlying assets, resulting in a delta-neutral position. "Delta neutral" means having no directional exposure to the underlying, allowing dealers to provide liquidity without taking a market view. However, delta does not stay constant, changing with price moves. As delta moves again, the dealer must readjust the hedge and again trade the underlying. Gamma hedging describes those readjustments—that is, how much and in what direction the dealer would need to trade to stay delta neutral as prices change.

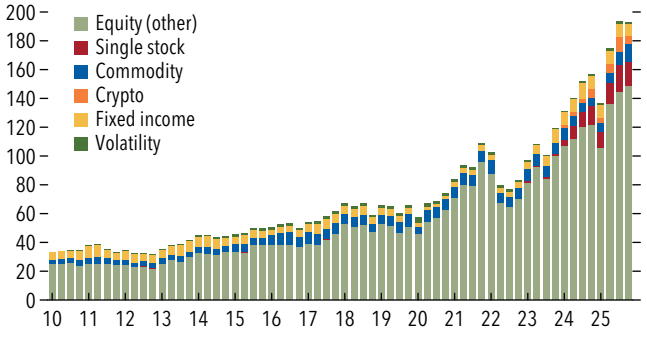
[22]On some days, up to 80 percent of volume can originate from options with zero- to one-day expiration on US indices and ETFs. More recently, in January 2026, US options exchanges also began listing new Monday and Wednesday expiries for options on mega cap technology stocks, including those among the Magnificent Seven, after approval for Nasdaq by the US Securities and Exchange Commission on January 16, 2026. These listings increase the frequency with which single-stock options become 0DTE during the week (Goyder 2026). In early trading, the most active options in Nvidia and other Magnificent Seven names were often contracts expiring the same day, mirroring the aforementioned shift toward short-dated expiries in index and ETF options since 2022.

[23]That said, volatility drag from daily leverage and high transaction costs tends to limit sustained buildups (Cheng and Ananth 2009). "Volatility drag" refers to the mechanical erosion of returns in leveraged ETFs that arises from daily leverage resetting in volatile markets. For example, consider an underlying asset price that falls by 20 percent on one day and rises by 25 percent on the next, returning to its original level. A 2× leveraged investor would have returns of –40 percent and +50 percent, which compounds to a loss of 10 percent.

Figure 1.14. Expansion of Leveraged Exchange-Traded Funds Can Amplify Sell-Offs

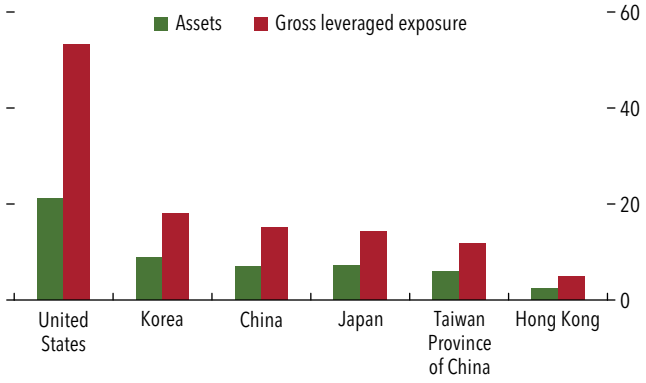
Leveraged ETFs have grown rapidly, including newer crypto and single-stock products.

1. Leveraged ETF Total Assets under Managementt
(Billions of dollars)



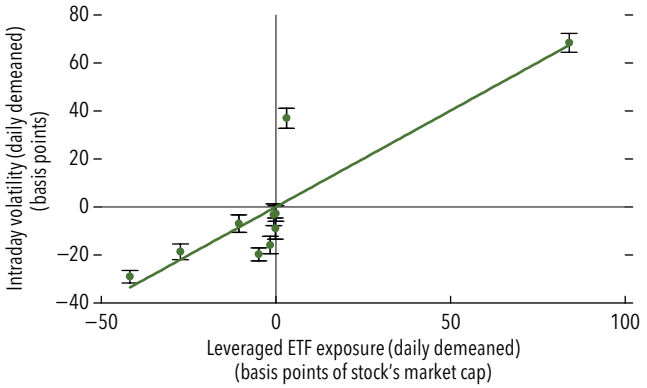
Leveraged ETFs are popular not only in the United States but also in other jurisdictions, particularly in Asia.

2. Leveraged Equity ETFs' Assets and Gross Leveraged Exposure
(Basis points of country's equity market capitalization)



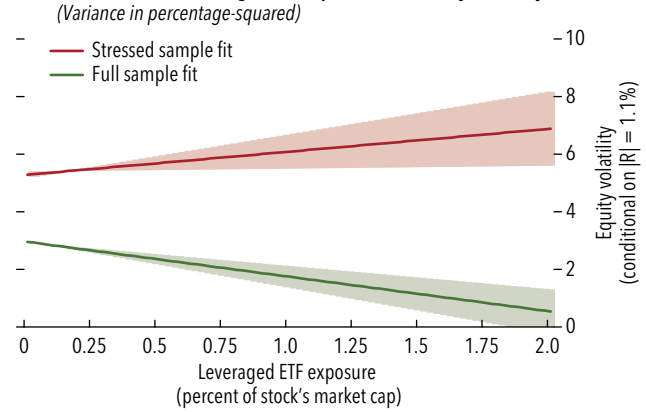
Within-day patterns suggest that higher leveraged ETF exposure is associated with higher intraday volatility.

3. Intraday Volatility and Leveraged ETF Exposure



However, after controlling for market returns and stock betas, leveraged ETF exposures are associated with higher volatility only in periods of market stress.

4. Contribution of Leveraged ETF Exposure to Intraday Volatility
(Variance in percentage-squared)



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

Note: Panel 2 shows the assets of leveraged equity ETFs as a percentage of the jurisdiction's equity market capitalization. This includes leveraged equity index ETFs, not just single-stock ETFs. Gross exposure is the product of the ETFs' assets and their leverage, reflecting their footprint on the underlying market capitalization. In panel 3, the horizontal axis reflects the aggregate leverage-adjusted ETF exposure on the underlying stock, expressed as a share of that stock's market capitalization. The chart is a binscatter of the Parkinson intraday volatility proxy for each bucket of ETF exposure (see Online Annex 1.3). Panel 4 shows the estimated additional Parkinson variance per additional percentage point of ETF pressure (see Online Annex 1.3). The relationship between these two variables is estimated on the full and stressed samples, while the predicted variance is computed keeping the market return at a fixed value to make the results comparable. Toward large exposure value, the confidence band crosses the zero line in the full sample prediction: This is an artifact of the sample being thin in this range and a consequence of the extrapolation of the linear fit. The stressed sample includes days with market returns (absolute value) in the 90th percentile and up. The sample covers the period of 2020–25 for all leveraged single-stock ETFs. Leveraged single-stock ETFs in the sample are those tied to stocks with tickers TSLA, NVDA, COIN, AMD, AMZN, APPL, ARM, GOOGL, PLTR, HOOD, META, MSFT, NFLX, and AVGO. ETF = exchange-traded fund.

these derivatives from broker-dealer counterparties, who then often hedge these positions using the underlying asset. Because leveraged exposure rises when prices increase and falls when prices decline, dealers' hedging activity tends to reinforce price movements. Third, leveraged ETFs mechanically rebalance at the end of each trading day to reset target leverage. This gives rise to predictable, directionally aligned adjustments near the close.

Leveraged ETF activity can amplify market moves during periods of stress. A simple within-day heuristic suggests that stocks with greater leveraged-ETF exposure tend to exhibit higher intraday volatility (Figure 1.14, panel 3). However, ETF rebalancing flows depend on the returns of those underlying assets, which could obscure the true impact of leveraged ETFs on volatility.

Overall, a larger presence of leveraged ETFs could amplify sell-offs, as the interaction of procyclical demand, intraday hedging, and end-of-day rebalancing increases the likelihood that large market moves translate into extreme returns and higher intraday volatility. To isolate the independent effect of leveraged ETF activity, Online Annex 1.3 presents a stock-level panel regression controlling for market returns and individual stocks' betas. The results suggest that leveraged ETF exposure is associated with higher volatility primarily during periods of market stress (Figure 1.14, panel 4). During market stress, volatility is higher as expected (level shift), but it also rises with ETF exposure (upward sloping). Outside periods of stress, leveraged ETFs are not associated with persistently higher volatility and may even support market stability, as predictable rebalancing allows liquidity providers to anticipate flows and manage inventories (Barbon and others 2022).

Early Fault Lines in Private Credit, but Limited Liquidity Mismatch Contains Systemic Impact

The private credit sector has recently become a source of investor concerns. Part of these concerns arise from high-profile defaults in non-direct-lending private credit, which suggest loose lending standards and insufficient due diligence for some borrowers and sectors. These concerns are compounded by the substantial exposure of direct lending to software borrowers facing potential AI disruption.[24] So far, direct-lending defaults have shown mixed dynamics: while selective default levels (including amend-and-extend transactions and stress-driven payment-in-kind options) have stabilized, payment defaults have continued to increase from a low base (Figure 1.15, panel 1). Going forward, should a severe shock—such as a geopolitical escalation or macroeconomic downturn—cause substantially higher rates (a "stressed rates" scenario) or a contraction in output (a "stressed earnings" scenario), selective default rates may increase by two to three times compared with what was observed in recent years (Figure 1.15, panel 2; Online Annex 1.4).

A rise in defaults alone is not a significant sign of financial instability but raises concern when combined with liquidity mismatches associated with the growing share of retail-oriented semiliquid funds. Indeed, some business development companies (BDCs)—such as perpetual nontraded BDCs—have experienced increased redemption pressures from investors, while new investments, or issuances, have slowed (Figure 1.15, panel 3). IMF staff analysis of select perpetual nontraded BDCs suggests that the ability of nontraded BDCs to address liquidity pressures depends heavily on the severity of a shock. Under mild stress assumptions, these vehicles could withstand quarterly redemptions of 5 percent of net asset value for approximately 9 to 11 quarters (Figure 1.15, panel 4; Online Annex 1.5). Under a moderate shock, when BDCs face capped redemptions, cannot attract additional collateralized secured facilities, and lack access to other sources of liquidity, liquidity buffers would be exhausted after five to seven quarters, materially limiting their ability to meet redemptions during prolonged stress episodes. The horizon would be much shorter if funds allow redemptions above the 5 percent threshold, as observed multiple times in recent months, or under a severe shock when borrowers draw down revolving credit lines frequently offered by BDCs and when unsecured debt of BDCs cannot be rolled over. Moreover, while managers may impose gates well before liquidity is exhausted to avoid destabilizing the remaining portfolio, recent experience shows that such actions may erode investor confidence across the broader industry.

As highlighted in previous issues of the *Global Financial Stability Report*, these results underscore the structural weaknesses of some semiliquid products. So far, the footprint of semiliquid vehicles in the direct-lending ecosystem is limited to about one-fifth of all direct-lending loans, but as private credit expands further to retail investors, its slow-moving valuations and illiquidity may amplify the disruptive effects of the so-called "first-mover advantage."[25] Unlike closed-end institutional vehicles, retail semiliquid vehicles are prone to redemption pressures, since investors may be aware that the selling of sizeable portfolios of direct-lending loans during stress is unlikely.[26] Large redemptions may necessitate additional secured borrowing, leaving remaining investors with a more leveraged exposure to illiquid and opaque loans. Although retail funds typically have design features to limit this risk, such as a quarterly redemption cap of 5 percent

[24]Roughly one-fifth of all direct-lending loans are in the software sector. The exposure to software borrowers may exceed 50 percent of NAV (equity) for leveraged private credit vehicles.

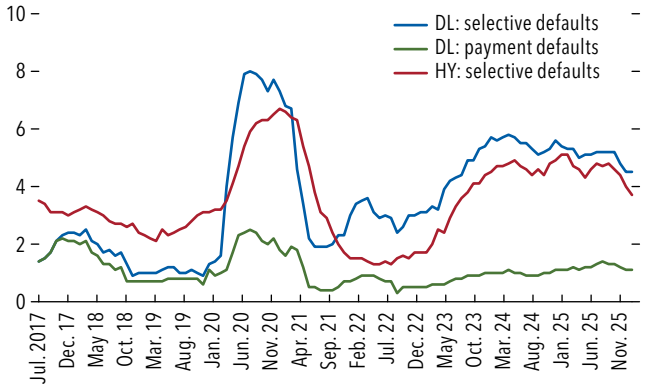
[25]The first-mover advantage applies both to direct investments in semiliquid funds and to indirect exposures through vehicles that allocate to them, potentially including private-credit sleeves offered via life insurance products and defined-contribution pension plans.

[26]While such a sale is not impossible during severe stress, it would likely require prohibitive haircuts, rendering it economically impractical.

Figure 1.15. Private Credit Is under Pressure amid Converging Headwinds

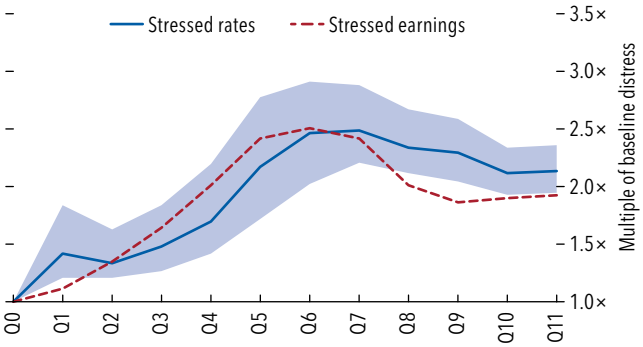
Selective defaults of direct-lending borrowers are normalizing, while payment defaults are gradually rising.

1. S&P Direct-Lending and High-Yield Default Rates
(Percent)



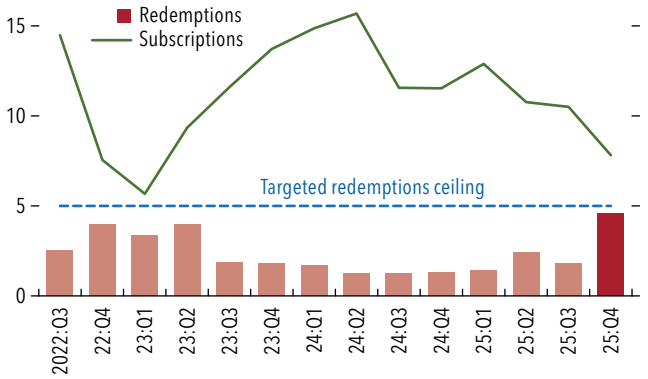
Stress tests show that default rates could more than double under a scenario of sharply higher interest rates or a significant decline in earnings.

2. Increase in the Share of Distressed Direct-Lending Borrowers under Stress Scenarios (Relative to Baseline)
(Ratio of the share of distressed direct-lending borrowers under stress scenarios to that under the baseline; quarterly)



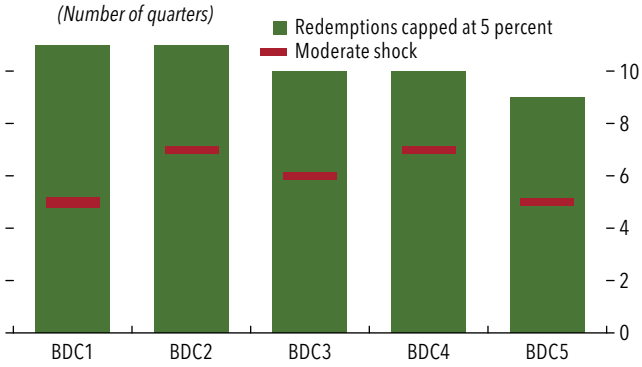
Perpetual nontraded BDCs are facing liquidity pressures as redemptions spike and inflows slow.

3. Quarterly Redemptions for Perpetual Nontraded Business Development Companies
(Percentage of outstanding shares)



Maturing unsecured debt and borrowers' revolvers may crowd out liquidity available for redemptions during a shock.

4. Number of Quarters to Liquidity Gap for Perpetual Nontraded Business Development Companies under High Redemptions and a Moderate Shock
(Number of quarters)



Sources: Capital IQ; S&P Global; and IMF calculations.

Note: In panel 1, direct-lending figures are based on the set of credit estimates reviewed by S&P Global. The methodology for panel 2 is described in Online Annex 1.4 and follows Ferreira, Martell, and Yakovlev (forthcoming). The baseline scenario represents modeled performance using actual historical inputs from the 2022–25 US tightening cycle. Distressed borrowers are defined as those with cash flow gaps after exhausting liquidity buffers. The shaded area represents the interquartile range for the "stressed rates" scenario simulations. The methodology for panel 4 is described in Online Annex 1.5. Moderate shock considers redemptions capped at 5 percent and no additional collateralized or unsecured sources of liquidity. BDC = business development company; DL = direct lending; HY = high yield (speculative grade-rated borrowers).

of net asset value, actual redemption dynamics remain uncertain and are often subject to asset managers' discretion and the availability of liquidity.[27]

[27]Recent cases in which managers either accommodated redemptions above the 5 percent limit or gated them despite apparent balance sheet capacity highlight the discretionary nature of these programs, potentially weakening the signaling value of the 5 percent guidance and complicating investor expectations about the availability of liquidity, potentially affecting the timing and magnitude of redemption requests.

Credit quality in the broader corporate sector has so far remained resilient on the back of solid earnings. The share of corporate debt among firms with an interest coverage ratio below 1 has not worsened materially in recent years, as most firms have managed through the period of high global interest rates using solid earnings and cash buffers in both advanced economies and emerging markets (Figure 1.16, panel 1). The key exception is companies in the software sector, as the potential AI-driven

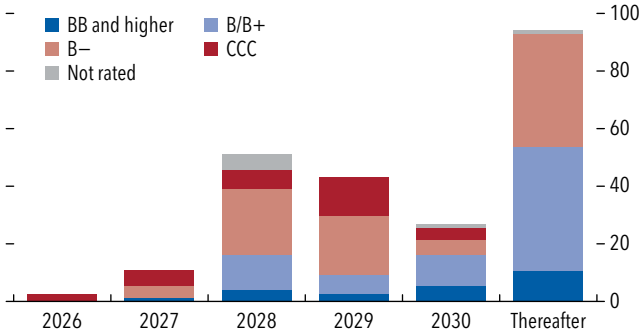
Figure 1.16. Corporate Credit Fundamentals

The share of debt with an interest coverage ratio below 1 at relatively high levels has not worsened substantially.

1. Share of Debt at Risk with Interest Coverage Ratio below 1
(Percentage of total debt of small and medium-sized firms)

The lowest-rated borrowers dominate short-term maturities of software companies' leverage loans.

2. Maturity Profile of Software Companies' Leverage Loans, by Credit Rating
(Billions of dollars)



Sources: Bank of America; Bloomberg Finance L.P.; Capital IQ; London Stock Exchange Group, Workspace; and Pitchbook.

Note: Panel 1 includes firms from Bangladesh, Brazil, Canada, Chile, Colombia, Egypt, France, Germany, India, Japan, Korea, Malaysia, Mexico, the Philippines, South Africa, Spain, Türkiye, the United States, the United Kingdom, and Vietnam. Interest coverage ratio is earnings before interest and taxes over interest expense.

disruption[28] has led some investors to reassess the durability of earnings growth assumptions embedded in debt, like software leveraged loans. With a large portion of such loans coming due by 2028, especially for B- and CCC-rated issuers (Figure 1.16, panel 2), refinancing risks have come into focus for the software sector, although the systemic impact of such refinancing appears contained.

Surge in AI-Related Investments Has Increased Concentration and Interconnectedness

The firms increasingly driving equity markets, known as hyperscalers, are at the core of the recent surge in AI investment and expected to account for 70 percent of a projected $3.4 trillion in AI-related capital expenditure by 2029.[29] A key short-term risk is that this investment could be weighed down by the implications of the conflict in the Middle East and other sources of related uncertainty. If so, the AI value stack, including construction firms ("builders"), power producers ("energizers"), chip and software developers ("hyperscalers"), and downstream operators, could experience a synchronized decline in revenues and enterprise value, given their reliance on hyperscalers' catalytic investments.

Current financial positions vary along the AI stack (Figure 1.17). Hyperscalers and chip developers thus far have financed investments robustly without materially weakening their financial positions. By contrast, less-systemic segments, such as energizers and operators, appear to have balance sheets more sensitive to the cost of rapid expansion. Looking ahead, the scale of expected capital expenditure could create balance sheet pressures, even for better-positioned firms.

Since 2025, circular financing arrangements within the AI stack have become increasingly prevalent. Under these arrangements, AI developers, chipmakers, and large technology firms simultaneously act as customers, investors, and financiers. The structure of circular financing forges interconnectedness between both publicly listed (for example, Nvidia, Oracle) and nonlisted AI-related firms (for example, OpenAI, xAI), operating with different levels of balance sheet vulnerabilities and diverse business models.

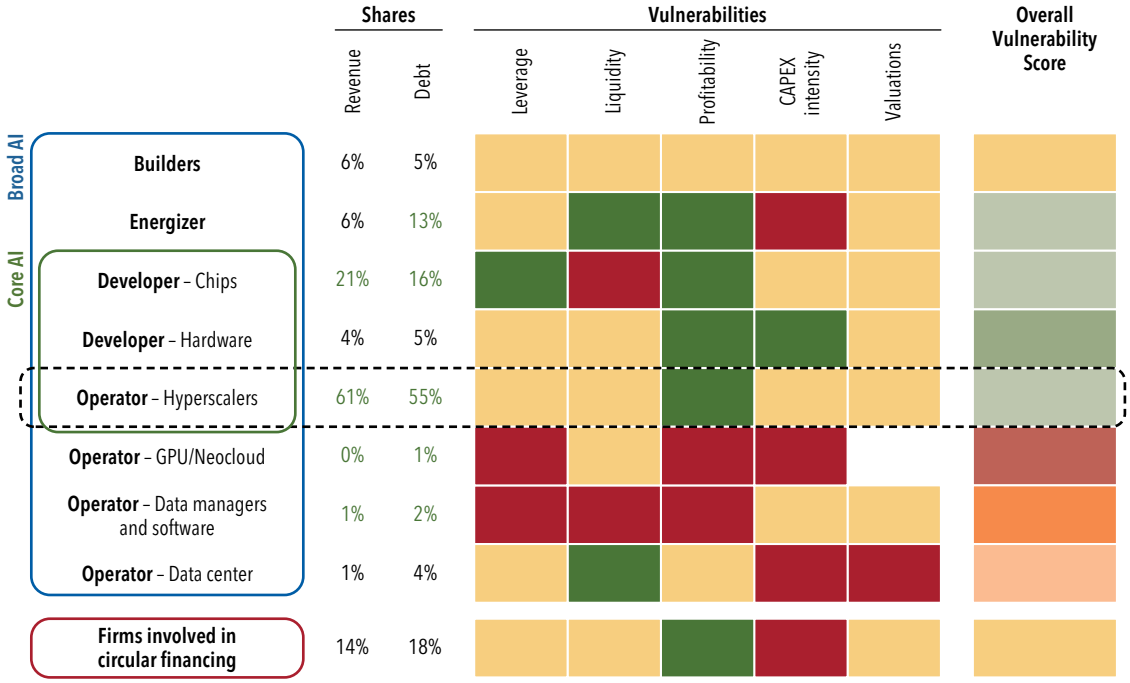
Such interconnectedness raises opacity risks. AI-related firms within the circle may simultaneously

[28]The AI-disruption narrative holds that advances in generative AI lower barriers to entry and accelerate commoditization in software, eroding incumbents' pricing power, margins, and long-term growth. Some analysts argue that the scope of potential disruption remains uncertain as incumbents may benefit from moats rooted in distribution, data, regulation, security, and switching costs—not coding complexity per se.

[29]The hyperscaler category includes seven US firms (Alphabet, Amazon, Apple, IBM, Meta, Microsoft, and Oracle) and three Chinese firms (Alibaba, Baidu, and Tencent). See Online Annex 1.6 for more details.

Figure 1.17. Firms in the Artificial Intelligence Value Stack and Their Balance Sheet Vulnerabilities

Core AI firms do not currently exhibit balance sheet vulnerabilities, unlike less systemically important firms.



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

Note: In the color scheme, red refers to higher vulnerabilities in the form of higher leverage, capital intensity, and valuations, and lower liquidity and profitability. Green refers to lower relative vulnerabilities in the form of lower leverage, capital intensity, and valuations, and higher liquidity and profitability. The AI ecosystem includes 73 public and private firms from Australia, Canada, China, Hong Kong SAR, Korea, The Netherlands, Taiwan Province of China, the United Kingdom, and the United States. The builder and energizer segments represent the more traditional industries, such as power generation and transmission equipment, manufacturing firms, and cooling solution providers; these two segments include 22 firms. The chip developer segment includes 12 leading firms involved in chip designing and manufacturing. The sample includes seven hardware firms. Firms identified as hyperscalers provide large-scale cloud services that operate with massive data center infrastructure (see footnote 29 in the main text). The remaining segments–data managers and software, data centers, and GPU/neocloud operators–include 22 firms. See Online Annex 1.6 for more details. AI = artificial intelligence; CAPEX = capital expenditure.

report inflated revenues, potentially detached from fundamentals, increasing the likelihood of stretched equity valuations and affecting market pricing more generally. Evidence of this dynamic is the sharp increase in market capitalization of firms benefiting from the surge in AI-related investment (including major hyperscalers) after announcements of deals with leading nonlisted AI-related firms such as OpenAI (Figure 1.18, panel 1). Moreover, since the third quarter of 2025, the average correlation of equity returns of listed AI circle firms,[30] net of effects attributable to broader stock market moves, has trended higher on net. IMF staff estimates suggest that of an approximately 12 percentage point increase in cumulative equal-weighted returns across AI circle firms from early September 2025 to end–December 2025, 7 percentage points can be attributed to correlation reinforcement effects within the circle, all else being equal (Figure 1.18, panel 2). This implies a contribution of $40 billion to rise in average market capitalization across these firms from a starting base of about $2 trillion over the said period.

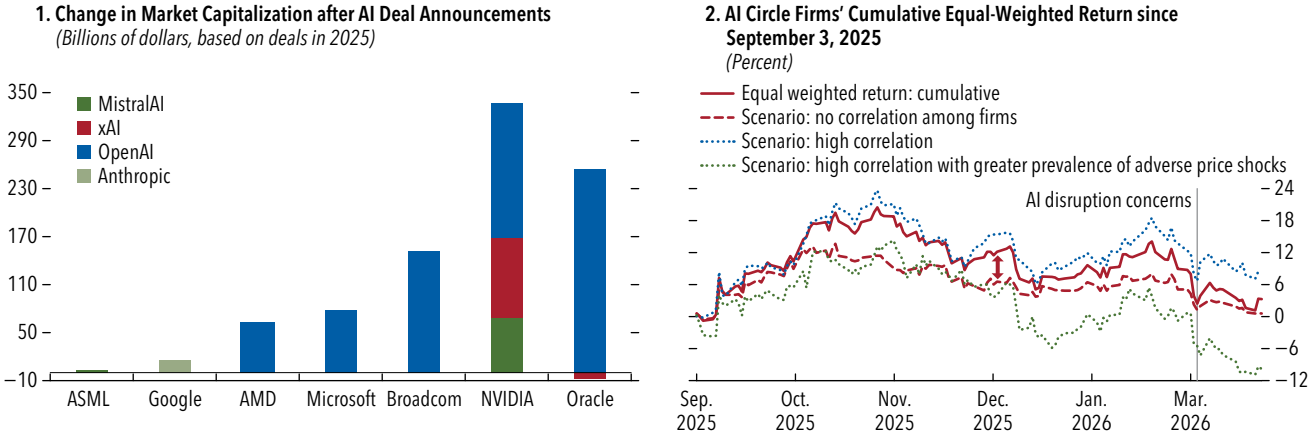
Greater interconnectedness owing to such circular financing structures heightens concerns of systemic spillovers should an adverse shock affect even a single entity (potentially characterized by higher balance sheet vulnerabilities than others). A counterfactual scenario in which correlations increase beyond what the data reflect can deliver even higher returns compared with the baseline but could also render firms susceptible to more pronounced downturns during adverse shocks (see Figure 1.18, panel 2, dotted blue and green lines).

[30]Specifically, AI circle firms are AI-related firms (many of which are classed as hyperscalers) represented in the core of the circular financing structure. These include Amazon, AMD, Alphabet (Google), Intel, Microsoft, Nvidia, and Oracle.

Figure 1.18. Artificial Intelligence Circularity

Market capitalization of hyperscalers and other AI-related firms rises after deal announcements as part of circular financing arrangements.

Return correlations among AI-circle firms could push valuations higher, while at the same time heightening risks of systemic spillovers in the event of adverse shocks.



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

Note: Panel 1 captures market reactions the day of the announcement of a deal with an AI company. If the deal is announced after the market closes, the panel captures the next trading day. In panel 2, equity returns for hyperscalers operating specifically within the circular financing structure are jointly modeled as a multivariate-GARCH system allowing for dynamic variance-covariance matrices, assuming disturbances obey Student's *t*-distribution. Return data used are at a daily frequency and the estimation sample starts January 1, 2020. Returns modeled in the system are first adjusted to purge influence of the broad market (systematic) risk factor by orthogonalizing relative to daily returns on the S&P 500. Cumulative returns under different scenarios represent an average across 50,000 model simulations, for the period starting September 1, 2025, to March 31, 2026. AI = artificial intelligence.

Furthermore, the complex multidirectional channels of shock transmission between circle firms created due to the circular structure could result in nonlinear amplification of adverse shocks, which could propagate to the wider market given centrality of these particular firms in driving AI-related investment, at a time when concentration risk is historically elevated.

For major hyperscalers, earnings growth has kept pace with capital expenditure, with free cash flows remaining at high levels (see Online Annex 1.6).[31] Looking ahead, earnings and cash buffers of hyperscalers could prove insufficient given the estimated $3.4 trillion in AI-related capital expenditure through 2029, potentially creating balance sheet pressures in the coming years. In anticipation of these future expenditures, hyperscalers have raised more than $100 billion in bond financing since January 2025, supplemented by leveraged loans and intercorporate arrangements that are, at times, part of circular financing structures. Private credit financing may also be needed, with insurers and asset-based finance playing a key role in infrastructure debt, while direct lenders finance midsize firms that support AI deployment (see Box 1.3).

That said, appetite for hyperscalers' debt issuance related to the AI capital expenditure (capex) boom in the investment-grade market is very healthy. The average credit quality of hyperscalers is strong given their robust balance sheet positions (as reported in Figure 1.17), supported by their ability to generate significant free cash flows. Therefore, even as the pace of debt issuance has increased, and is expected to stay elevated compared with prior years, financial stability risks remain contained.

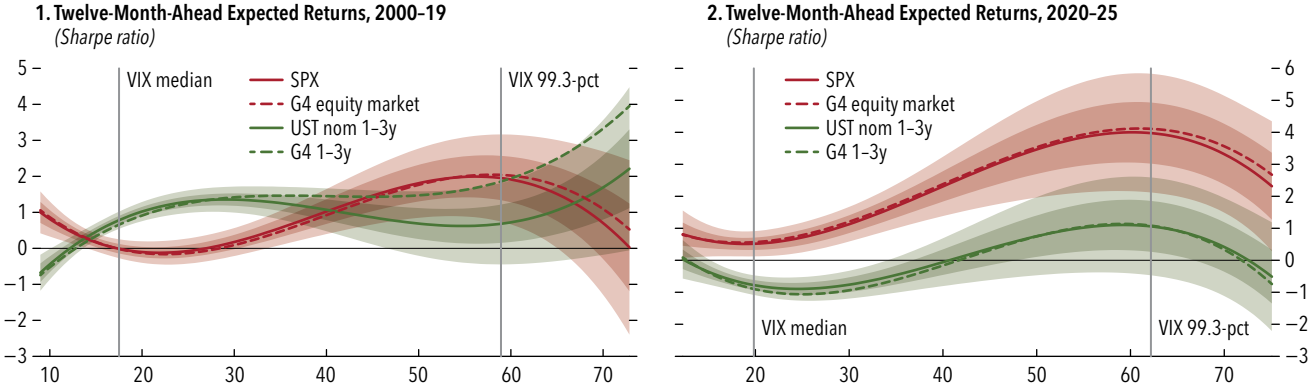
Another factor that may require hyperscalers to potentially increase their scale of debt issuance is related to assumptions around capital obsolescence. Based on accounting depreciation figures reported by major hyperscalers, staff estimates suggest that the current average implied useful life of "property, plant, and equipment" is around seven years. However, GPUs and advanced chips—a major share of AI server and infrastructure costs—could face obsolescence within shorter horizons, owing to the rapid speed of technological advancement in the AI space. Even though obsolescence risk is not an imminent financial stability concern, higher debt could eventually lead to macrofinancial risks in the future (see Box 1.4).

[31]Higher technology investment and expenditure is estimated to have added about 0.3 percentage points to average annualized US GDP growth in the first three quarters of 2025, based on the January 2025 *World Economic Outlook Update.*

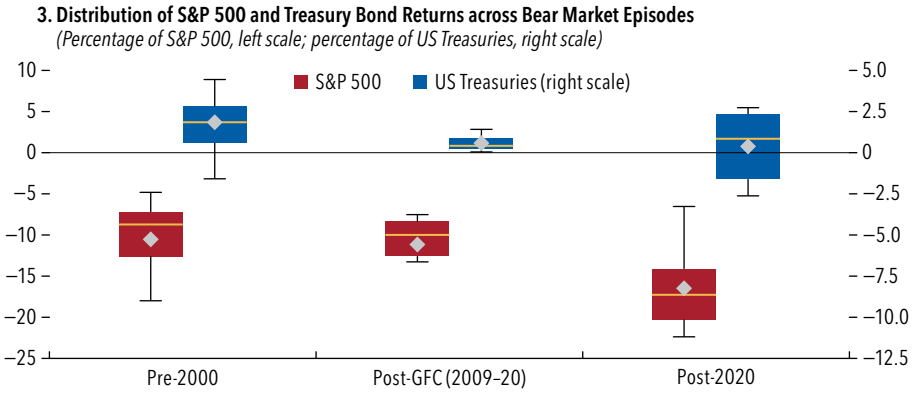
Figure 1.19. Correlation between the Returns of G4 Equities and Sovereign Bonds

Between 2000 and 2019, equities and bonds demonstrated a strong hedging relationship ...

... but the expected returns of both now rise with the VIX, indicating concurrent falling prices.



Stock and bond sell-offs have become more concurrent and larger in recent years.



Sources: Bloomberg Finance L.P.; EUROPACE AG/Haver Analytics; London Stock Exchange Group; and IMF staff calculations.

Note: Panels 1 and 2 show smooth regression coefficients of equities and bond expected returns on VIX (proxy for broad market volatility). Returns are constructed as consecutive overlapping 12-month holding period excess returns observed at weekly phasing. Excess returns are calculated over short-term risk-free rates, standardized by volatility (to arrive at Sharpe ratios). Profiles for the US and G4 aggregate are compared following Adrian, Crump and Vogt (2019). One- and two-standard-deviation confidence intervals are shown. Panel 3 shows the interquartile range of return distributions across bear market episodes in the S&P 500 occurring over selected historical time periods. Using daily returns data, the analysis follows Bry and Boschan (1971) and defines bear episodes as at least 5 percent cumulative downward correction within nonoverlapping windows, and with window length no fewer than five consecutive trading days. Returns included in each period's box, more specifically, reflect peak-to-trough moves greater than 5 percent. Mean returns are depicted by diamonds, while yellow lines depict median returns. GFC = global financial crisis; nom = nominal; pct. = percentile; SPX = S&P 500 Index; UST = US Treasuries; VIX = Chicago Board Options Exchange Volatility Index.

Equities and Bonds Are Now More Likely to Sell Off at the Same Time

Another amplification channel corresponds to the higher likelihood of equities and bonds selling off at the same time during an adverse shock. The current conflict in the Middle East may once again bring this key change in financial markets seen in recent years to the fore.[32] Historically, equities and bonds have had a strong hedging relationship, serving as the foundation of diversification strategies for investors. However, when equities and bonds decline at the same time, sell-offs are amplified through forced deleveraging in both equities and bonds, particularly by risk parity and other volatility-targeting funds. It also instills a "only cash is safe" mentality among investors, exacerbating sell-offs in all other asset classes and limiting the monetary and fiscal policy headroom to mitigate the market turmoil.

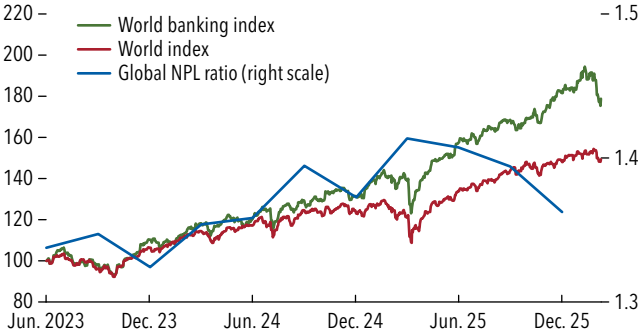
Indeed, from 2000 to 2019, when market stress (proxied by the VIX) increased, standardized expected returns for G4 equities increased as stock prices fell, while expected returns for G4 bonds declined as yields fell (Figure 1.19, panel 1). In the past five years,

[32]Much of the earlier postpandemic period was characterized by a high prevalence of supply shocks, originating from supply chain disruptions that reduced productive capacity, and translated to persistent upward pressure on inflation, thereby contributing to progressive erosion of hedging properties of bonds.

Figure 1.20. Global Bank Performance and Key Risk Indicators

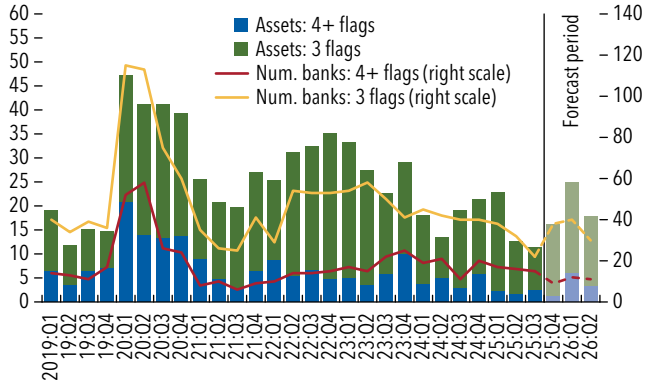
Banks have outperformed the broader market but are facing challenges in 2026 from shifts in risk sentiment.

1. Global Bank Performance and the Nonperforming-to-Total-Loans Ratio
(Prices, indexed June 30, 2023 = 100, percent)



The number of vulnerable banks has declined since 2022, but analysts' forecasts suggest near-term deterioration.

2. Banks Signaling in Most Key Risk Dimensions
(Total assets in trillions of dollars, left scale; number of banks, right scale)



Sources: Bloomberg Finance L.P.; Visible Alpha S&P Global Market Intelligence; and IMF staff calculations.

Note: Panel 1 is based on the Bloomberg World Banking Large and Mid-Cap Price Return Index and the Bloomberg World Large and Mid-Cap Price Return Index. The nonperforming-to-gross-loan ratio is defined as the current period total of nonperforming loans to current period loans held in the portfolio, based on data for 310 publicly traded banks across regions from the second quarter of 2023 to the third quarter of 2025, and on forecasted nonperforming loan ratios for the fourth quarter of 2025 if the actual ratio was not available. Panel 2 uses consensus forecasts for the fourth quarter of 2025 if actual data were not available, as well as aggregate consensus forecast data for the first quarter and second quarters of 2026. NPL = nonperforming loan.

however, the rising VIX has coincided with rising expected returns—or falling prices—for both equities and bonds (Figure 1.19, panel 2). Concerningly, the magnitude of price falls has also increased, along with correlation. From 2009 to 2020, average equity drawdowns were around –9 percent, while Treasuries always delivered positive returns (Figure 1.19, panel 3). In contrast, average equity losses during bear market episodes since 2020 have deepened to around –17 percent, while Treasuries have frequently sold off at the same time. This new pattern is robust to excluding extreme episodes such as the global financial crisis and the pandemic "dash for cash."

Medium-Term Vulnerabilities

Banking Sector Resilience and Emerging Vulnerabilities

The conflict in the Middle East is weighing on a broadly resilient global banking sector. Lower-than-expected credit costs have been a key driver of banks' resilience. While nonperforming loan ratios have edged up in some markets—particularly in consumer segments—global asset quality remains stable, with the global nonperforming loan ratio below 1.4 percent (Figure 1.20, panel 1). However, stagflation concerns, AI-led disruption risks, and vulnerabilities signaled by high-profile credit events that highlighted weak lending standards, lack of due diligence, and fraud are starting to pressure banks in some countries and have gradually tightened lending conditions (see Online Annex 1.7, Section 1.7.1).

Despite the broad resilience of the global banking sector, pockets of vulnerability remain. Banks with aggregate assets of $25 trillion—12 percent of estimated global banking assets—have been included in the IMF monitoring list (Figure 1.20, panel 2).[33] Although the number of banks in the monitoring list has declined since 2022, analysts' forecasts point to some near-term deterioration in earnings, with mounting pressure on market and liquidity risk metrics likely to further pressure the weaker tail of banks (see Online Annex 1.7, Section 1.7.2).

Two concerns need close attention in the medium term. The first is the increasing bank exposure to NBFIs, which has grown steadily to nearly 13 percent of world GDP (Figure 1.21, panel 1), reflecting the expanding role of NBFIs and their growing complementarities with banks. Stress in the NBFI sector can significantly reduce the capital ratio of banks, given the substantial size of these exposures.[34]

[33]See the October 2023 *Global Financial Stability Report* for the methodology.

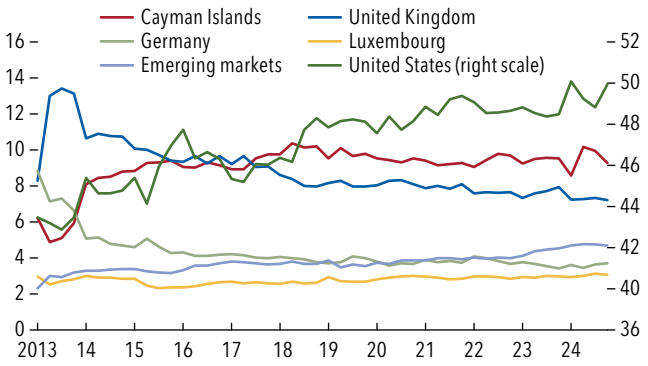
[34]See the October 2025 *Global Financial Stability Report.*

Figure 1.21. Growing Global Interconnections between Banks and Nonbank Financial Intermediaries

Domestic and foreign claims to NBFIs are increasing, with the United States the clear leader among recipient countries.

1. Top Recipient Destination Economies

(Percentage of global total claims for non-US recipients, left scale; and US, right scale)



Banks in the United Kingdom, Japan, and Canada are the primary providers of funding to US NBFIs.

2. Banks' Foreign and Domestic Claims to Nonbank Financial Intermediaries in Selected Economies

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

Notes: The CBSG is used to track banks' exposures to country risk, that is, the risk arising from their exposures to NBFIs domiciled in a particular country. The CBSG provides information about on-balance-sheet positions as well as off-balance-sheet exposures. The CBSG allocates all bank positions to the country of the banks' headquarters (that is, the home country). Intragroup positions are netted out, leaving only positions with unaffiliated entities. Only a limited number of countries report CBSG data. In panel 2 the size of the links is proportional to the amount of the economy's claims. CBSG = Consolidated Banking Statistics on a Guarantor Basis; NBFIs = nonbank financial intermediaries.

Nearly half of bank NBFI exposures are cross-border and highly concentrated. Five jurisdictions account for 73 percent of bank cross-border funding—up 5 percentage points since 2013 (Figure 1.21, panel 1). Much of the cross-border lending from Canadian, Japanese, and UK banks is directed to the United States (Figure 1.21, panel 2). These interconnections support market functioning but can transmit and amplify stress during turmoil. Sudden unwinding of funding, simultaneous NBFI credit line usage, and margin calls on derivatives and repos can trigger liquidity pressures and forced deleveraging. Given the concentrated and global nature of these links, stress from the US NBFI sector can quickly spread across institutions and borders through credit losses, funding withdrawals, or fire sales, worsened by data gaps.

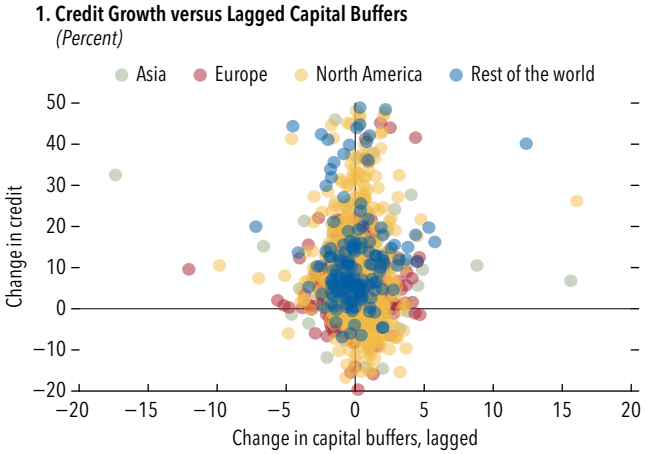
The second involves possible changes in bank capital, a major source of their recent resilience. Some authorities have proposed reviewing and simplifying capital regulations (see online Annex 1.7). Such a review could help identify unnecessary complexity that raises compliance costs, thereby supporting credit supply and growth. Reforms, however, must be targeted, as capital freed by lower requirements could support new lending but could also increase higher payouts.

Evidence suggests that regulatory easing boosts lending, but the effect depends on initial capital positions and is short lived. Releases of countercyclical buffers mainly support lending by banks with limited headroom, while well-capitalized banks respond much less (Raja 2022; Dursun-de Neef, Schandlbauer, and Wittig 2023; Bedajo and Galán 2024). The impact typically fades after about three quarters. Over the medium term, stronger capitalization lowers equity costs and supports lending (Gambacorta and Shin 2016). Indeed, changes in capital buffers and credit growth show little correlation (Figure 1.22, panel 1). Recent earning transcripts also suggest that banks could prioritize capital distributions—payout ratios rose in 2025, and many global banks have reaffirmed plans to sustain or expand dividends and share buybacks in 2026. Furthermore, many banks have reported capital levels above internal targets, suggesting room to increase payouts (Figure 1.22, panel 2; Online Annex 1.7, Section 1.7.4).

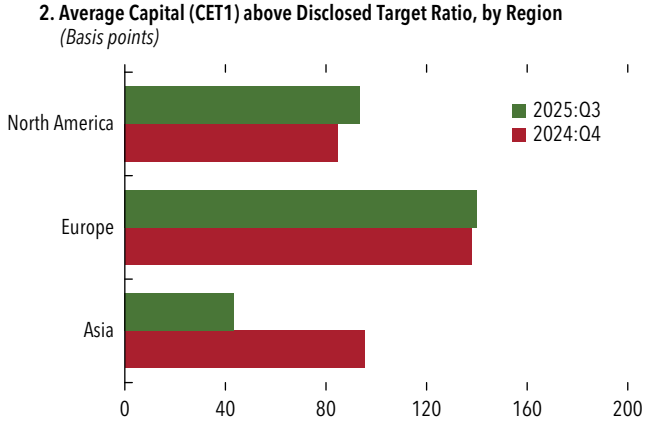
Easing capital rules also entails risks. Banks with weaker capital positions tend to deleverage and restrict lending more during crises (Gambacorta and Marques-Ibanez 2011). Accounting practices may overstate equity values, reinforcing the case for adequate

Figure 1.22. Capital Distributions by Banks Are Expected to Remain High

Capital buffers and annual credit growth reveal little correlation, even after controlling for lags.



Capital ratios substantially exceeded internal target levels, suggesting a potential increase in payouts.



Sources: S&P Capital IQ Pro; Visible Alpha S&P Global Market Intelligence; and IMF staff estimates.

Note: Panel 2 is based on earning transcripts for 78 publicly traded banks, including 20 global systemically important banks reporting CET1 target ratios (lower bound). Europe includes the United Kingdom, and Asia includes Australia. CET1 = Common Equity Tier 1.

capital requirements. Poorly coordinated reforms across jurisdictions could increase regulatory arbitrage and weaken prudential standards.

Global Risks Result in More Vulnerable Frontier Markets

The war in the Middle East has highlighted differences across frontier markets in their exposure to external shocks and financing pressures. Since the onset of the conflict, sovereign spreads of frontier economies have mostly widened, with larger increases concentrated among lower-rated issuers and countries more exposed to current account pressures and adverse terms-of-trade shocks (Figure 1.23, panel 1). This suggests that recent market reactions have been driven primarily by country-specific risk exposures rather than a broad asset class repricing. IMF staff have developed a Frontier Market Resilience Index (FMRI), based on selected macroeconomic and governance indicators (see Online Annex 1.8), which suggests that resilience improved across many frontier markets between 2022 and mid-2025 (Figure 1.23, panel 2), supported primarily by stronger external positions and lower inflation. This improvement has coincided with the tightening of frontier economy sovereign spreads. However, the improvement is uneven across countries, and elevated public debt levels continue to weigh on aggregate resilience. Going forward, the model results suggest that pressure on inflation and external positions in frontier markets as a result of the conflict in the Middle East could result in much wider spreads across the weaker and most affected frontier markets.

At the same time, market pricing increasingly differentiates across frontier sovereigns, including between those that have restructured international debt and those that have not. Sovereigns that have restructured international debt since 2020 on average trade at prices higher than similarly rated peers that have not undertaken market debt restructuring (Figure 1.24, panel 1). Near-term refinancing pressures for lower-rated sovereigns are contained and are only expected to gradually rise during the next three to five years. The 12-month ahead repayments for emerging markets overall peak at around $140 billion in the first quarter of 2030 (Figure 1.24, panel 2).

Foreign Exchange Buffers Are Constrained for Most Vulnerable Emerging Markets

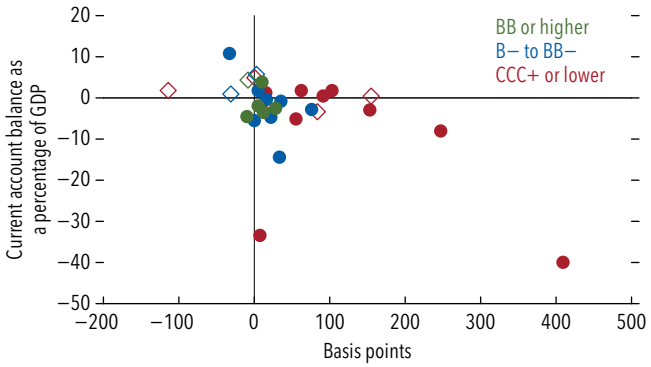
Amid the ongoing geopolitical shock, the most vulnerable emerging markets have limited foreign exchange rate buffers. Although foreign exchange reserves across most emerging markets have risen gradually since early 2024, coinciding with the peak US rates, foreign exchange reserve adequacy, measured

Figure 1.23. Uneven Improvement in Frontier Market Resilience

Frontier sovereign spreads have widened modestly since the conflict in Iran, with markets differentiating based on energy exposure, external vulnerabilities, and credit quality.

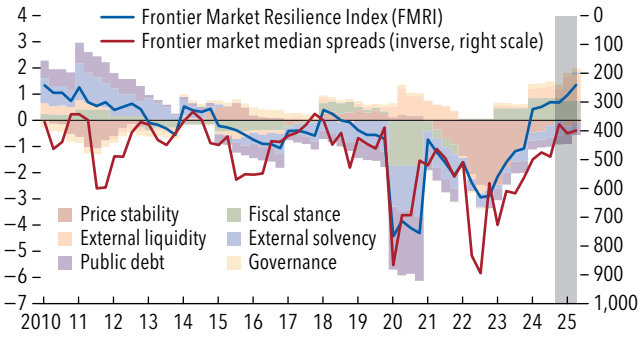
Improved frontier market resilience is mirrored by tighter spreads, despite public debt vulnerabilities.

1. Range of Changes to Hard-Currency Index Spread since February 27, 2026



2. Aggregate Frontier Market Resilience Index and Subcomponents; Average Frontier Market Spreads

(Z-scores, left scale; basis points, inverted, right scale)



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

Note: Panel 1 index spreads are based on the JPMorgan EMBIG Diversified Index. Changes are reflected up to March 27, 2026. A circle indicates an energy importer and a diamond shape indicates an energy exporter. Panel 2 indicators are standardized as *z*-scores relative to the 2010–19 baseline. For variables where higher input values imply weaker resilience (for example, inflation, public debt, foreign exchange debt share), signs are inverted so that higher index values uniformly indicate stronger resilience. The shaded area in panel 2 is based on preliminary data and IMF staff estimates.

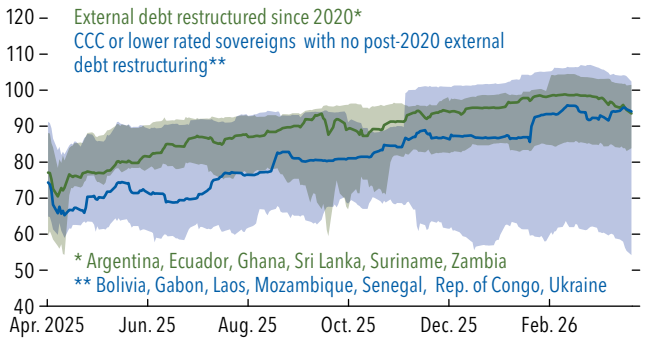
Figure 1.24. Pricing of Restructured External Debt and Upcoming Maturities of Emerging Markets

The external debt of economies that have been restructured is priced at levels comparable to or higher than other similarly rated sovereigns.

Refinancing pressures of emerging markets are modest in the near term, with more sizable maturities in the three- to five-year horizon.

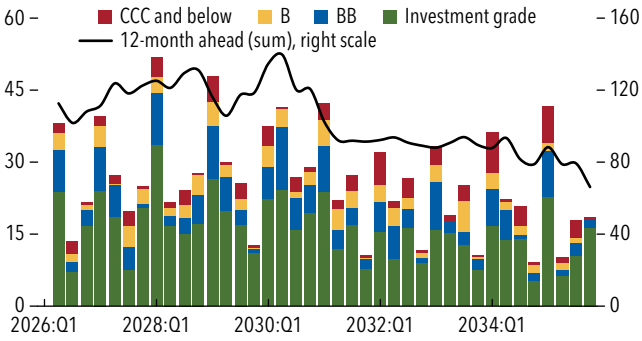
1. International Bond Prices of Select Economies

(Price, percentage of par)



2. Amount of Emerging Market Sovereign Bonds That Are Maturing

(Billions of dollar equivalent)



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

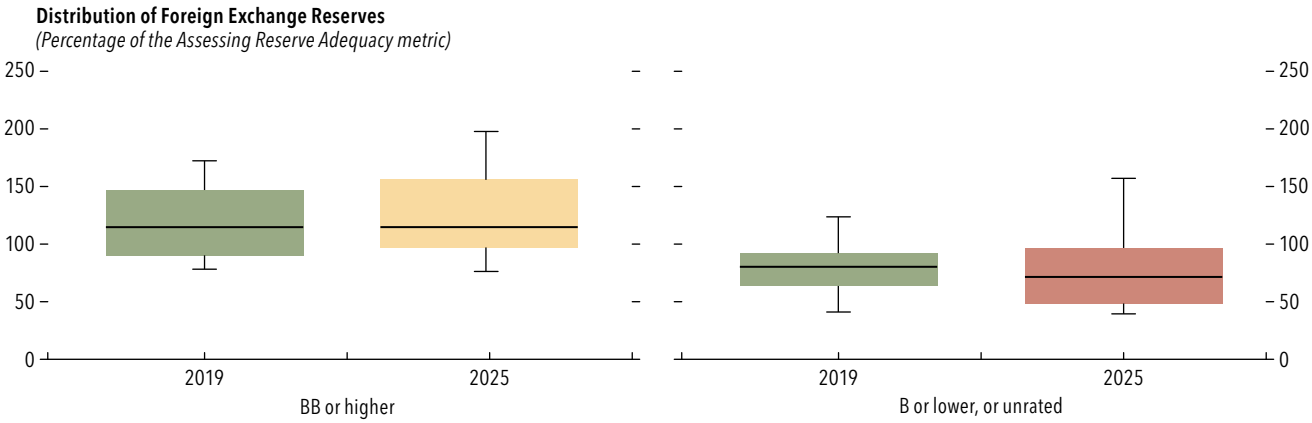
Note: Panel 1 is based on international bonds that mature in, or close to, 2030.

against the IMF's Assessing Reserve Adequacy metric, has remained largely stable for most emerging markets and has not recovered to prepandemic levels. For more vulnerable economies,[35] particularly those with limited or impaired access to international markets, the adequacy of reserves has deteriorated and remains worse than before the pandemic, in contrast with their higher-rated peers (Figure 1.25, panel 2). Many emerging markets did not take full advantage of the benign market environment of accommodative global financial conditions and stronger currencies before the conflict

[35]Emerging markets having an average rating of B or lower, or not rated, are considered the most vulnerable here.

Figure 1.25. Easing Strains on Foreign Exchange Reserves Creates Scope to Rebuild Buffers

Foreign exchange reserve adequacy has not recovered to prepandemic levels for vulnerable emerging markets.



Sources: EUROPACE AG/Haver Analytics; IMF, Assessing Reserve Adequacy dataset; and IMF staff calculations.

Note: Data includes 16 emerging markets rated B or lower or not rated. Credit ratings are an average across three international rating agencies as of December 31, 2025.

in the Middle East to strengthen external positions, including by rebuilding reserve adequacy. This underscores the need to carefully calibrate policy responses to external shocks with tools within the Integrated Policy Framework.

Policy Recommendations

Amid the ongoing war and financial market turbulence, authorities should prepare to deal with possible market dysfunction and limit the risk of destabilizing feedback loops. With amplification channels stronger and policy space more constrained from fiscal pressures and upside inflation risks than in past cycles, authorities should ensure that sound financial safety nets are in place, contain inflationary pressures, plan to rebuild fiscal and financial buffers, and bolster the resilience of financial institutions, before vulnerabilities bind and self-reinforcing stress takes hold.

Support market functioning. National authorities should be ready to intervene and ensure that central bank liquidity facilities are operationally ready, to be deployed swiftly to support market functioning during stress. Authorities should also ensure that financial institutions can access these facilities, including through periodic tests of access to central banks' instruments. Liquidity can be provided to nonbanks with appropriate guardrails (see Chapter 2 of the April 2023 *Global Financial Stability Report*). All this should help mitigate the funding and liquidity stress at the locus of past episodes of financial turmoil. At the same time, the financial sector needs to enhance recovery and resolution frameworks to manage shocks without systemic disruption or requiring extraordinary public support. Bilateral and regional currency swap lines are crucial for preserving stability in funding and foreign exchange markets.

Monetary policy. Monetary policy should preserve price stability and be attuned to spillovers from actual inflation to inflation expectations, especially medium to long term. With the memories of the postpandemic inflation surge fresh, second round effects could be larger than in 2021–22. At the same time, tightening prematurely could be destabilizing if financial conditions tighten further or consumer and business confidence decline. If monetary policy was already well calibrated before the current shock, monetary authorities may benefit from waiting for more clarity about its likely impact, but they should stand ready to tighten policies to contain second round effects. Central banks with less firmly anchored inflation expectations—and that have faced persistently high inflation—may need to respond faster. On the other hand, central banks that expected to ease policy before the war should proceed only with robust evidence that inflation expectations remain well anchored and that inflation is clearly converging back to target, as premature easing in a positive scenario could exacerbate risk taking, reinforcing financial imbalances and de-anchor inflation expectations. Central banks facing negative demand shocks

may provide further accommodation while remaining attentive to price and financial stability risks. Across jurisdictions, clear communication should help avoid excessive market reactions to individual data points, anchor inflation expectations and in turn help stabilize bond and funding markets.

Emerging market policy responses. Authorities should continue to strengthen policy frameworks and policy credibility. Proactive monetary tightening by several emerging market central banks in the aftermath of the COVID-19 pandemic was crucial to overall resilience. Exchange rates should generally be allowed to move flexibly to facilitate macroeconomic adjustment to shocks. Where tightening global financial conditions, carry trade reversals, and higher energy price volatility pose imminent risks of excessive or disorderly foreign exchange movements, the IMF's Integrated Policy Framework offers guidance on when temporary foreign exchange intervention and capital flow management measures can be appropriate, provided they support credible macroeconomic policies and necessary adjustments. Stronger surveillance and data systems are also needed to track nonresident hedge funds and leveraged investors active in emerging market assets and to assess the chances of abrupt capital flights. For weaker sovereign borrowers, efforts to address risks from high debt and fragile recovery should continue, supported by multilateral cooperation and strong international assistance.

Fiscal policy and rollover risks in bond markets. The recent rise in term premiums of core sovereign bonds leaves little room for fiscal missteps. In many economies, fiscal policy remains too loose despite historically high debt, accommodative financial conditions before the war and, in some cases, persistent above-target inflation. Rising debt-servicing costs and weakening the safe haven role of sovereign bonds are of concern. Given these pressures, fiscal stances must shift toward appropriate tightening to rebuild buffers and place public debt on a clearly sustainable path in the years ahead (see the April 2026 *Fiscal Monitor*), particularly in advanced economies facing rising spending needs from population aging, defense requirements, and heightened geopolitical risks. Fiscal support to protect vulnerable groups from the current energy shock should be explicitly temporary and tightly targeted, with clear sunset clauses and identified offsets. At the same time, an overall tight fiscal stance should be maintained without offsetting the monetary policy stance and consistent with credible medium-term fiscal consolidation. Jurisdictions considering shorter-term issuance should assess rollover risks. Sovereign debt management strategies must account for central bank liquidity frameworks to avoid inadvertently straining secured funding markets when moving toward shorter maturities.

Funding market stability. Periodic strains in short-term funding markets call for strengthening market infrastructure by expanding central clearing for government bond repos, especially where bilateral markets dominate. This should reduce counterparty risk, enhance netting, and support intermediation capacity. Wider clearing also needs to be paired with robust central counterparty risk management, including resilient margining, adequate default management resources, and credible recovery and resolution plans, to avoid concentrating systemic risk, alongside reforms designed to reduce procyclicality in repo haircuts and margins.

Institutional governance. As financial shocks become harder to contain and policy mistakes become more costly, strong governance frameworks for central banks and financial sector supervisors are critical. Central banks' operational independence, grounded in law and supported by adequate institutional and financial autonomy, must be complemented by clear mandates and robust accountability to ensure policy credibility and public trust. For central banks, accountability is essential to anchor inflation expectations and insulate monetary policy from short-term pressures. Likewise, effective financial supervision requires authorities that are operationally independent, adequately resourced, and endowed with sufficient legal powers to act decisively in pursuit of clearly defined financial stability objectives. Weaknesses in independence, mandates, or enforcement powers have repeatedly been associated with heightened systemic risks, underscoring that sound governance is foundational to resilience and stability.

Banking sector resilience. Elevated vulnerabilities underscore the importance of maintaining the resilience of the banking sector by completing the implementation of the Basel framework and avoiding uncoordinated review of regulations that could undermine the effectiveness of international prudential standards. A review of financial regulatory and supervisory frameworks aimed at reducing undue complexity and ensuring consistency with financial institutions' systemic importance and risk profiles could be beneficial to growth. Such frameworks, however, must continue

to safeguard firm-level soundness and systemic financial stability, and be internationally coordinated to avoid arbitrage. Regulatory changes should consider the phase of the cycle to avoid procyclicality and guard against excessive risk taking in markets.

Sovereign–bank nexus. The deepening sovereign–bank nexus calls for strengthening systemwide surveillance and stress testing to explicitly capture sovereign risks. Financial repression measures on banks to hold excessive sovereign debt should be gradually unwound. For less-developed emerging markets, this should be complemented with efforts to broaden and deepen local capital markets and reduce excessive reliance on the domestic banking system for sovereign financing. Where bank sovereign exposures are large, supervisors should consider options to weaken this nexus, such as capital surcharges on sovereign bond holdings above specified thresholds. To enhance market discipline and risk monitoring, policymakers should promote more granular and comparable disclosure of bank sovereign exposures, including information by currency denomination and accounting classification.

Nonbank financial intermediaries. As NBFIs grow more leveraged and more connected to banks, it is crucial to close remaining data gaps, improve cross-jurisdictional data-sharing, and enhance oversight. Although most banks are well capitalized and broadly resilient to standard stress tests, growing exposures to NBFIs require improvements in data reporting to ensure that supervisors have sufficient information to account for NBFIs' increasing leverage, interconnectedness, and liquidity risk. Consistent with Financial Stability Board (FSB) recommendations on NBFIs, enhancing transparency and reporting, as well as collaborating, when appropriate, with foreign authorities to reduce challenges that hinder effective cross-border risk identification and monitoring, is important and will allow authorities to better address contagion risks from domestic and foreign NBFIs in the context of elevated and growing cross-border activities. The growth of NBFIs may also require expanding central bank operations to address market dysfunctions linked to NBFI liquidity stress.[36]

Margining and counterparty risks. Effective supervision of central counterparties is a key lever for containing liquidity and leverage risks arising from NBFIs. Supervisors should ensure sound margining, haircuts, and collateral valuation practices to limit excessive leverage and procyclicality. Strong counterparty credit risk management, including exposure limits, stress testing, and scrutiny of NBFI liquidity risk management, can help contain leverage and liquidity mismatches that could amplify market turmoil. Enhanced transparency, supervisory data sharing, and coordinated oversight of banks and central counterparties further support early detection and mitigation of systemwide vulnerabilities in interconnected repo and derivatives markets.

Monitoring credit markets. Stress tests and scenario analyses should be applied to banks and, where possible, to NBFIs to assess the impact of a potential rise in corporate credit distress. Recent high-profile credit failures have illustrated weaknesses from poor lending standards, insufficient due diligence, opaque financing structures, and the double-pledging of collateral, all of which require attention. As retail and semiliquid structures gain market share within private credit, the timely recognition of losses in loan valuations becomes increasingly important to help minimize self-reinforcing redemption pressures during periods of market stress.

[36]See Chapter 2 of the April 2023 *Global Financial Stability Report.*

Box 1.1. Rising Japanese Government Bond Yields Could Affect Global Asset Allocation

The sharp and volatile rise of Japanese government bond (JGB) yields since October 2025, against a backdrop of gradual monetary policy tightening and political developments, has raised the possibility of shifting asset allocations by both residents and nonresidents. The 40-year bond reached 4.21 percent on January 21, 2026—a historic high—before retracing (Figure 1.1.1, panel 1).

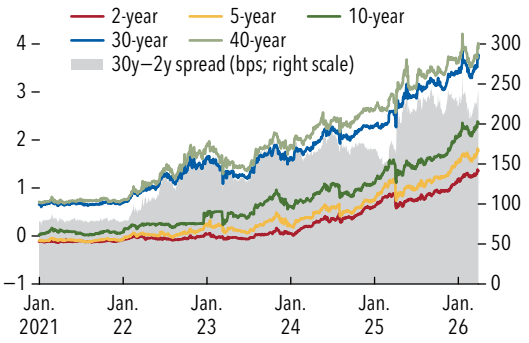
Increases in the long-dated segment of the JGB curve have been the most pronounced. The 10- to 30-year segment is particularly steep by global comparison. Part of the steepness reflects a higher term premium, as risk-free rate expectations have remained range bound. Factors such as the Bank of

This box was prepared by Sally Chen and Jing Zhao.

Figure 1.1.1. Sharp Yield Increase and Concentrated Holdings Put Liquidity under Stress

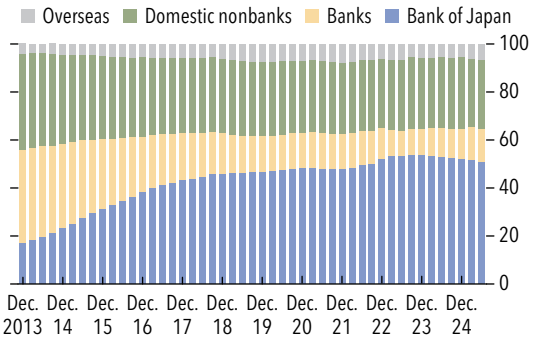
Japanese government bond yields have risen to a multidecade high.

1. Japanese Government Bond Yields
(Percent, left scale; basis points, right scale)



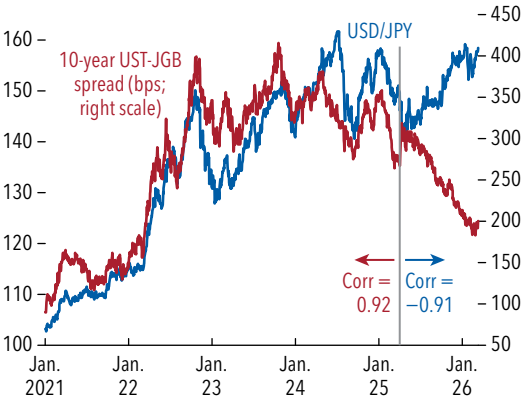
The Bank of Japan remains the largest holder.

2. Composition of Domestic Japanese Government Bond Holdings
(Percent)



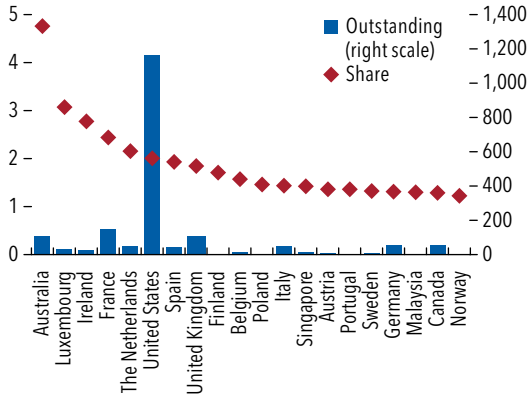
The positive correlation between narrowing spreads and a stronger yen no longer holds.

3. Yield Spread between US Treasury Bonds and Japanese Government Bonds and the Dollar–Yen Exchange Rate
(Yen per dollar, left scale; basis points, right scale)



Repatriation of Japanese yen could affect European markets disproportionately.

4. Japan's Outstanding Debt Securities Holdings and Share to Market Cap at the End of 2024
(Percent, left scale; billions of dollars, right scale)



Sources: BIS Debt Securities Statistics; Bloomberg; CEIC; Japan Ministry of Finance; and IMF staff calculations.

Note: Panel 3 shows the correlation between US dollars (USD) and Japanese yen (JPY) and the 10-year UST–JGB yield spread for two periods: January 2021 to March 2025 and April 2025 to March 2026. For panel 4, debt securities include issuance by both public and private sectors from non-Japanese entities. bps = basis points; Corr = correlation; JGB = Japanese government bond; JPY = Japanese yen; UST = US Treasuries.

Box 1.1 *(continued)*

Japan's changes in monetary policy and the easing of special demand from insurers, which were responding to regulatory requirements that mandated a more dynamic, market-consistent approach to measuring financial soundness may have influenced market dynamics (Figure 1.1.1, panel 2).

Rising JGB yields have imposed sizable unrealized losses on the asset side of JGB domestic investors' balance sheets. Losses suffered by investors before record yield increases in January 2026 offer some guidance on the possible magnitude of effects. For example, yields on the 30- and 40-year JGBs typically preferred by lifers had risen 23 basis points over the previous fourth quarter. Over this period, the largest life insurance companies in Japan—Dai-ichi, Meiji Yasuda, Nippon, and Sumitomo Life—reported a combined unrealized loss of ¥13.2 trillion ($83 billion), compared with about ¥11 trillion at the end of the third quarter of 2025. Despite these losses, financial stability risks appear contained given sizable capital and liquidity buffers at banks and insurance companies (IMF 2024).

A concern is the impact of domestic investment reallocations in response to higher yields. Sharp adjustments seem unlikely, as investment mandates at Japan's largest institutional investors typically adjust gradually. For example, Nippon Life plans a ¥3 trillion shift by selling lower-yielding JGBs in exchange for higher-yielding ones, after a ¥2 trillion rotation during the past fiscal year. Meanwhile, pension funds usually review their investment mandates about once every five years. Moreover, the Bank of Japan remains the largest domestic holder, at 51 percent of total JGBs outstanding as of the end of June 2025, dampening procyclical selling pressures (Figure 1.1.1, panel 2).

Despite rising JGB yields, the yen remains historically weak. Typically, relatively higher JGB yields lead to an appreciation of the yen, as higher yields make the yen and JGBs more attractive to both foreign and local investors. However, this relationship has weakened in recent months (Figure 1.1.1, panel 3). Over this period, the yen has depreciated in trade-weighted terms even as JGB yields have risen. Although the US dollar/Japanese yen cross-currency swap basis has narrowed, reducing hedging costs, yield spreads have shrunk more sharply, making yen carry trades less attractive.

An unwinding of yen carry trades could affect global capital flows as investors reassess relative value across markets. Japanese investors are among the largest holders of US Treasuries and euro area sovereign debt. Increased allocation to domestic bonds in response to changing relative values could spill into global bond markets, increasing debt issuance costs and exacerbating fiscal pressures in other advanced economies. The effect would likely be larger for bond markets in countries where Japanese investors hold a large market share, such as Australia, several euro area countries, and the United States (Figure 1.1.1, panel 4; Carriere-Swallow, Kindberg-Hanlon, and Smirnov 2025; April 2023 *Global Financial Stability Report*). Meanwhile, the JGB market has seen an increase in foreign investor inflows. In 2025, nonresidents bought ¥13.3 trillion net of long bonds (with maturities of 10 years or longer, including over-the-counter trading of public and corporate bonds), which is the largest amount since comparable statistics began in 2005, accounting for 53 percent of all new purchases in 2025, according to data from Japan Securities Dealers Association as of the end of January 2026.

Box 1.2. Financial Conditions: Scenarios and Consequences

Financial markets have so far functioned in an orderly manner amid the war in the Middle East. Although financial conditions have broadly tightened, market liquidity has not materially deteriorated, trading across asset classes has largely not been interrupted aside from a few instances of circuit breakers and trading halts in emerging equity markets, margin calls have reportedly been met, and no major financial institutions have come under severe strains. This resilience points to a favorable scenario in which, if the conflict de-escalates, energy prices normalize, and corporate earnings remain solid, financial conditions could stabilize. Higher productivity growth driven by artificial intelligence (AI) could support fiscal consolidation and rein in bond market fragilities (see the April 2026 *World Economic Outlook*). In addition, a resilient banking system, strengthened by regulatory reforms after the global financial crisis, together with recent improvements in market structure, such as central clearing in bond and repo markets, could help keep financial stability risks in check.

By contrast, the longer the war persists, the greater the risk that global financial conditions could tighten abruptly. In a severe amplification scenario, market functioning could deteriorate as volatility sellers in option markets abruptly unwind their positions and leveraged exchange-traded funds facing rebalancing pressures sell underlying assets, spiking volatility measures like the Chicago Board Options Exchange Volatility Index (VIX), triggering stop-losses, and leading to further sharp selling in a domino effect. Meanwhile, repo markets could begin to strain, prompting hedge funds to briskly unwind their leveraged fixed-income arbitrage trades, further raising bond volatility, and deterring wary investors from buying sovereign bonds as a safe-haven asset. Credit markets could seize up. This would be challenging, potentially requiring central banks to step in with facilities to restore market functioning and preserve financial stability. For emerging markets—especially commodity importers and more vulnerable economies—reserves would be drained, and access to international debt markets constrained. With limited funding options, these countries may turn to their banks and central banks, intensifying the sovereign–bank nexus and inflationary pressures. Financial stability risks would be elevated in this scenario.

The financial stability implications of these risks materializing can be summarized using the growth-at-risk (GaR) framework. Under prevailing global financial conditions (Figure 1.2.1, panel 1, green line), current credit growth, and the *World Economic Outlook* baseline for global growth, near-term financial stability risks are at elevated levels historically. The GaR metric indicates that one-year-ahead global growth could fall below 0.75 percent with a 5 percent probability (Figure 1.2.1, panel 2, black density line). The balance of risks to global growth is tilted to the downside. At roughly the 35th historical percentile, the current GaR is only moderately elevated by historical standards (Figure 1.2.1, panel 3, black line).

In the upside scenario, the war de-escalates and energy prices normalize. In this case, (1) the global equity rally would resume, with market capitalization increasing by a further 10 percent—roughly half the annual gains recorded in 2023 and 2024—easing financial conditions by about one standard deviation; and (2) improved bond market stability would lift credit growth to around half its peak pace during that period. Under this scenario, GaR improves to about 2.6 percent (Figure 1.2.1, panel 2, blue density line).

By contrast, in the downside scenario in which conflict wages on, two shocks could occur simultaneously: (1) global financial conditions tighten about 1.1 standard deviations and stay there (Figure 1.2.1, panel 2, yellow dot); and (2) global credit growth decelerates to its average before the AI boom, weighed down by a global bond market sell-off and rising credit defaults.[1] In this case, GaR deteriorates by 1.2 percentage points relative to the baseline, falling to –0.5 percent (Figure 1.2.1, panel 2, yellow density line).

This box was prepared by Harrison Kraus.

[1]Downside scenarios analyzed in this section are based on those in the April 2026 *World Economic Outlook*, specifically, the inflation, sovereign bond yield, and corporate spread impacts in that scenario are incorporated in the computation of the financial conditions index.

Box 1.2 *(continued)*

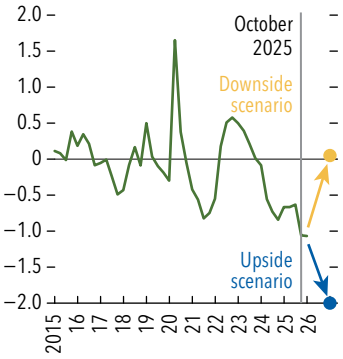
Figure 1.2.1. Growth-at-Risk Metric Indicates That Financial Stability Risks Remain Elevated

Financial conditions could move appreciably under alternative scenarios.

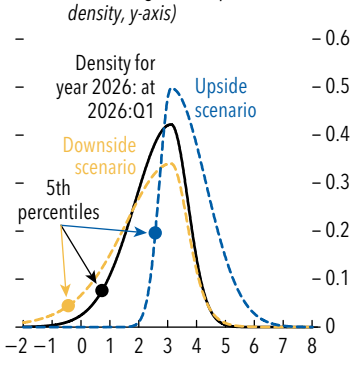
These scenarios affect growth at risk mainly by changing the balance of risks ...

... placing growth at risk in contrasting historical percentiles.

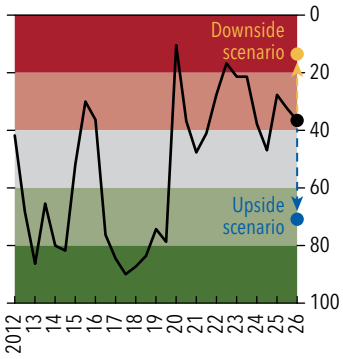
1. Global Financial Conditions Index
(Z-score)



2. Growth Forecast Probability Density
(Real GDP growth in percent, x-axis; density, y-axis)



3. One-Year-Ahead Growth-at-Risk Forecast
(Historical percentile rank)



Sources: Bank for International Settlements; Bloomberg Finance L.P.; EUROPACE AG/Haver Analytics; IMF, International Finance Statistics database; and IMF staff calculations.

Note: Panel 1 shows the time series of the Global Financial Conditions Index (FCI). The blue marker shows the level of FCI in a upside scenario, whereas the yellow marker shows the level in an downside scenario. In panel 2, the mode of the baseline growth forecast density accords with the April 2026 World Economic Outlook database forecast for 2026. The global conditional forecast density model employed here augments information on current quarter growth and financial conditions with a proxy for global credit growth constructed as a PPP-GDP weighted aggregate of private nonfinancial sector credit growth. Blue reflects the upside scenario and yellow reflects the downside scenario. In panel 3, the black line traces the evolution of the fifth percentile (the growth-at-risk metric) of these forecast densities. The intensity of shading depicts the quintiles for the growth-at-risk metric, with the brightest red indicating the worst growth-at-risk quintile and the highest financial stability risks. PPP = purchasing power parity.

Box 1.3. Data Centers Become a Large Part of Global Commercial Real Estate and Require Financing

Data centers have emerged as the top-performing commercial real estate subsector, as they have become core artificial intelligence (AI) infrastructure. It is expected to continue outpacing other commercial real estate segments, supported by record supply pipelines, robust capital inflows, and speculative preleasing in power-constrained markets. Demand—already elevated from cloud growth and broad digitalization—has surged further with the emergence of generative AI and record commitment by hyperscalers.[1] Forecasters broadly expect data center leasing to reach an all-time high in 2026. While the AI data center build-out has so far been concentrated in North America, capacity is also expanding significantly in Asia and in Europe, the Middle East, and Africa. However, utilization rates remain uneven across markets, while power constraints increasingly bind in some jurisdictions. Key vulnerabilities include hyperscaler tenant concentration, rapid tech-driven obsolescence, speculative development timing, and capacity constraints stemming from grid delays and labor shortages, with power interconnection lead times now stretching from two to seven years.

The scale of data center investment is likely to require financing well beyond hyperscalers' cash flows and corporate issuance (Figure 1.3.1, panel 1). Securitization is expanding but remains a niche funding source. Since 2018, $46 billion has been issued, 70 percent of which is in asset-backed securities and 30 percent in commercial mortgage-backed securities. Both markets experienced record issuance in 2025 (Figure 1.3.1, panel 2), with data center securitization expected to reach $150 billion by 2028. Commercial banks are likely to remain a crucial bridge between temporary construction lending and more permanent capital. At the same time, private credit and bespoke financing structures are expanding, while data center real estate investment trusts and operators are increasingly partnering with energy and technology firms to secure power and manage costs, with microgrids and on-site generation gaining traction. While these arrangements can support project viability, greater reliance on circular finance may amplify systemic risk by inflating valuations and masking true underlying demand. A sharp retrenchment in AI capital expenditure, combined with procyclical credit tightening, could expose data center lenders to refinancing risk and transmit stress through banks' growing linkages with private credit and other nonbank financial institutions.[2]

This box was prepared by Zixuan Huang, Corrado Macchiarelli, Timothy Chu, and Sheheryar Malik.

[1]Demand for AI and digital infrastructure pushed sectoral inflows above an estimated $270 billion in 2025 (UNCTAD 2026). Among advanced economies, France ($69 billion), the United States ($29 billion) and Korea ($21 billion) accounted for the bulk of host activity. Emerging markets such as Brazil ($10 billion), Thailand ($9 billion), India ($7 billion), and Malaysia ($4 billion) also secured significant projects.

[2]For now, exposure to AI-related sectors remains modest for the average private credit fund but total private credit lending to such sectors has grown rapidly over the past few years. See Aldasoro, Doerr, and Rees (2026).

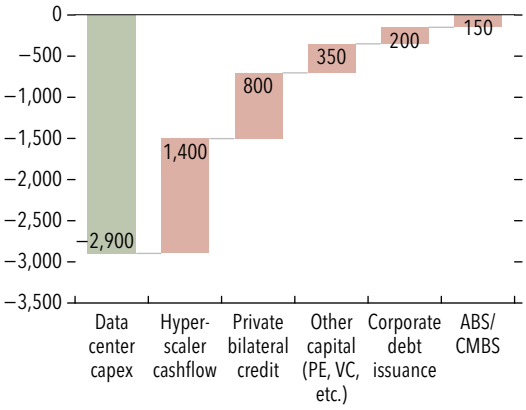
Box 1.2 *(continued)*

Figure 1.3.1. Required Financing and Securitization for Data Centers

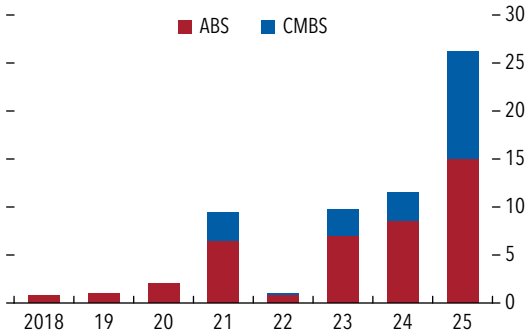
Data center capital expenditure far outstrips other sources, signaling sizable financing gaps through 2028.

Rising asset-backed securities and commercial mortgage-backed securities issuance points to stronger securitization flows as funding needs intensify.

1. Data Center Capital Expenditure through 2028
(Billions of dollars)



2. New Issue Supply of Data Center Linked Asset-Backed Securities and Commercial Mortgage-Backed Securities
(Billions of dollars)



Sources: Bank of America; and Morgan Stanley.

Note: In panel 1, data center capital expenditure through 2028 is based on Morgan Stanley Research estimates as of July 2025. Given recent guidance from hyperscalers on increased AI-related capital expenditure during the fourth quarter of 2025, estimated expenditures and therefore funding sources through 2028 may be meaningfully higher than depicted. Estimates are inclusive of data center spending but not associated power investments. Private bilateral credit includes credit through asset-backed financing. Other capital sources include private equity, venture capital, and sovereign funding. ABS = asset-backed securities; AI = artificial intelligence; CMBS = commercial mortgage-backed securities; PE = private equity; VC = venture capital; YTD = year to date.

Box 1.4. Hyperscalers' Balance Sheets and Obsolescence Risk: Stylized Scenario Analysis

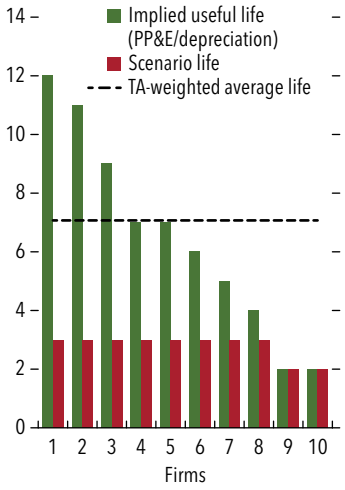
The analysis in this box attempts to demonstrate the relationship between capital obsolescence and debt financing in the case of hyperscalers—which is considered to essentially pose a business risk, rather than having first order implications for financial stability. Using accounting depreciation figures reported by 10 hyperscalers, staff estimates the current average implied useful life of "property, plant, and equipment" is around seven years (Figure 1.4.1, panel 1). However, GPUs and advanced chips are a major share of artificial intelligence (AI) server and infrastructure costs and could face obsolescence within two years. Even though obsolescence risk is not an imminent financial stability risk, higher debt could lead to macrofinancial risks in the future.

This box was prepared by Deepali Gautam, Johannes Kramer, and Aki Yokoyama.

Figure 1.4.1. Impact of Obsolescence Risk on Margin Compression and Debt Dynamics

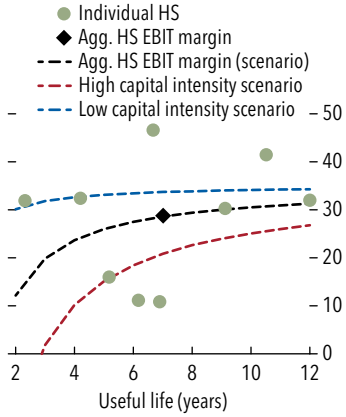
The useful lives of hyperscalers' capital could be shorter than the current implied life of seven years.

1. Useful Life of Hyperscalers' Capital
(Number of years)



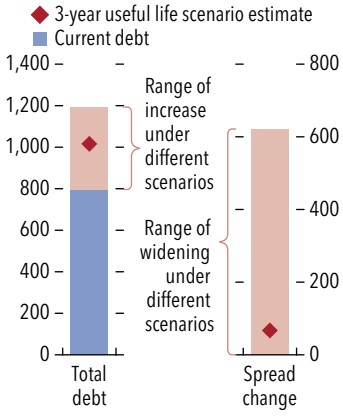
Profit margins could decline nonlinearly as capital becomes obsolete sooner than expected.

2. Hyperscalers' Profit Margins under Selected Obsolescence Risk Scenarios
(Percent, EBIT margin, y-axis; years, useful life, x-axis)



Shorter useful life could translate to higher debt levels and wider credit spreads.

3. Hyperscalers' Debt Outstanding and Modeled Spread Changes
(Billions of dollars, left scale; basis points, debt-weighted average spread change, right scale)



Sources: Bloomberg Finance L.P.; London Stock Exchange Group Workspace; and US Securities and Exchange Commission filings.

Note: In panel 1, useful lives are proxied by dividing PP&E by depreciation based on information from individual US Securities and Exchange Commission 10K filings or other company disclosures. In panel 2, the light green circles indicate the current EBIT margin of individual hyperscalers as of end–2025. Diamond marker indicates the aggregated EBIT margin. Dotted lines indicate aggregated EBIT margins under different useful lives, applying a widely used straight line depreciation methodology (Online Annex 1.6). The "low capital intensity scenario" hypothetically assumes a case with fixed assets being 10 percent of hyperscalers' aggregated revenue, whereas the "high capital intensity scenario" assumes fixed assets being 100 percent. Aggregated hyperscalers' capital intensity, the property-and-equipment-to-revenue ratio, is 46 percent. In panel 3, the "three-year useful life scenario" assumes that the useful life of capital is three years, and firms rely fully on debt financing to maintain the level of productive fixed assets. The higher end of the range assumes useful life of two years. Spread changes are estimated using a Merton-type model (see Online Annex 1.9 for details) where the neutral drift of risk reflects lower return on capital under the scenario, thus sensitivity to shorter useful lives. Agg. = aggregated; EBIT = earnings before interest and taxes; HS = hyperscaler; PP&E = property, plant, and equipment; TA = total asset.

Box 1.4 *(continued)*

Assuming a useful life of three years, as opposed to seven years, aggregate earnings before interest and taxes (EBIT) margin would drop by more than 9 percentage points because of higher depreciation expenses (Figure 1.4.1, panel 2). Furthermore, higher capital intensity tends to increase EBIT margin sensitivity to useful life assumptions. Under a scenario of high obsolescence (three-year useful life) and high capital intensity (the amount of fixed assets fully matching firm revenue), aggregate EBIT margin is entirely wiped out by the new investment required.

With lower EBIT, the amount of additional debt financing needed increases (Figure 1.4.1, panel 3). Under a scenario of three-year useful life of capital and assuming hyperscalers fulfill these additional financing needs by issuing debt, their debt levels could rise from the present $800 billion to more than $1 trillion. In addition, a Merton-style model suggests debt-weighted average credit default swap spreads of hyperscalers could rise by around 60 basis points; a significant increase considering that these spreads are currently in the range of 20 to 160 basis points (see Online Annex 1.9). Overall, this analysis demonstrates that underestimation of obsolescence risks and greater reliance on debt financing for investment could lead to a meaningful rise in corporate risk premium.

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