International Monetary Fund

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Volatility and Risk Institute 4th Annual Conference

"Managing Compound Risks in a Polycrisis World"

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A Financial System Tested By Higher Inflation and Interest Rates

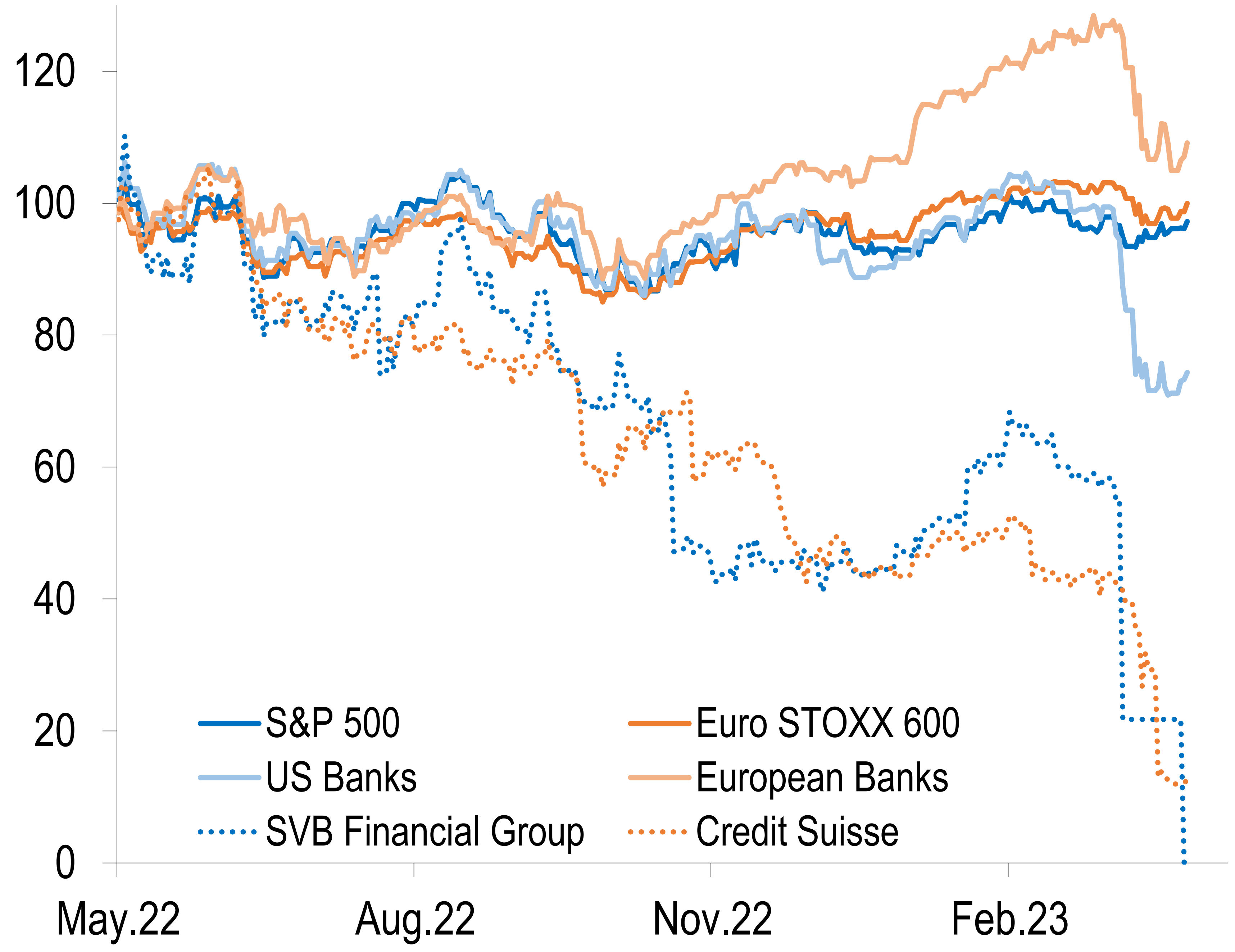
- **The resilience of the global financial system has been severely tested since October.**
- **Market sentiment remains fragile.**
- **Downside risks to the global economy are still elevated.**
- **Higher rates environment poses risks to vulnerable emerging and frontiers countries.**

Global Financial Markets Facing a Banking Stress Amid Elevated Vulnerabilities

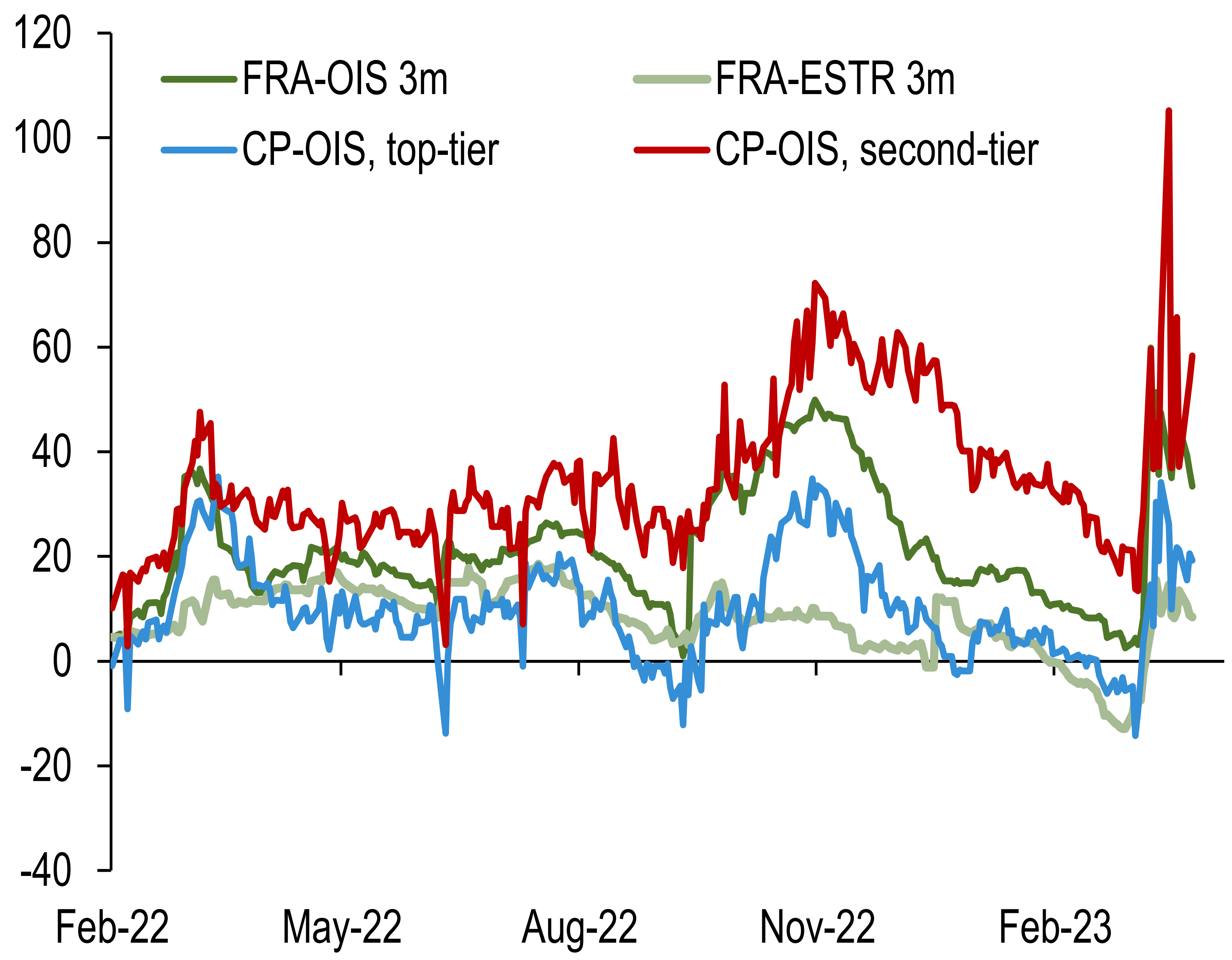
The Recent Banking Stress Jolted Financial Markets

The US regional banks and Credit Suisse turmoil led to a selloff of US and European banks 'stock prices and tightening of funding conditions.

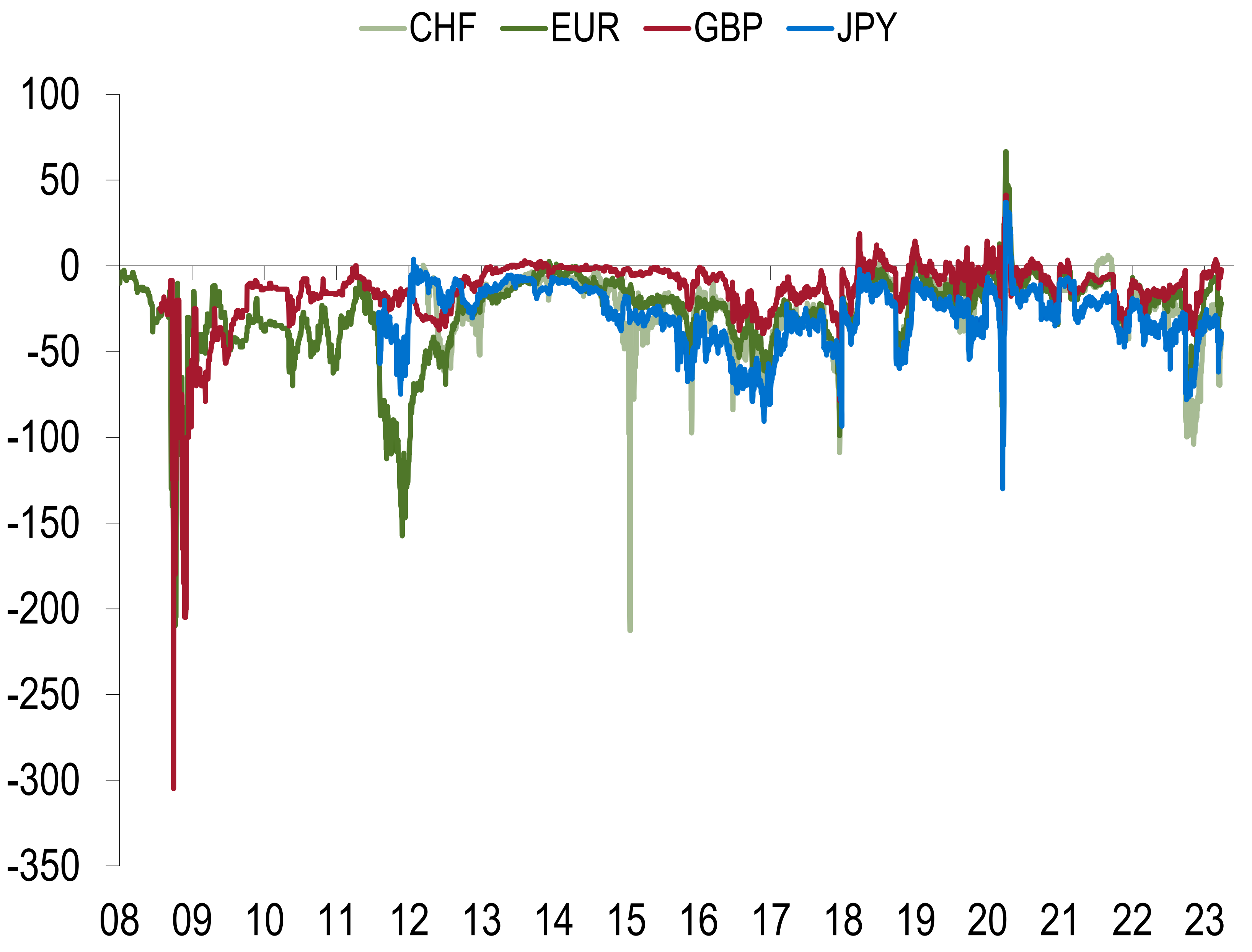
Performance of selected US and European Equity Indices and Stocks
(Indexed to 100 on May-2022)



Interbank Funding Spreads in the US and Euro Area
(Basis points)



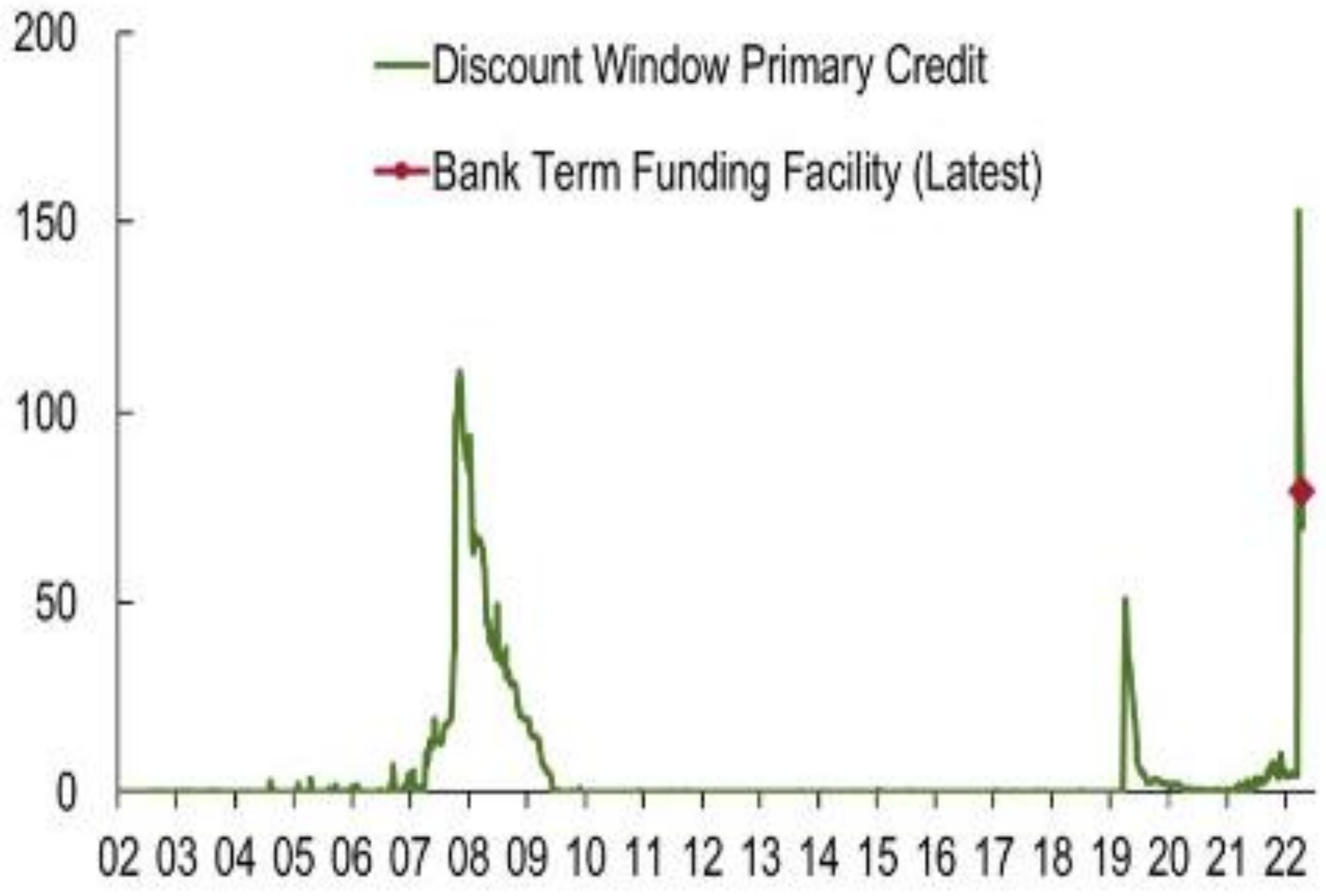
Cross-currency dollar funding spreads
(Basis points)



Borrowings From Emergency Lending Facilities Have Jumped

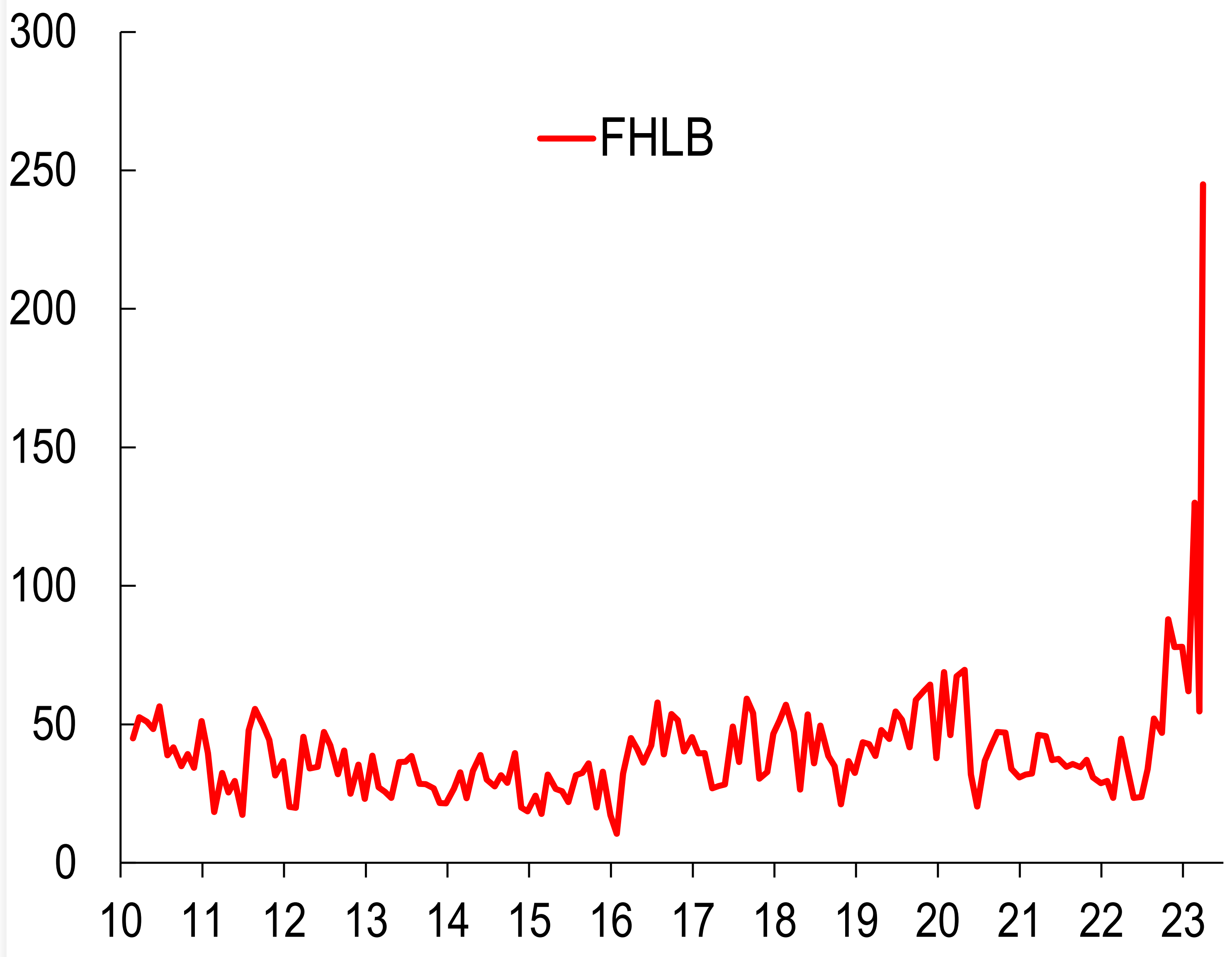
Usage at the Fed's discount window borrowing reached all time high and banks also tapped the new Fed facility…

Weekly Average Take-up at the Discount Window and BTFP (as of April 5)
(Billions of US dollars)



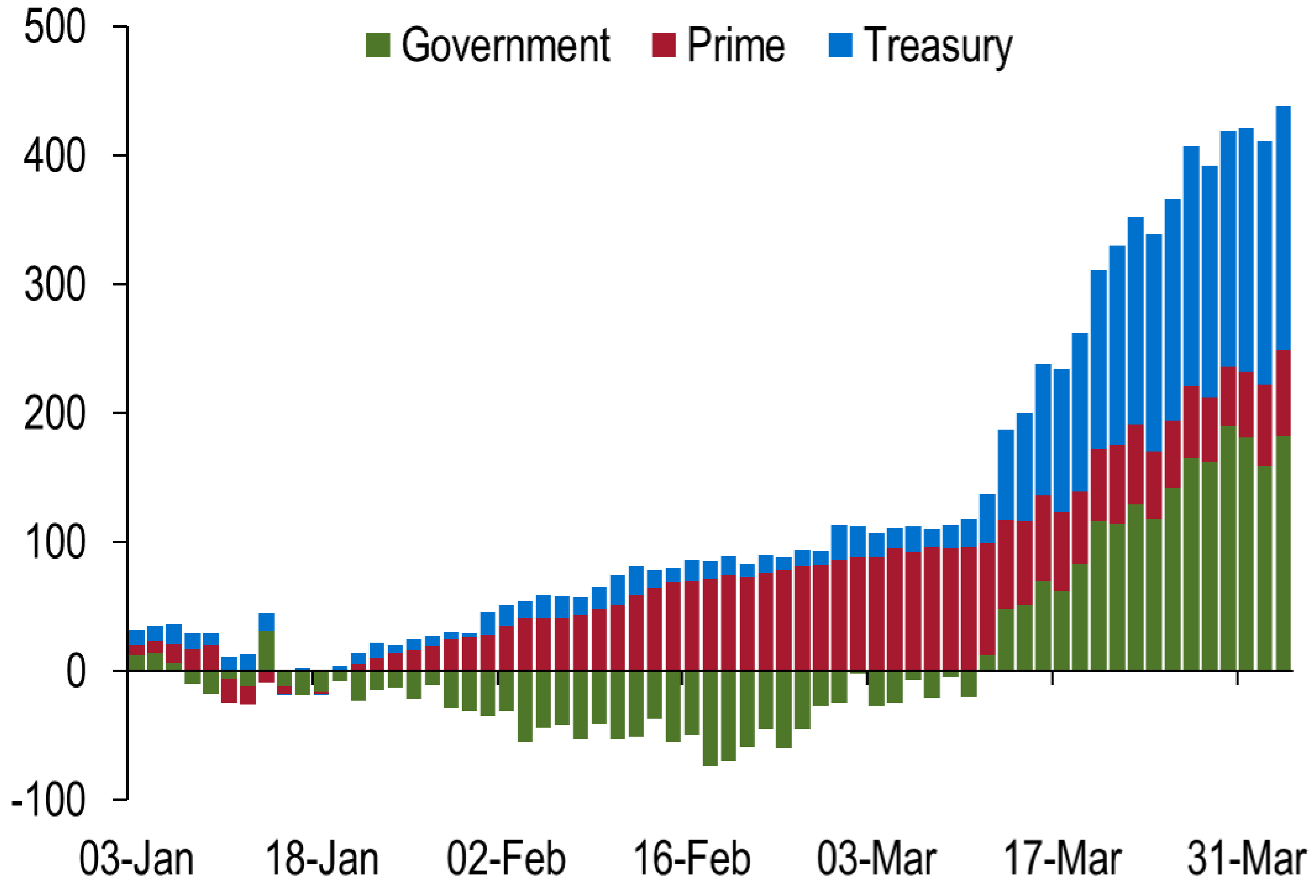
…banks were heavy borrowers from FHLBs since the Fed tightening cycle began but borrowing surged in March.

FHLB Advances and Issuance
(Billions of US dollars)



Money markets have seen strong inflows as investors diversify away from bank deposits.

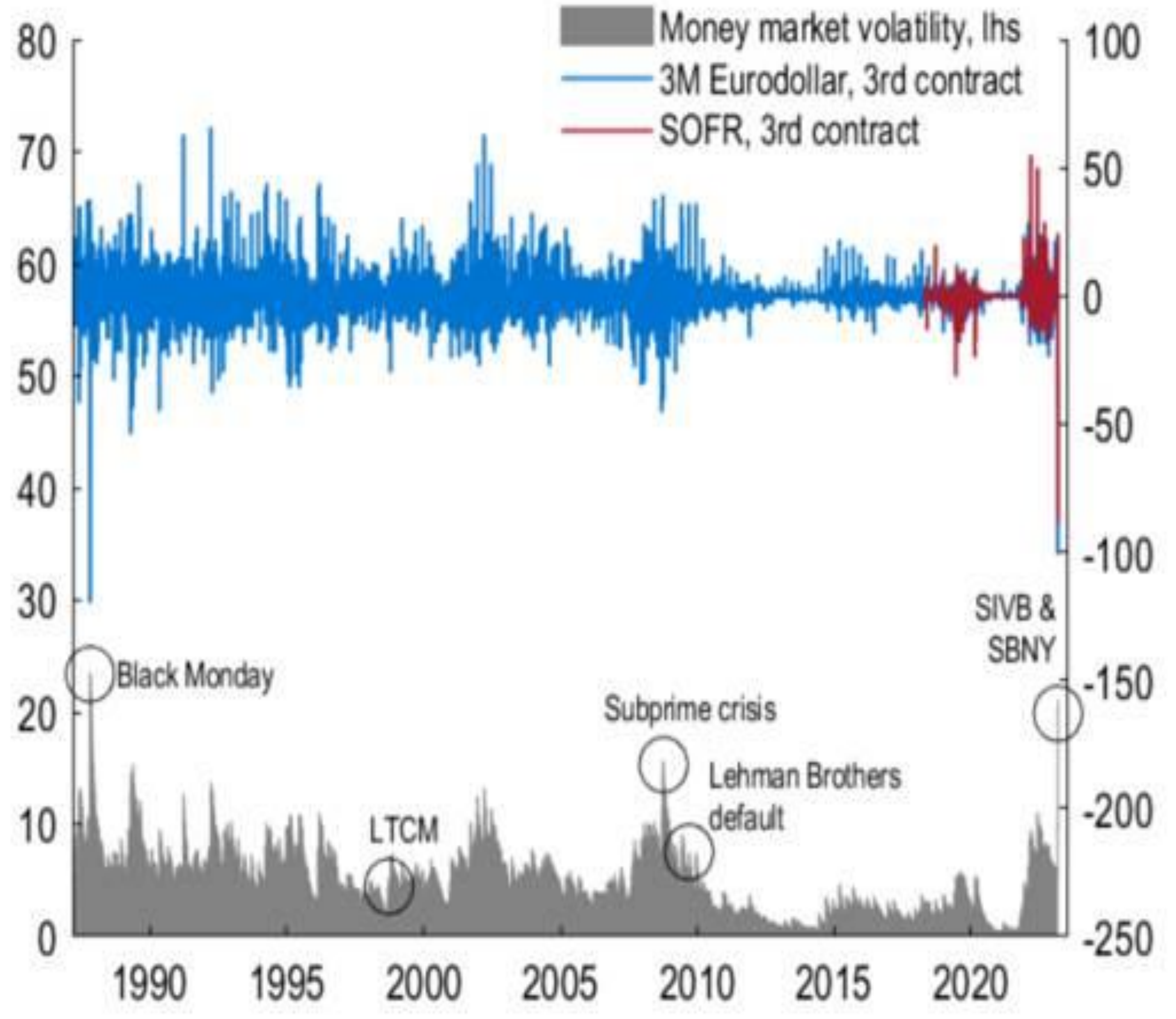
Cumulative Money Market Fund Flows
(YtD- Billions of US dollars)



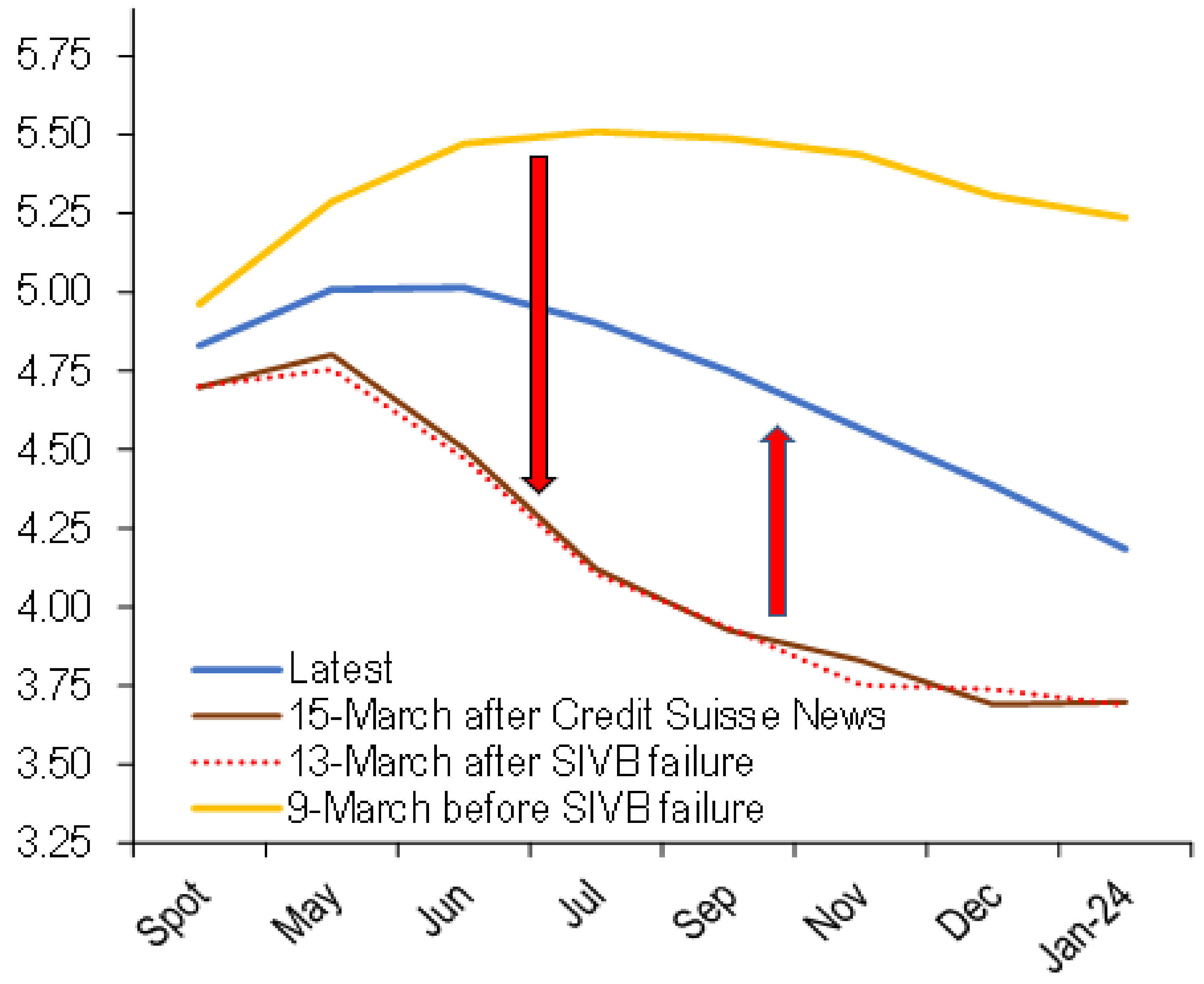
Sharp Repricing of Monetary Policy Paths

Unprecedented reassessment of market rate expectations in terms of speed and magnitude.

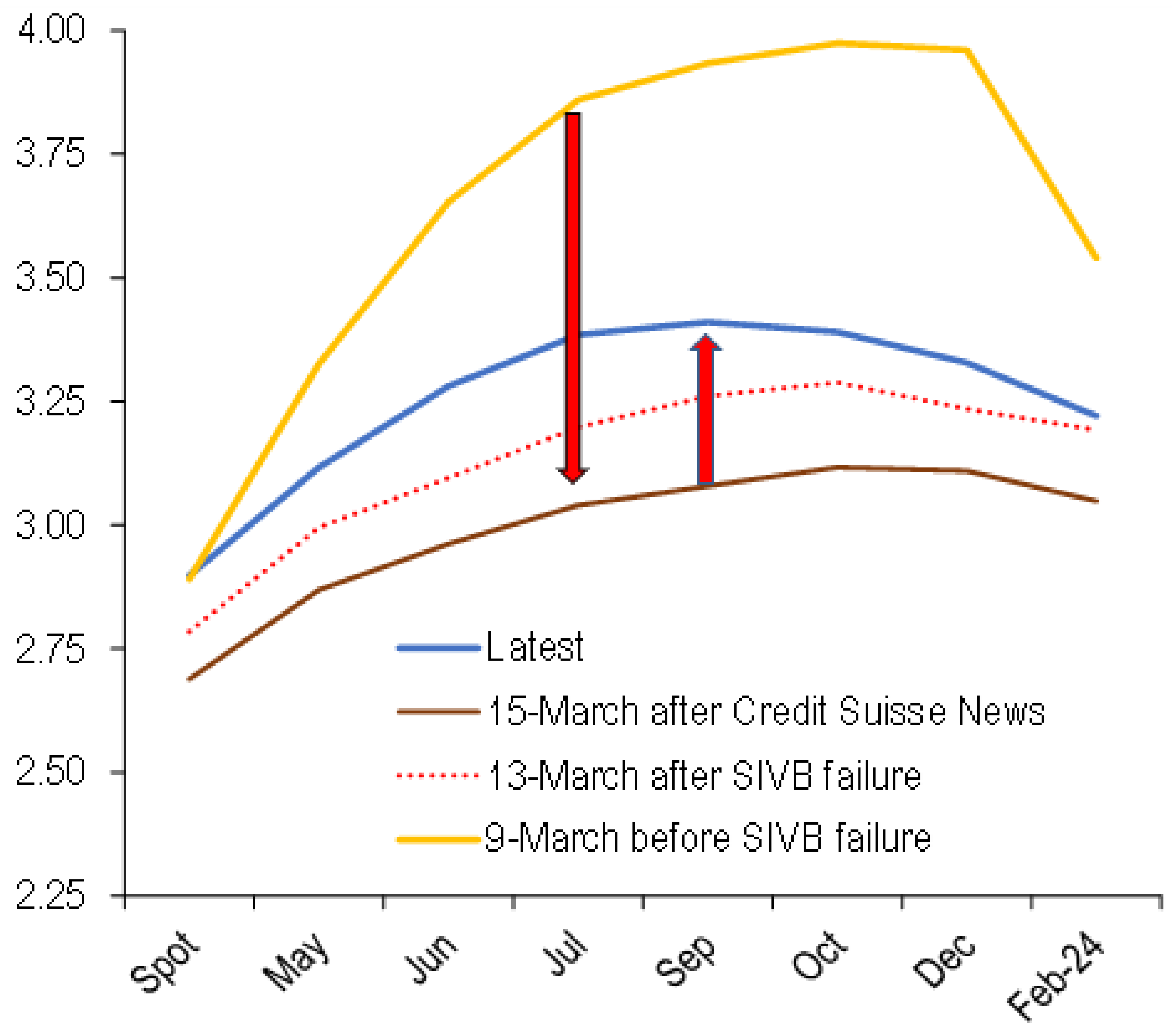
US, changes in near-term policy expectations vs. main risk events
(basis points)



Policy Path Change in USD Overnight Swaps
(Percent)



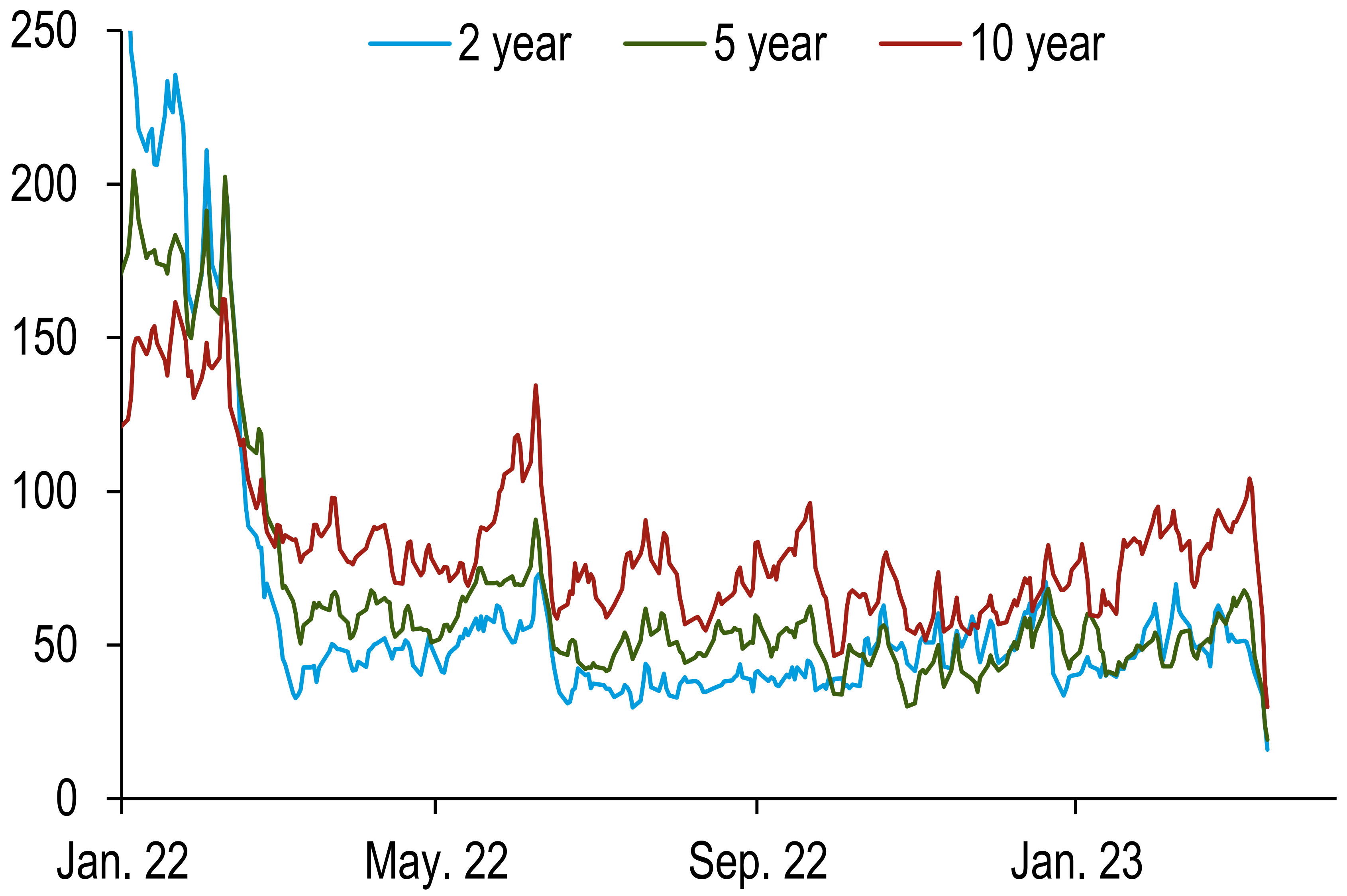
Policy path change: EUR Overnight Swaps
(Percent)



Poor Market Liquidity Amplified Volatility in Financial Markets

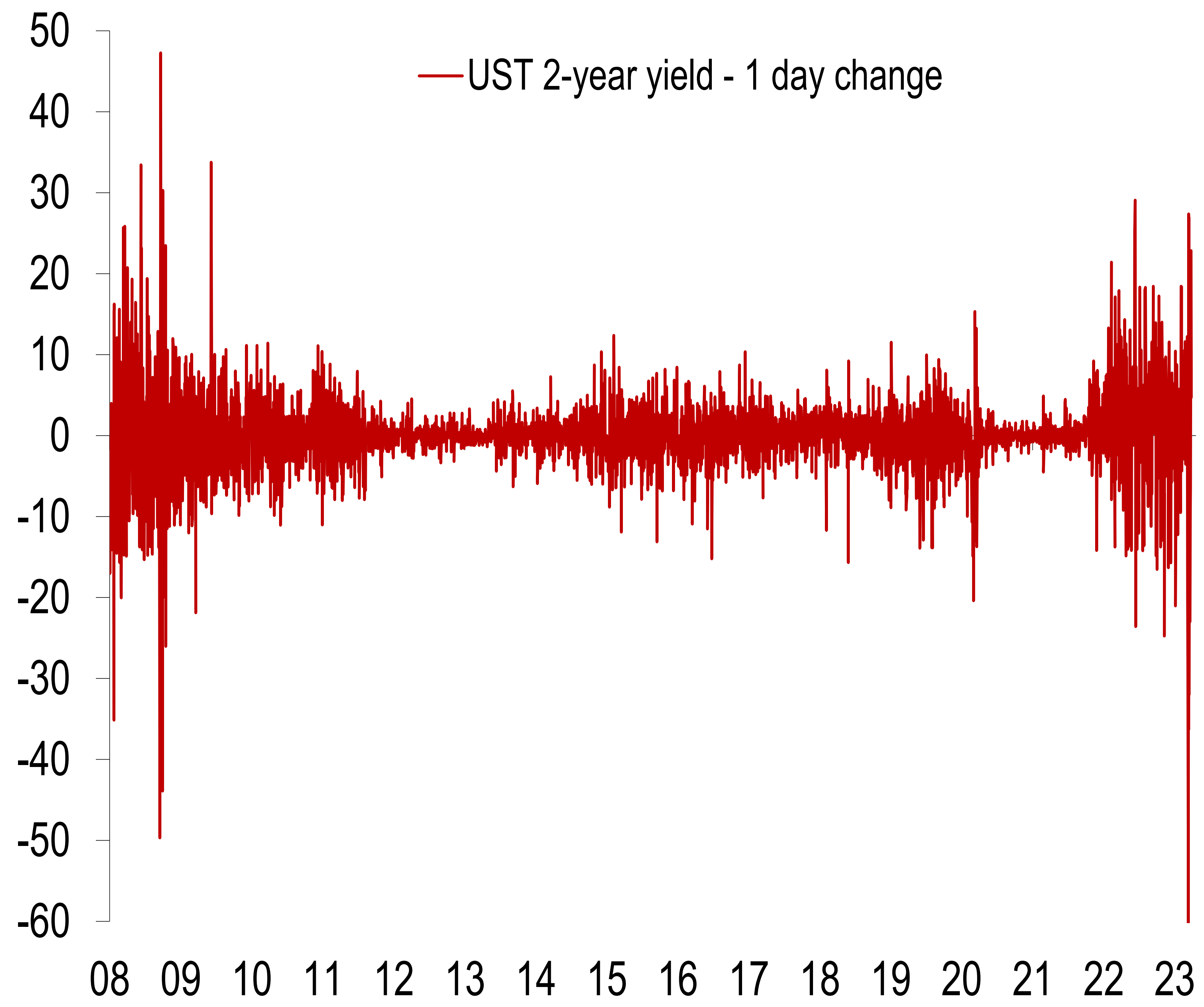
Treasury market depth became shallower as bid-ask spreads have widened.

US Treasury Market Book Depth
(Millions of US dollars)



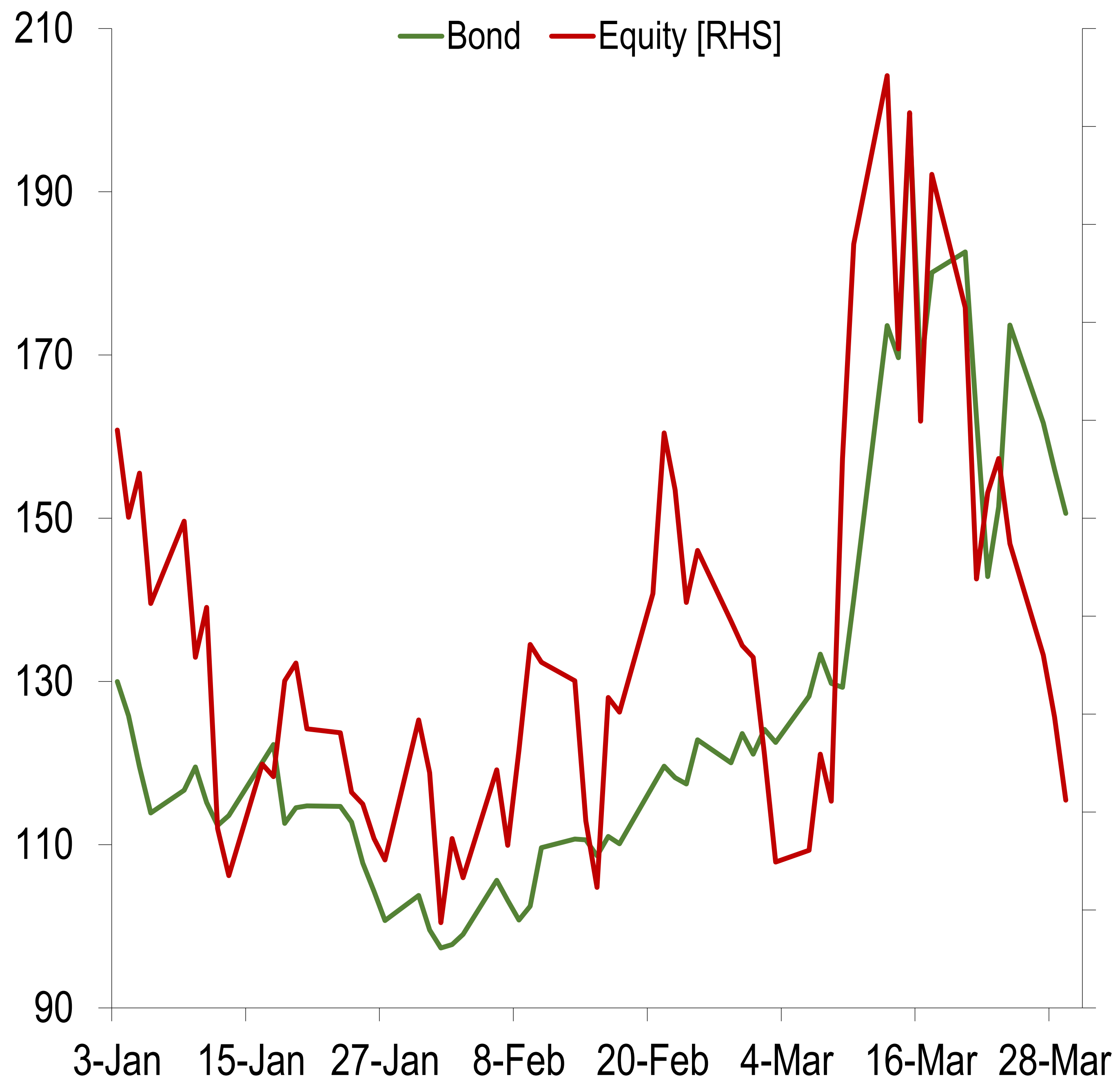
The banking turmoil has triggered a sharp flight to quality in the sovereign bond market.

One-day Change in the US 2-year Yield
(Basis points)



Bond market volatility remains very high surged and remain very high despite the recent retracement.

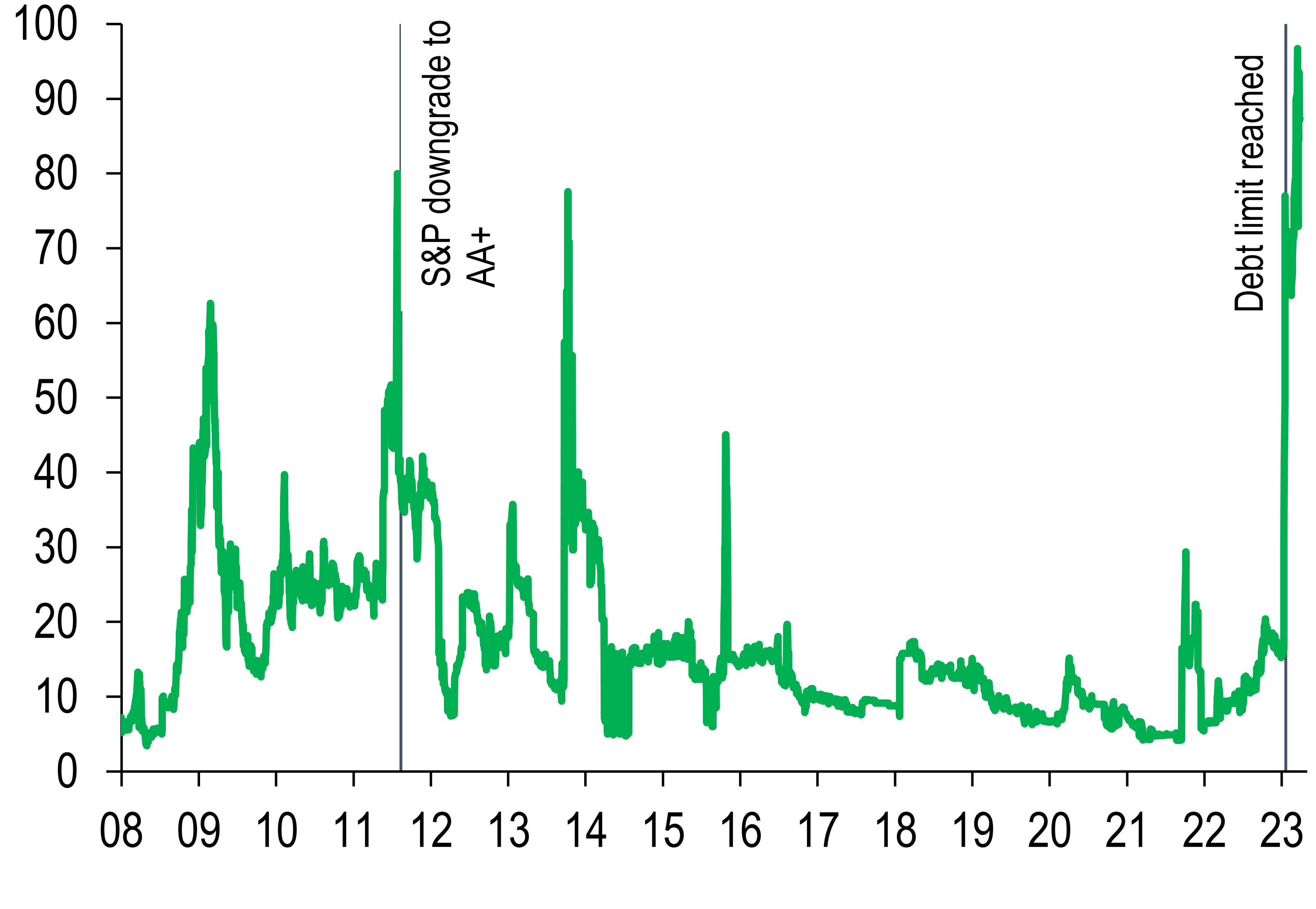
Bond and Equity Market Volatility
(Index)



The US Debt Ceiling Standoff Could Lead to Further Problems in the UST Market

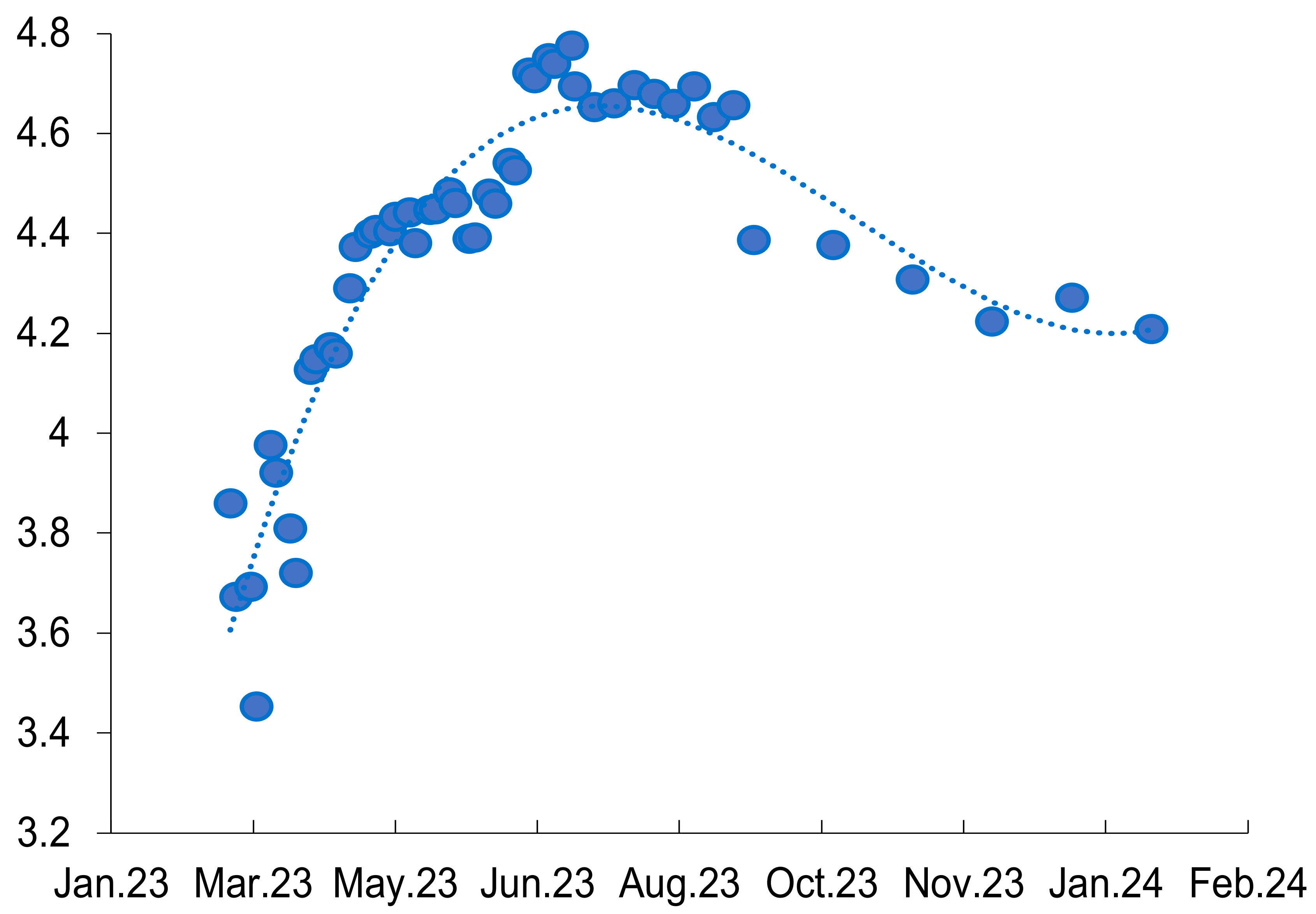
The US credit default swap spread has spiked upwards to levels seen during past debt ceiling episodes…

Credit Default Swap at 1-year Maturity Point
(Basis points)



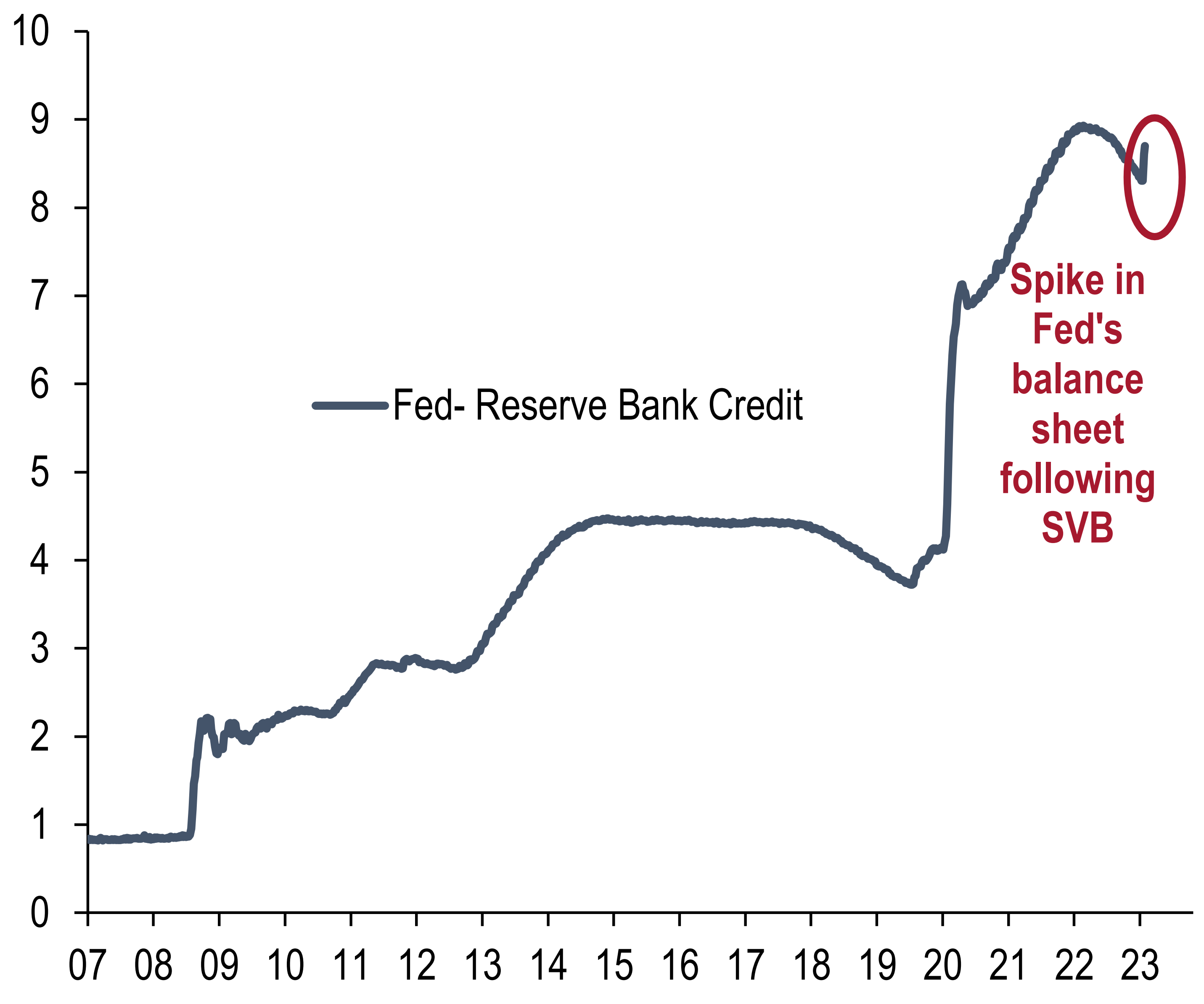
… and the surge in bill yields maturing in August aligns with the projected date when the Treasury is expected to face payment difficulties.

Term Structure of Treasury Bills
(Percent)



Despite recently starting quantitative tightening, the Fed's balance sheet witnessed a spike in its assets.

Federal Reserve – Reserve Bank Credit
(Trillions of US dollars)



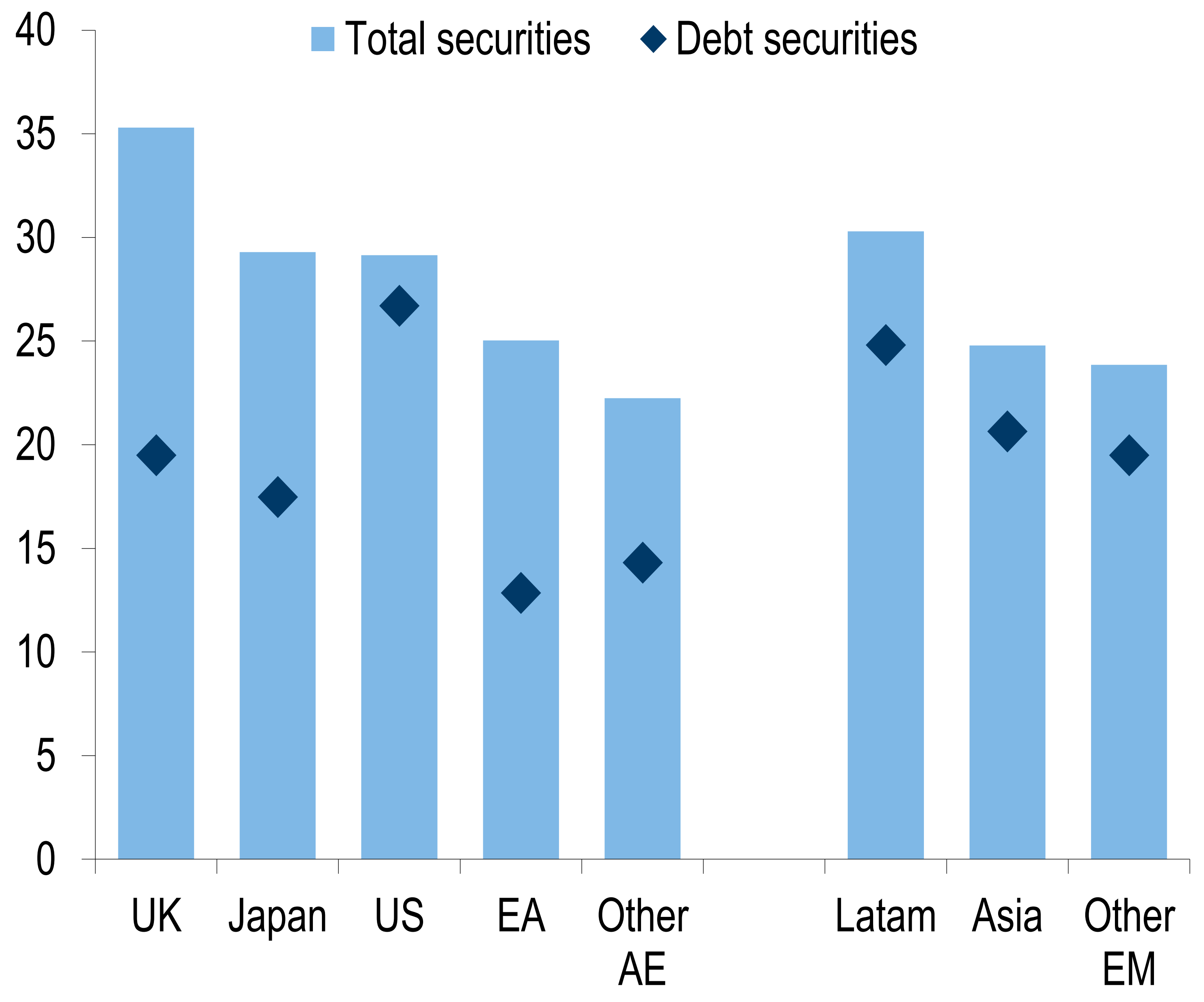
Global Banks Facing Higher Interest Rate Risks

Securities holdings account for a large share of banks' assets, but US, UK and Japan appear most exposed to interest rate risks.

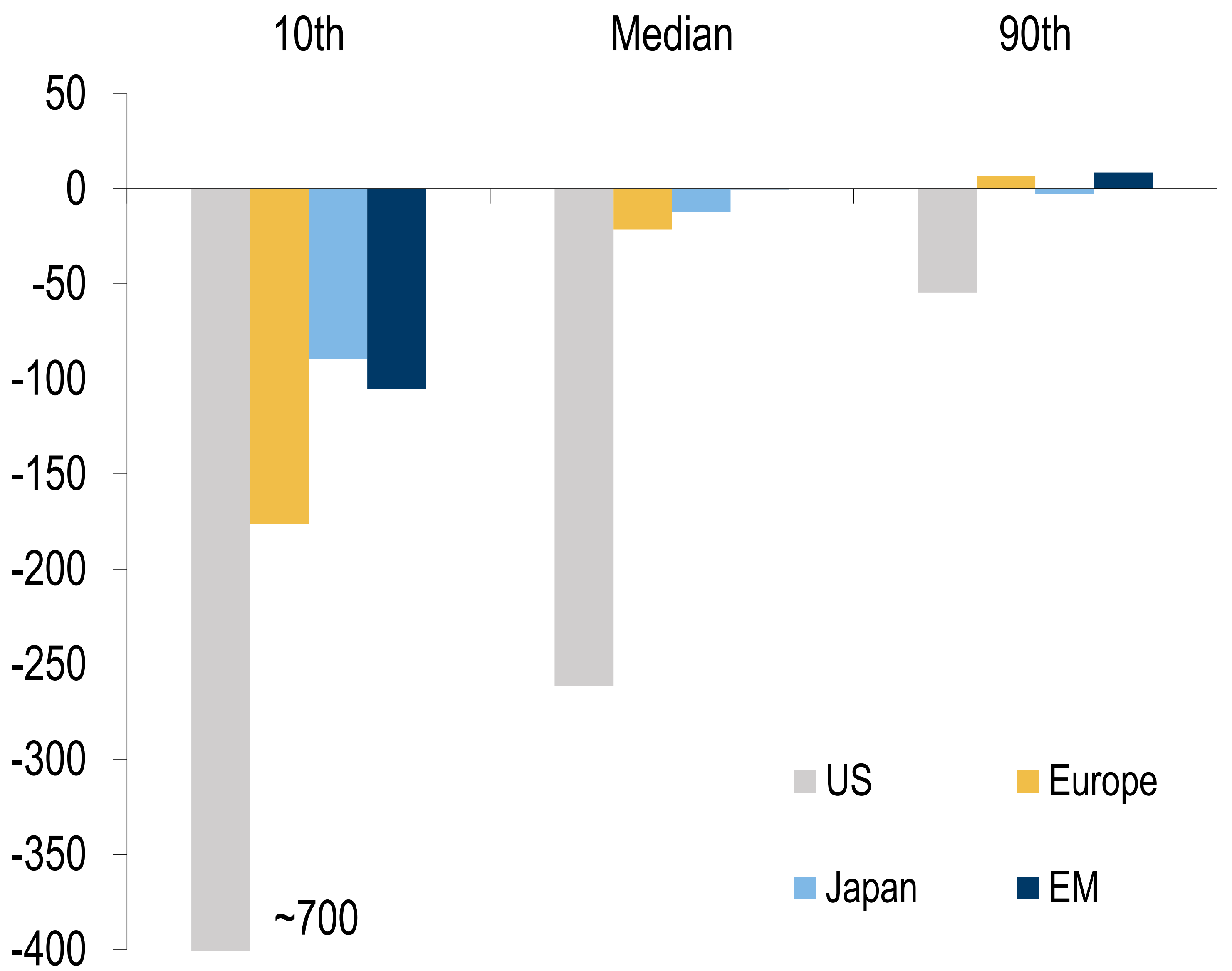
Valuation losses on securities holdings are sizeable for some banks.

The level of protection offered by deposit insurance varies significantly across countries, especially in Africa.

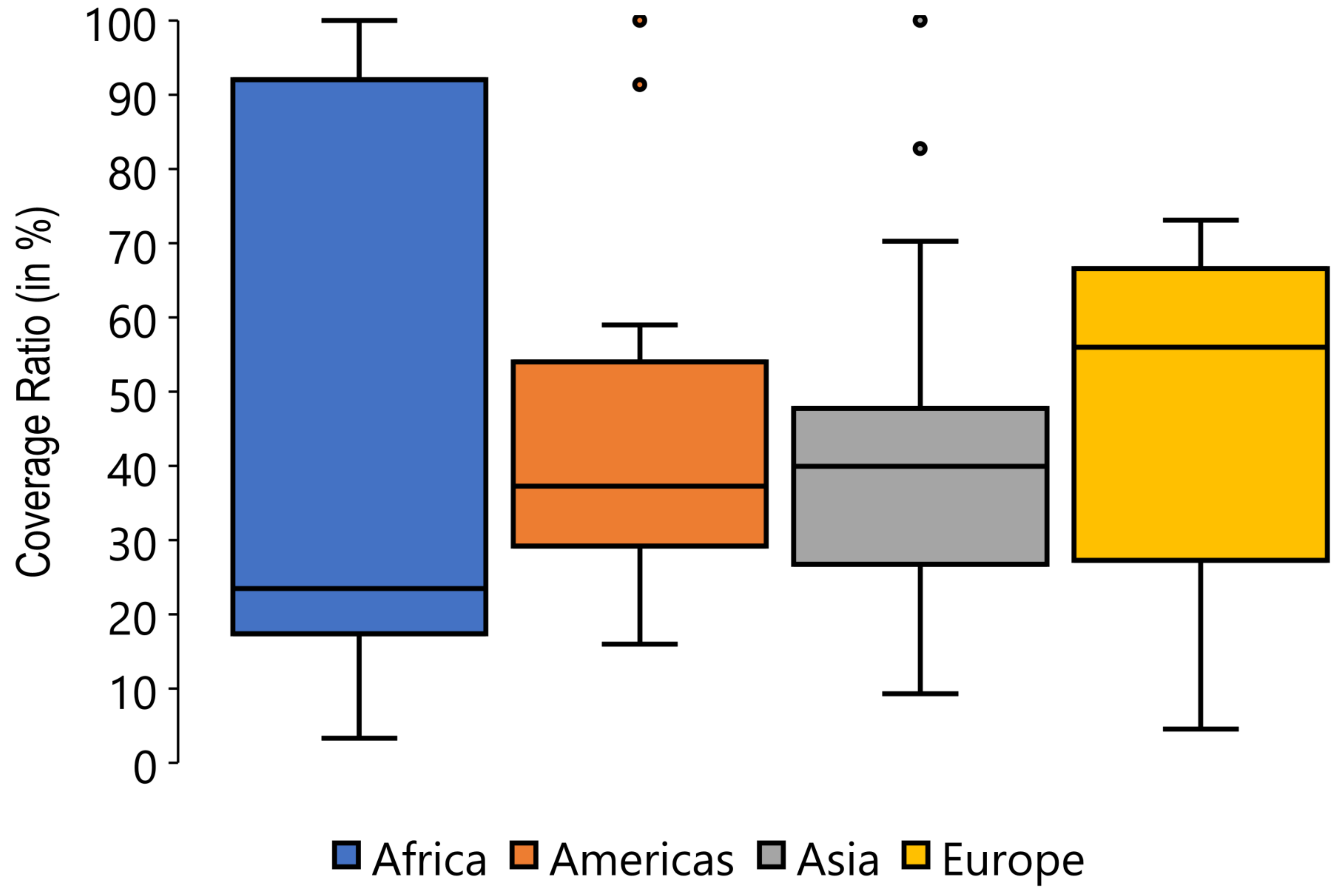
Banks' Security Holdings
(Percent of total assets)



Estimated Impact on CET1 Ratios from Unrealized HTM Losses
(Basis points)



Deposit Insurance Coverage Ratio Distribution by Regions
(By regions for the median banks in each country in 2021; Percent)

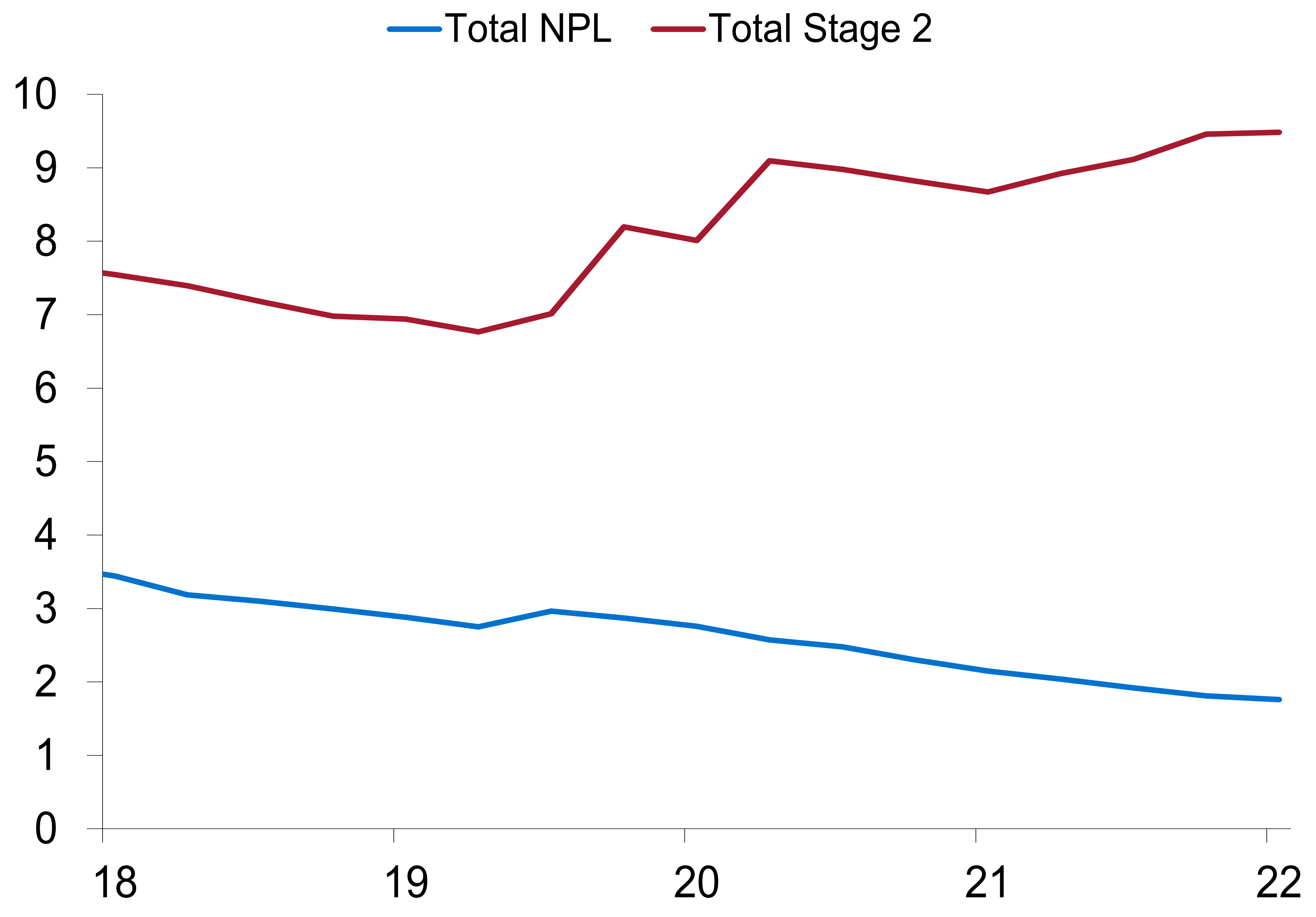


Note: Coverage ratio is defined as the ratio of total covered (insured) deposits to total deposits. The box plot shows the maximum, minimum, and quartile data. Bold lines within the boxes represent the median coverage ratio for each respective broad region. The dots are outliers, and in some cases, jurisdictions have multiple deposit insurers.

Further Deterioration of Asset Quality May Add Pressure on the Banking Sector

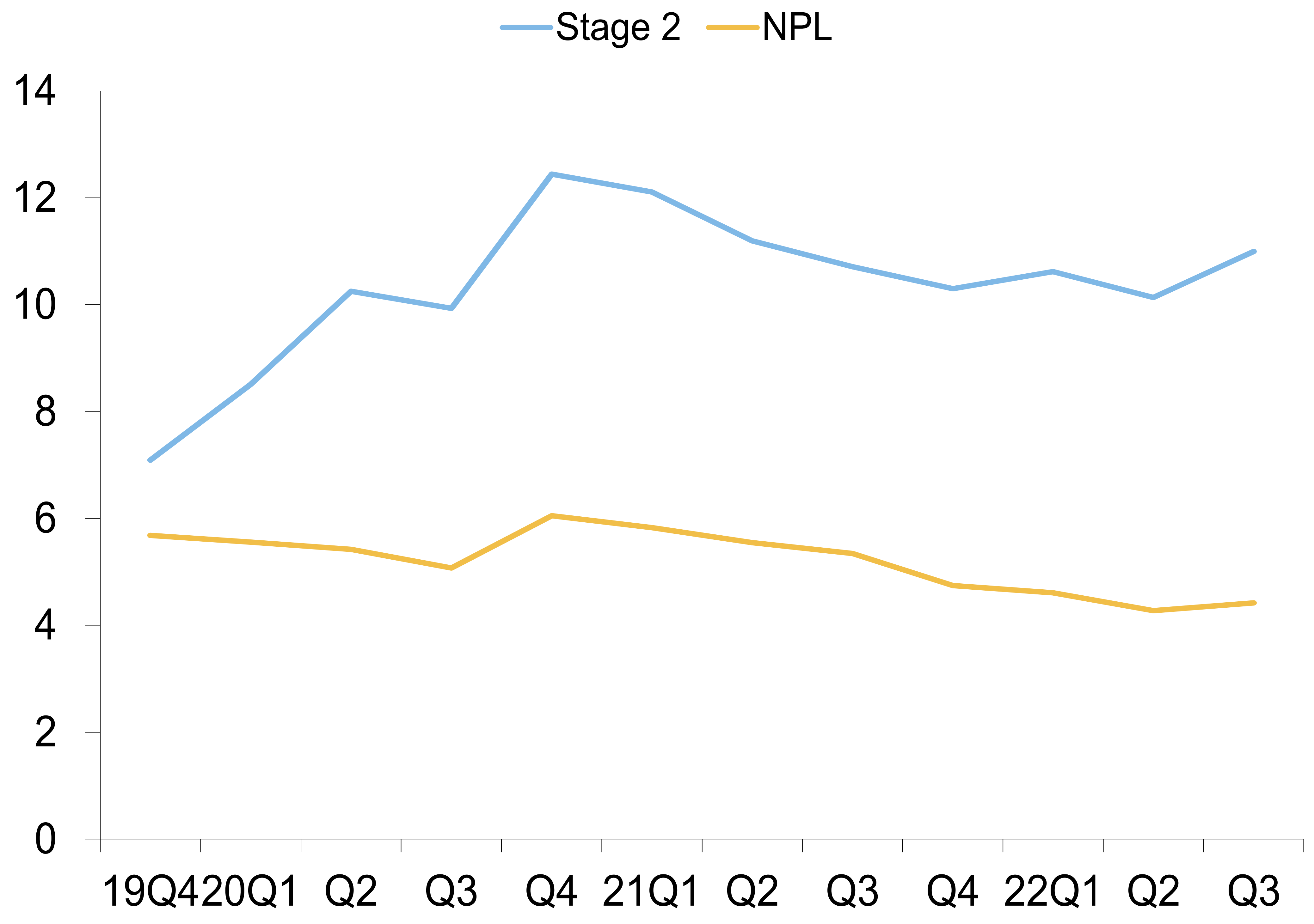
Underlying asset quality has started to deteriorate despite a stable non-performing loan ratio for banks.

European Union Banks: Stage 2 and Nonperforming Loans
(Percent of total loans, median)



Emerging Market Banks: Stage 2 and Nonperforming Loans

(Percent of total loans, median)

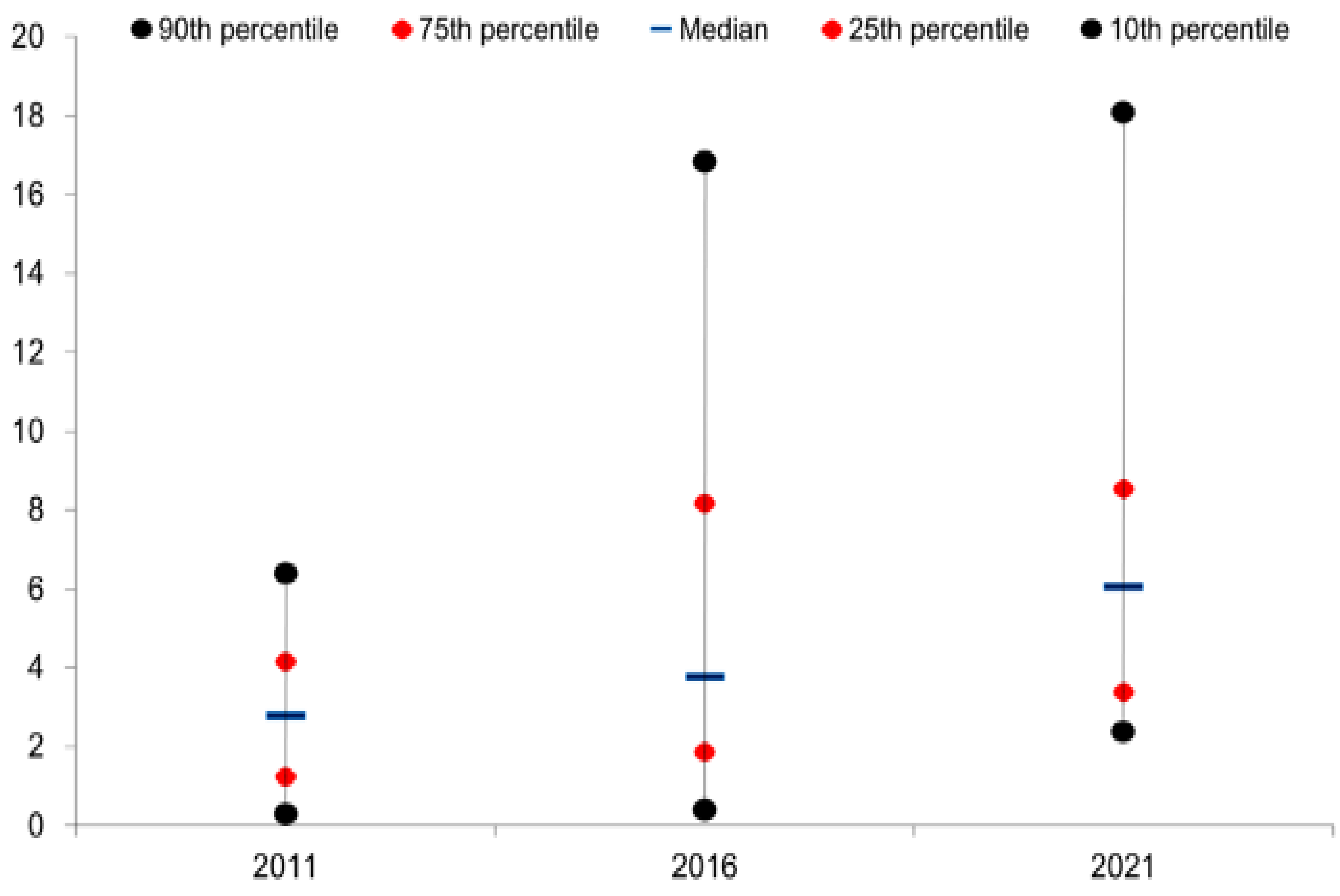


NBFIs: Rising Vulnerabilities Amid Tighter Financial Conditions

Reaching for yield, insurers have increased their exposure to illiquid credit investments over the past decade.

Share of Level III Assets in Insurer Portfolios Globally

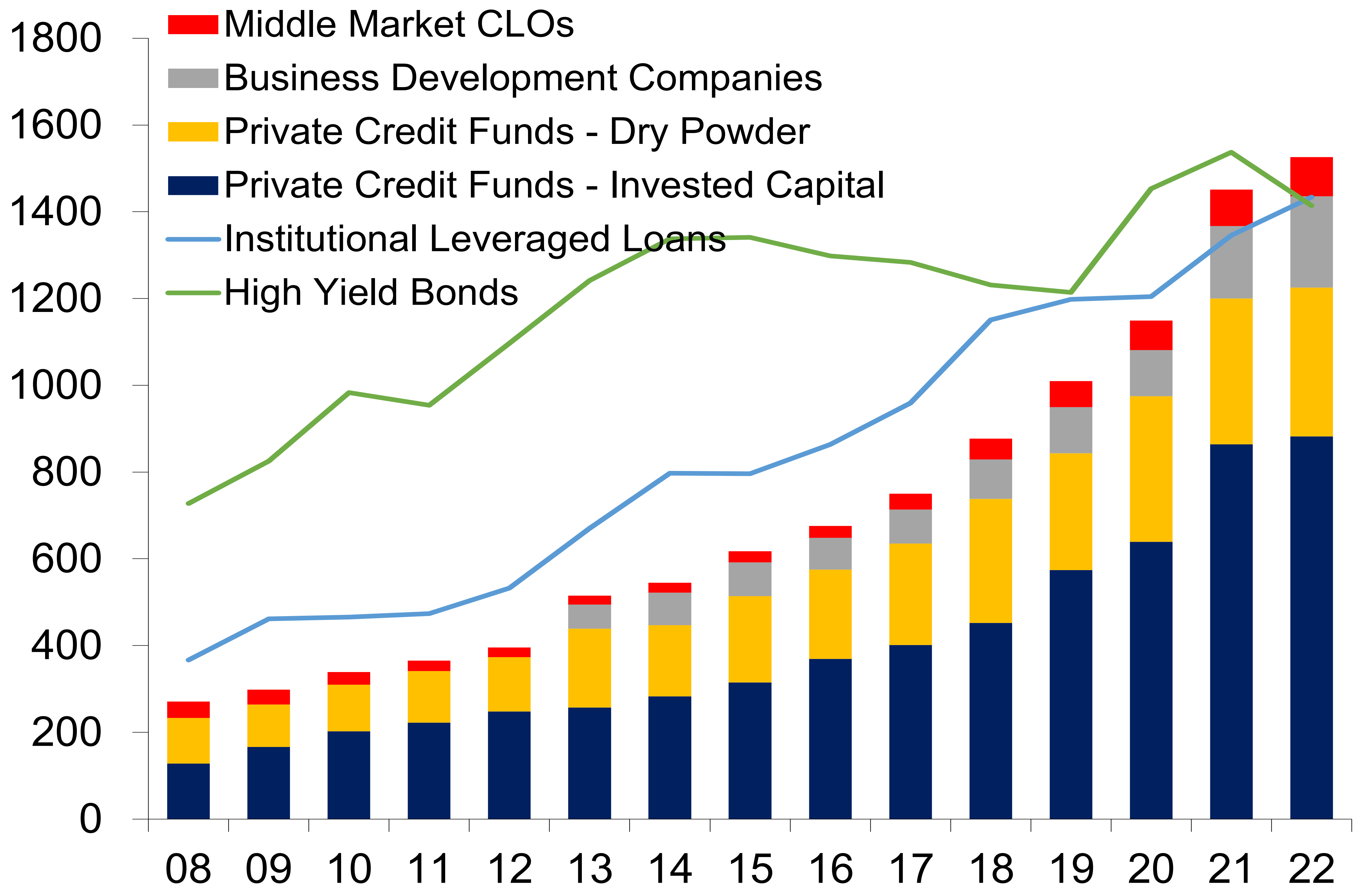
(Percent)



Private credit has grown rapidly and has become a significant source of funding for firms with weaker credit profiles.

Private Credit Assets under Management and US Leveraged Loans and High-Yield Bonds Outstanding

(Percent)

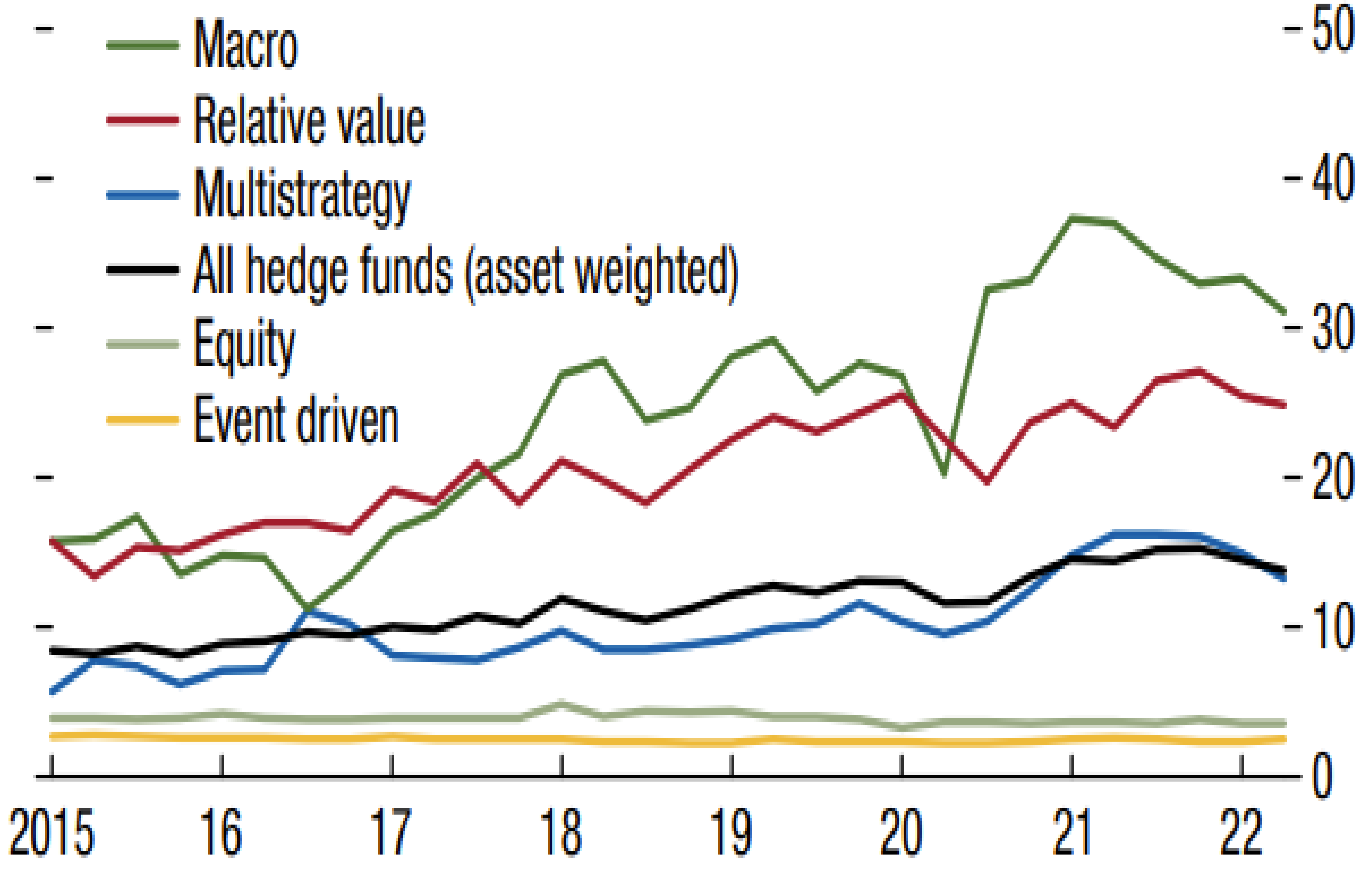


NBFIs: Rising Vulnerabilities Amid Tighter Financial Conditions

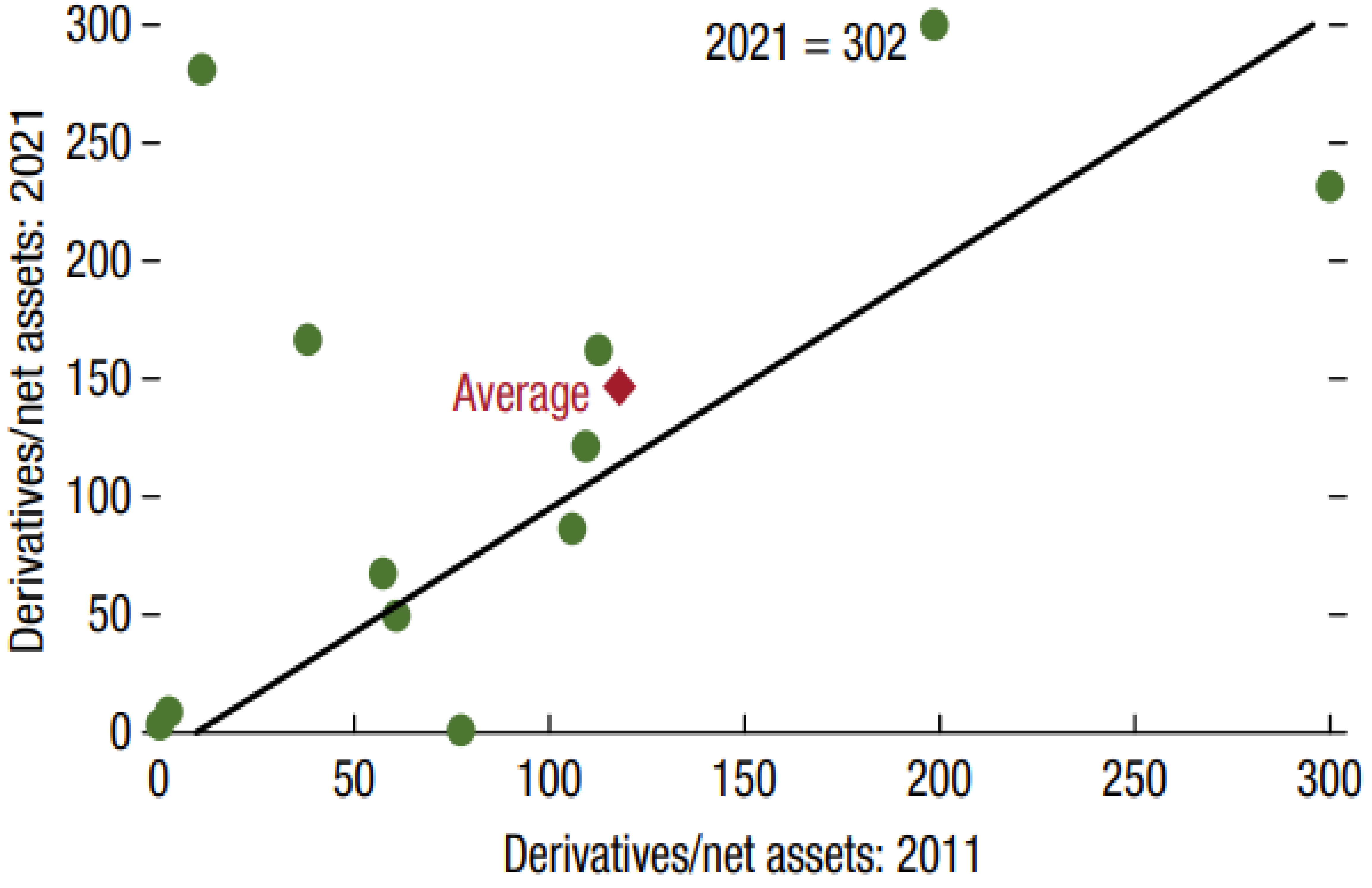
Hedge fund leverage has risen and can vary greatly by strategy…

… and derivatives-based leverage for selected pension funds have also risen over the past decade

Hedge Fund Derivatives-Based Leverage
(Gross notional exposure to NAV)



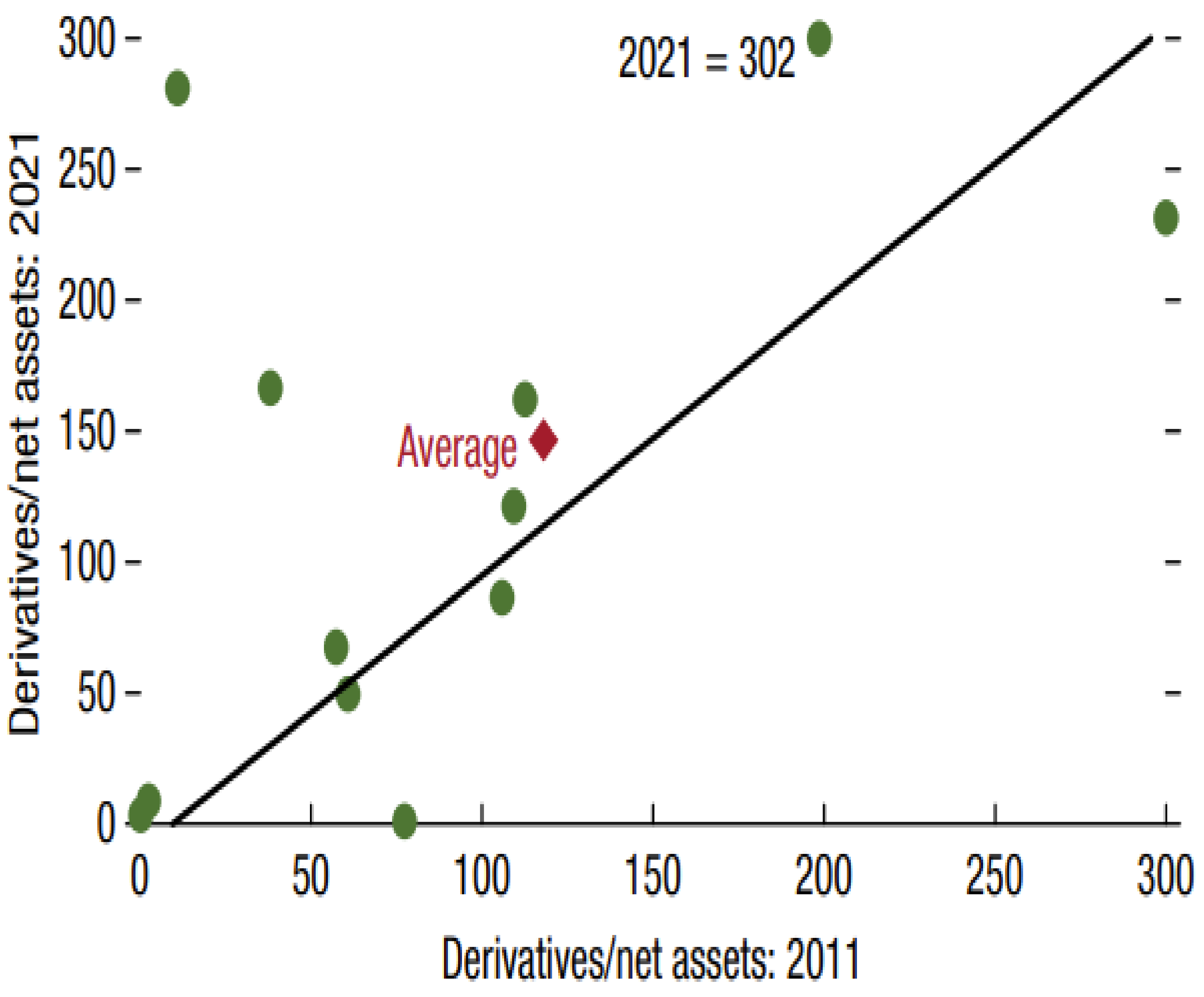
Derivatives-based Leverage of Selected Pension Funds
(Percent)



LDI Stress in the UK: Could It Happen Elsewhere?

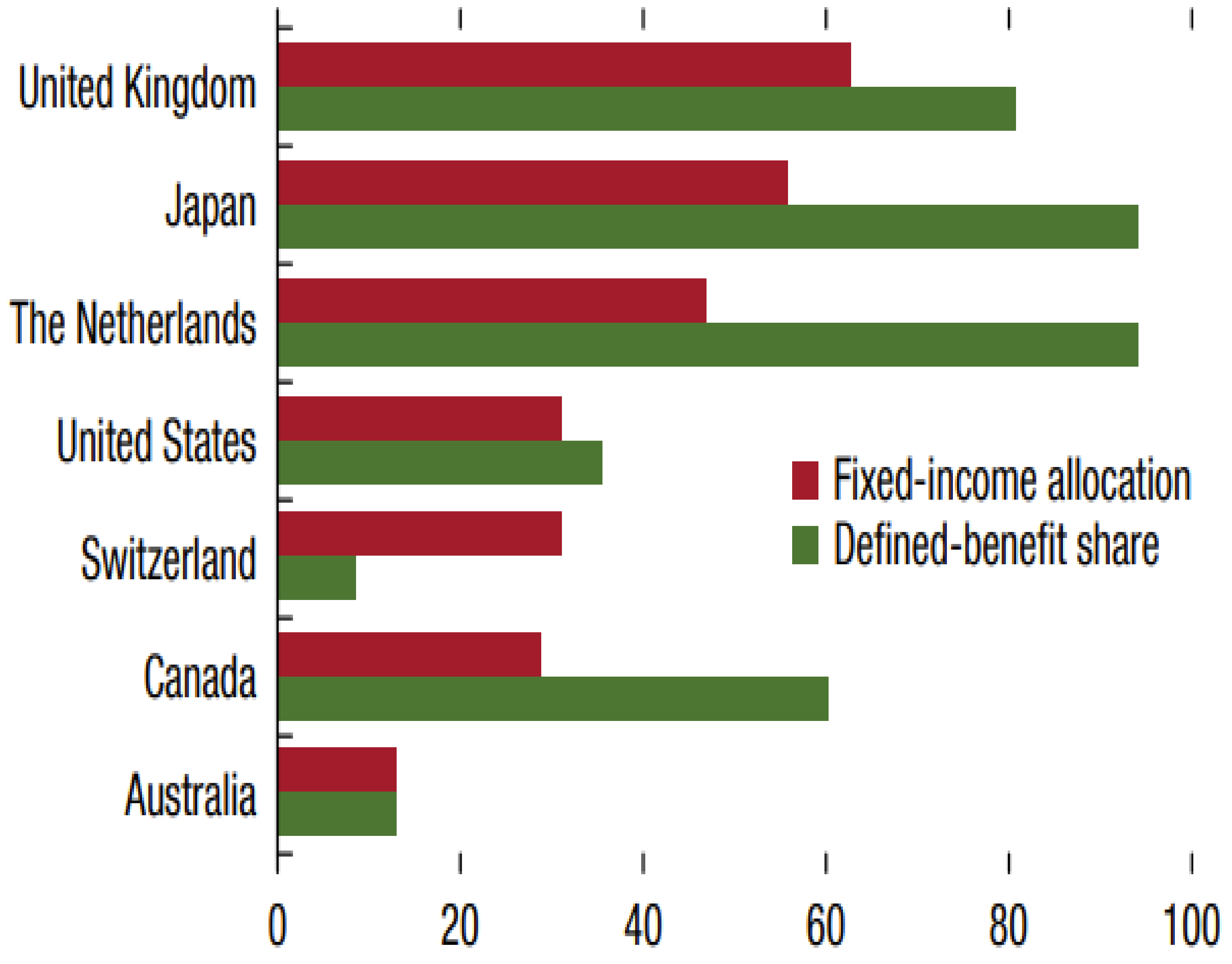
Derivatives-based leverage for selected pension funds have risen over the past decade

Derivatives-based Leverage of Selected Pension Funds
(Percent)



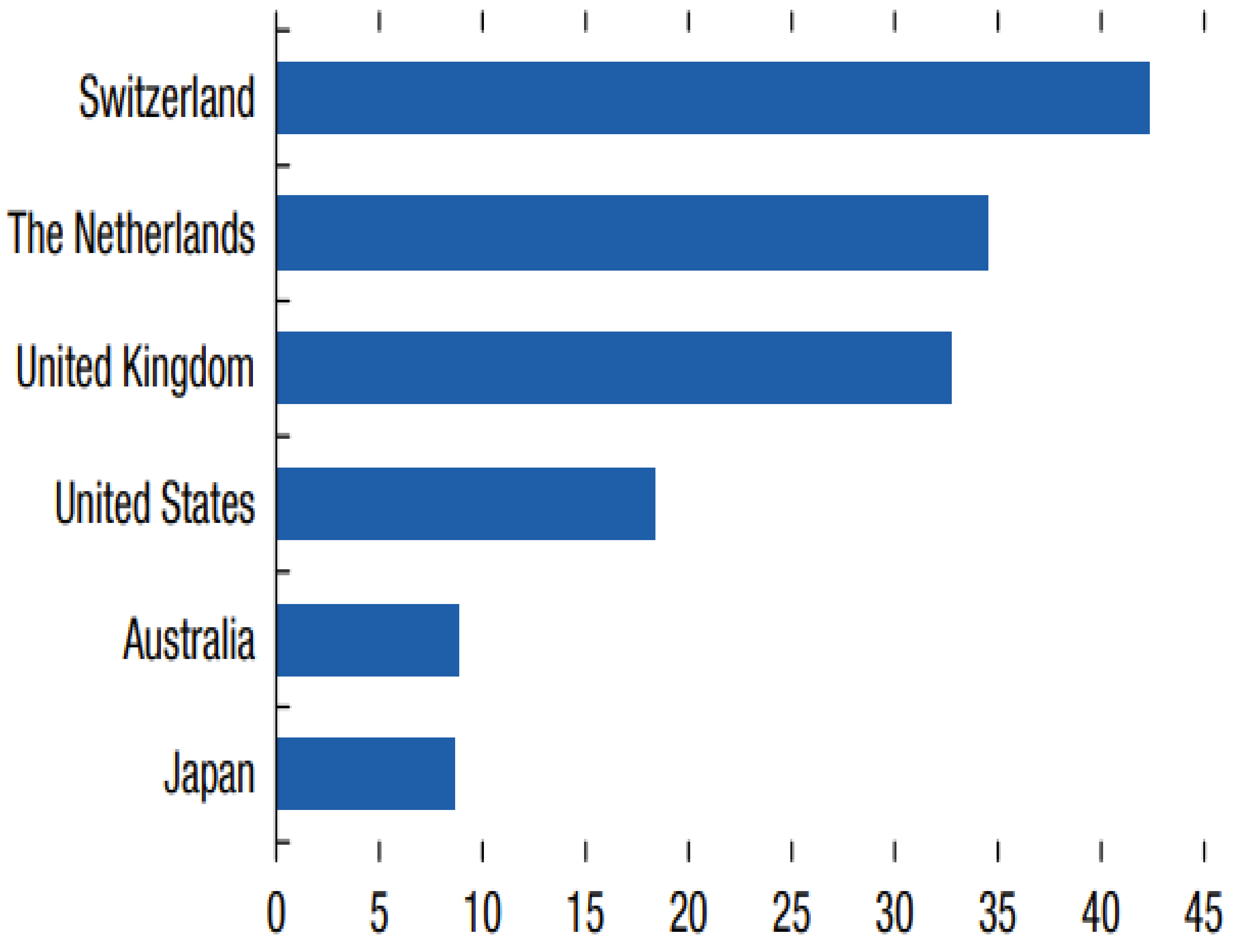
UK pension funds had less diversified portfolios and an elevated share of DB plans

Pension Fund Fixed Income Allocation and Share of Defined Benefit Plans
(Percent)



UK pension funds own a sizable share of domestic sovereign and corporate bonds

Pension Fund Share of Domestic Sovereign and Corporate Bond Market Ownership
(Percent)

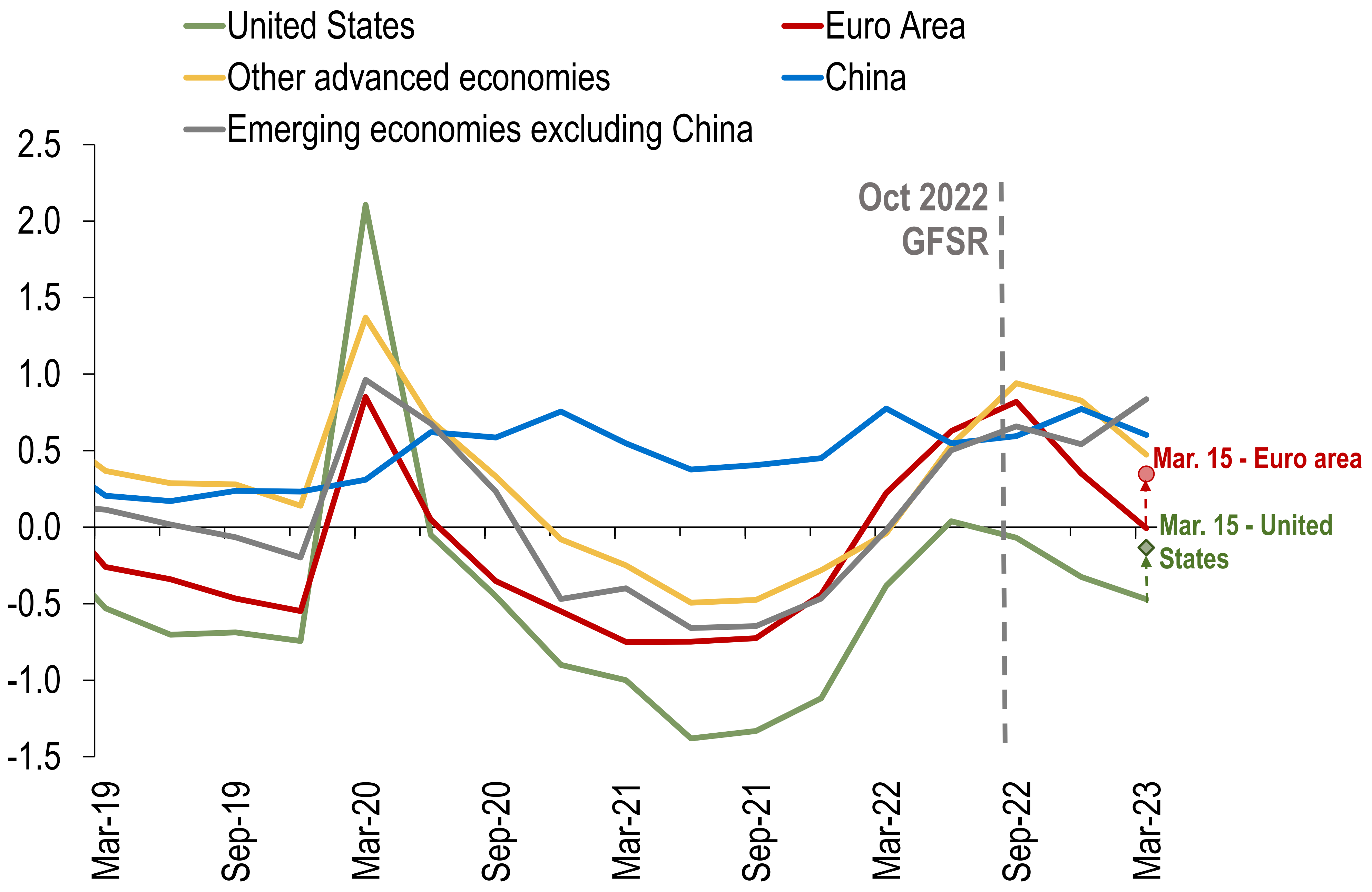


Growth at Risk and Stickier Inflation?

Risks to Growth Remain Skewed to the Downside

Financial conditions had broadly eased on net until early March, but has tightened sharply driven by higher volatility, tighter credit and higher funding costs...

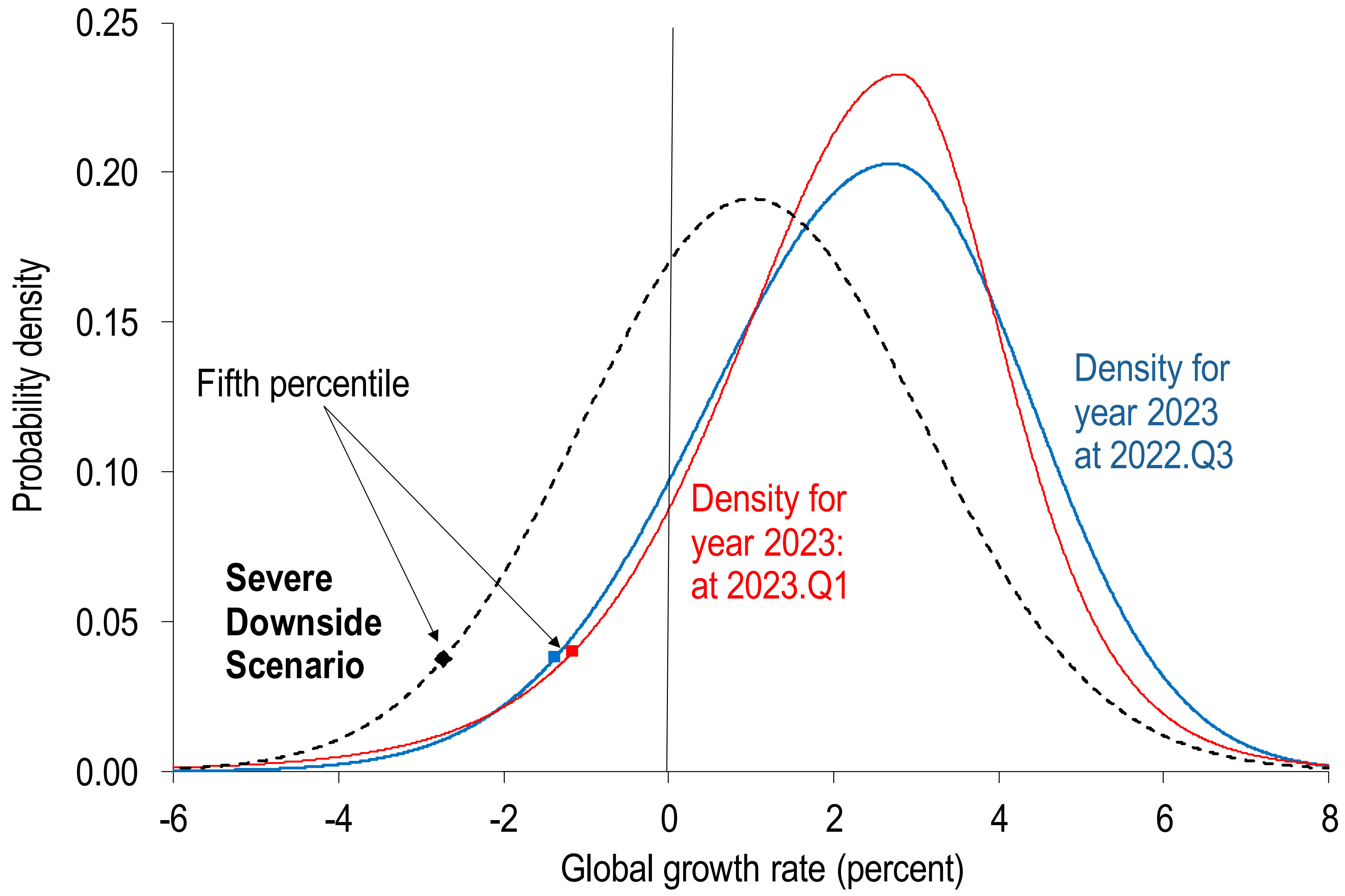
Financial Conditions Have Eased on a Net Basis
(Standard deviations from the mean)



Note: Final point of estimation is 15 March 2023.

On balance, risks to growth are skewed to the downside and remain elevated compared with historical norms.

Near-Term Growth-at Risk Forecasts
(Probability density)

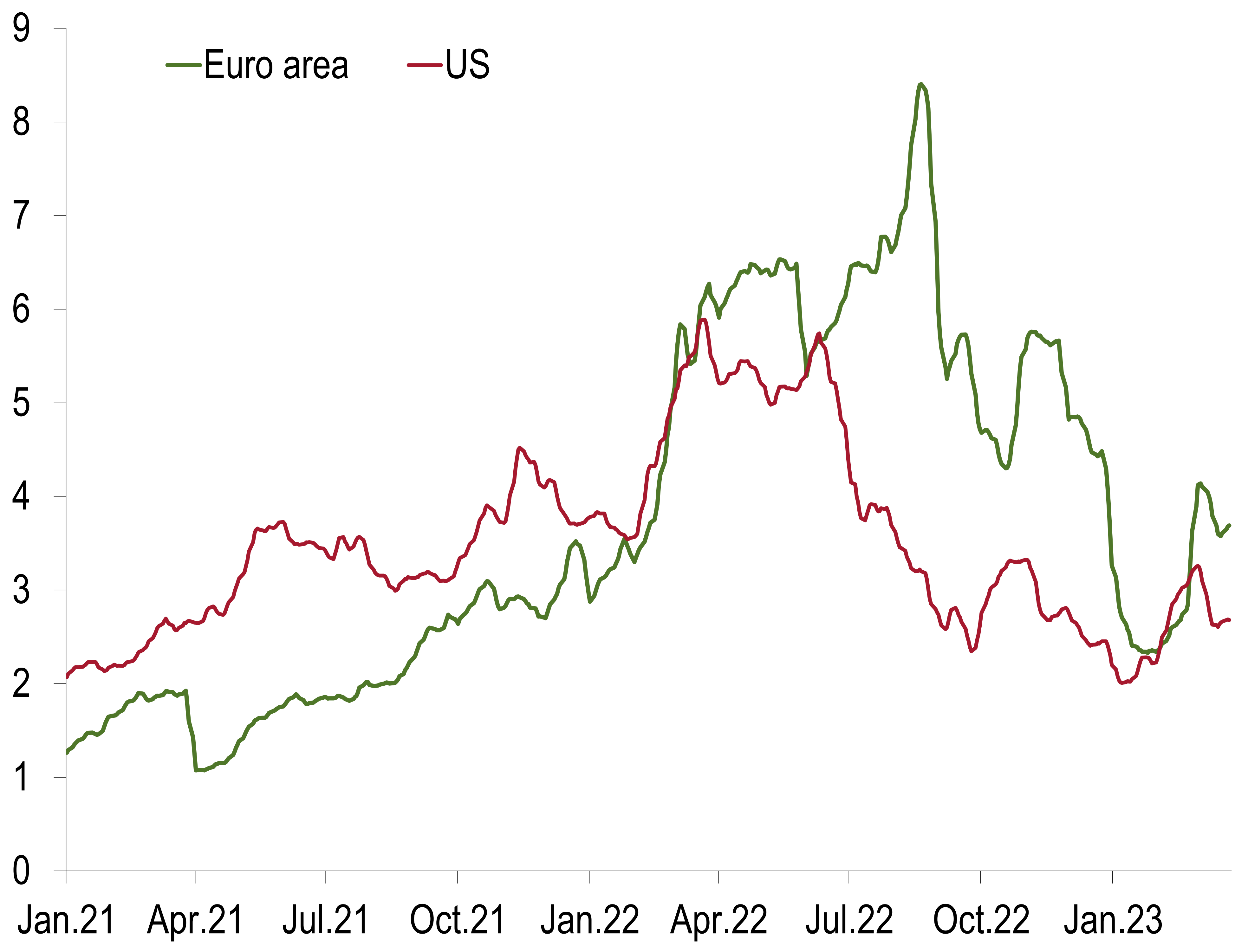


Note: The adverse scenario is associated with a two standard deviation shock to financial conditions and a modal global growth close to zero.

Despite the Recent Decline Inflation Expectations Remain Elevated

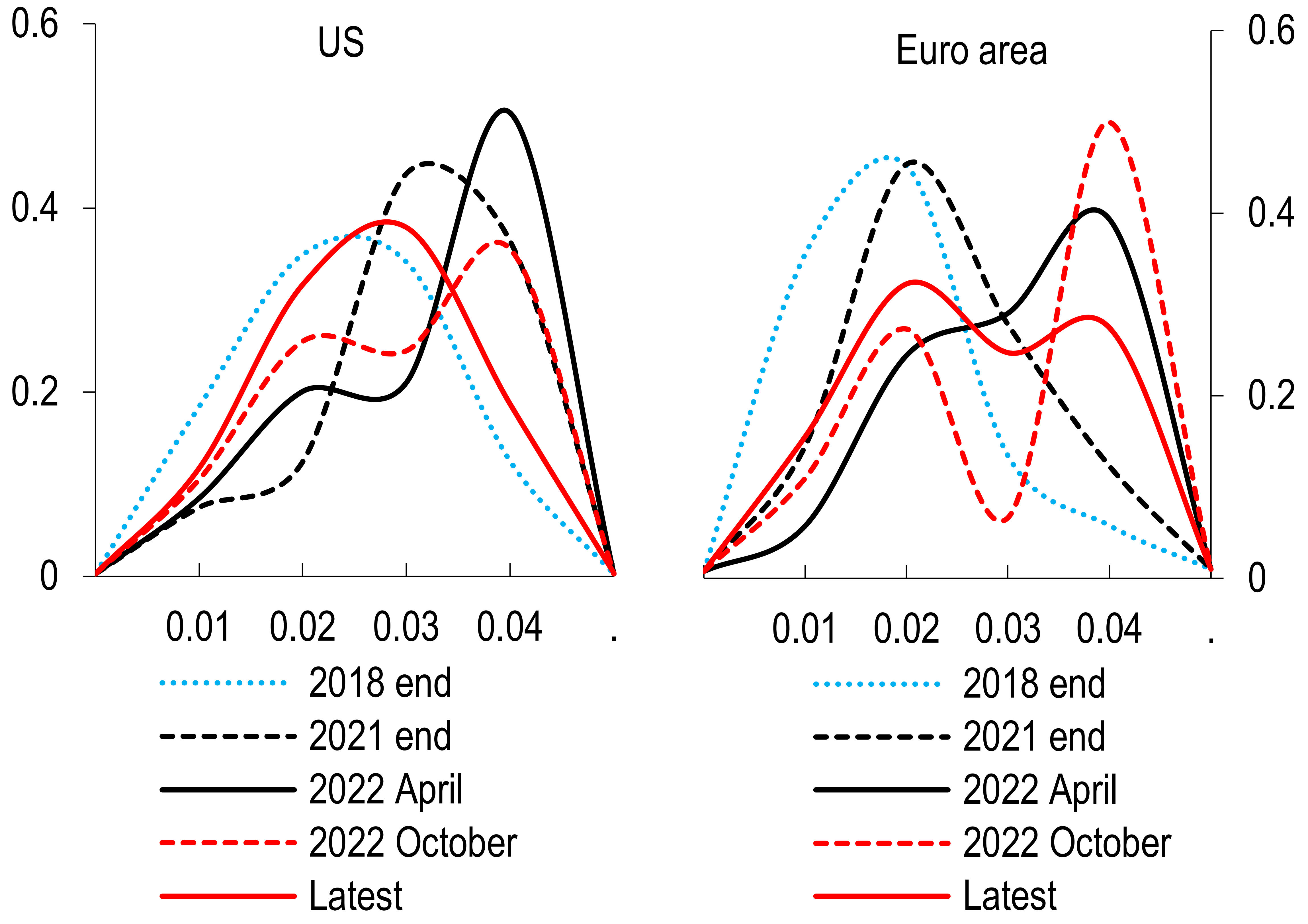
Short term inflation expectations remain at elevated levels compared to historical averages despite the recent declines.

One Year Inflation Swap Rates
(Percent)



Distributions around five-year inflation expectation outcomes have normalized modestly since the last GFSR.

Option-Implied Probability of Inflation Outcomes
(Probability density)



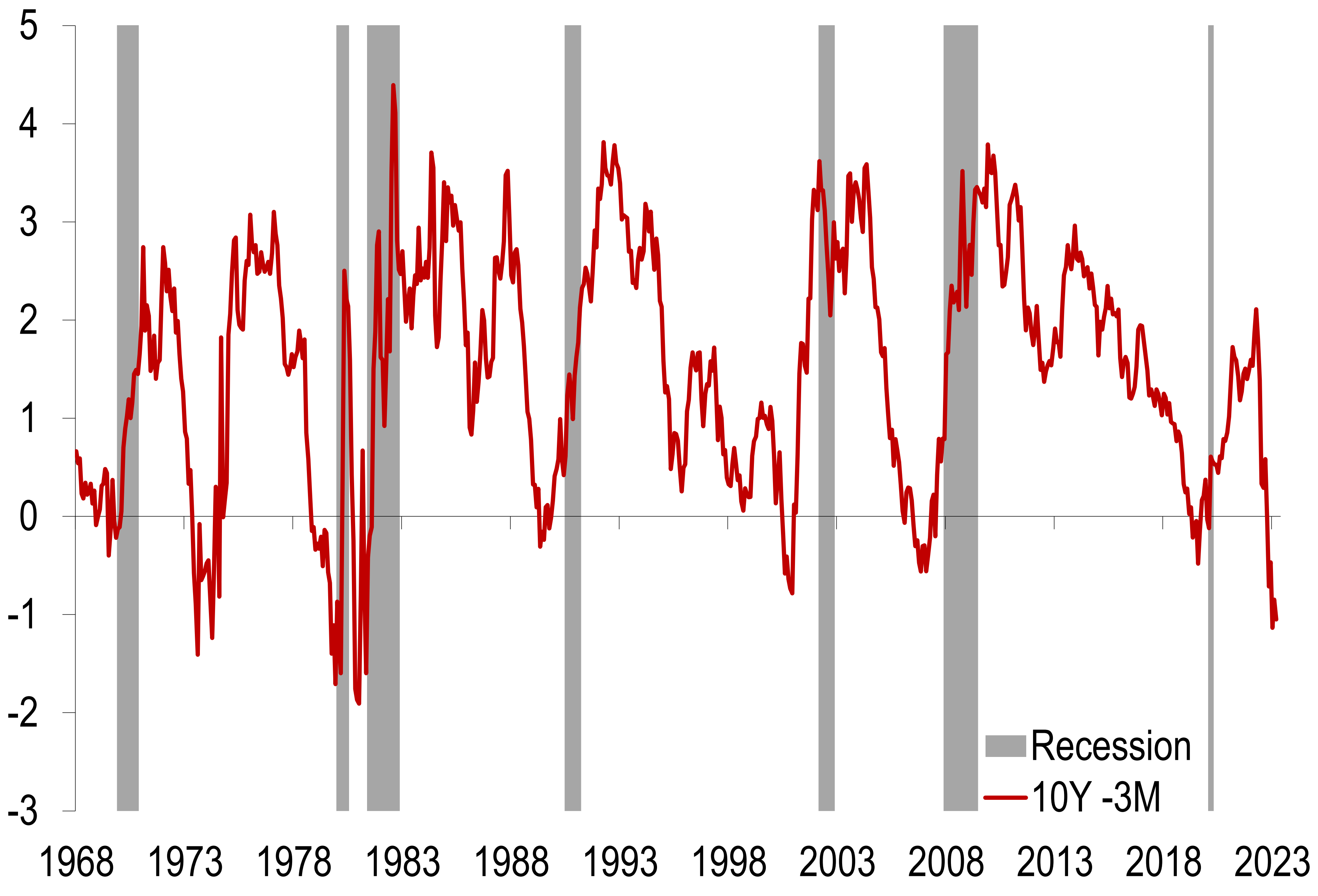
Tightening of Lending Standards Amid Concerns About the Outlook

The US yield curve has inverted and is strongly signaling recession.

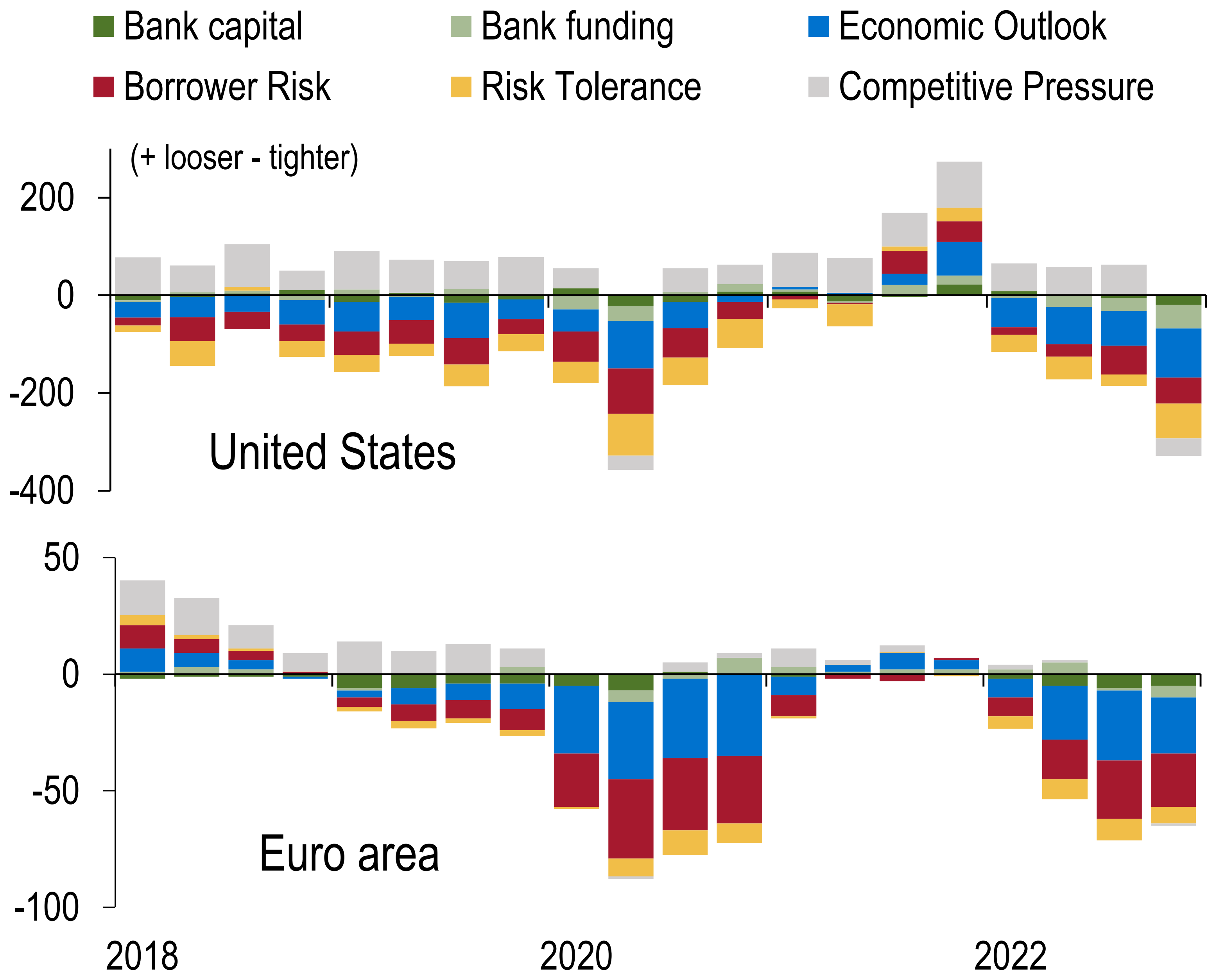
Global banks have tightened lending standards considerably due to worries about the economic outlook and borrower risks.

Recent decline in bank stocks could further tighten lending standards which adversely impacts real GDP growth

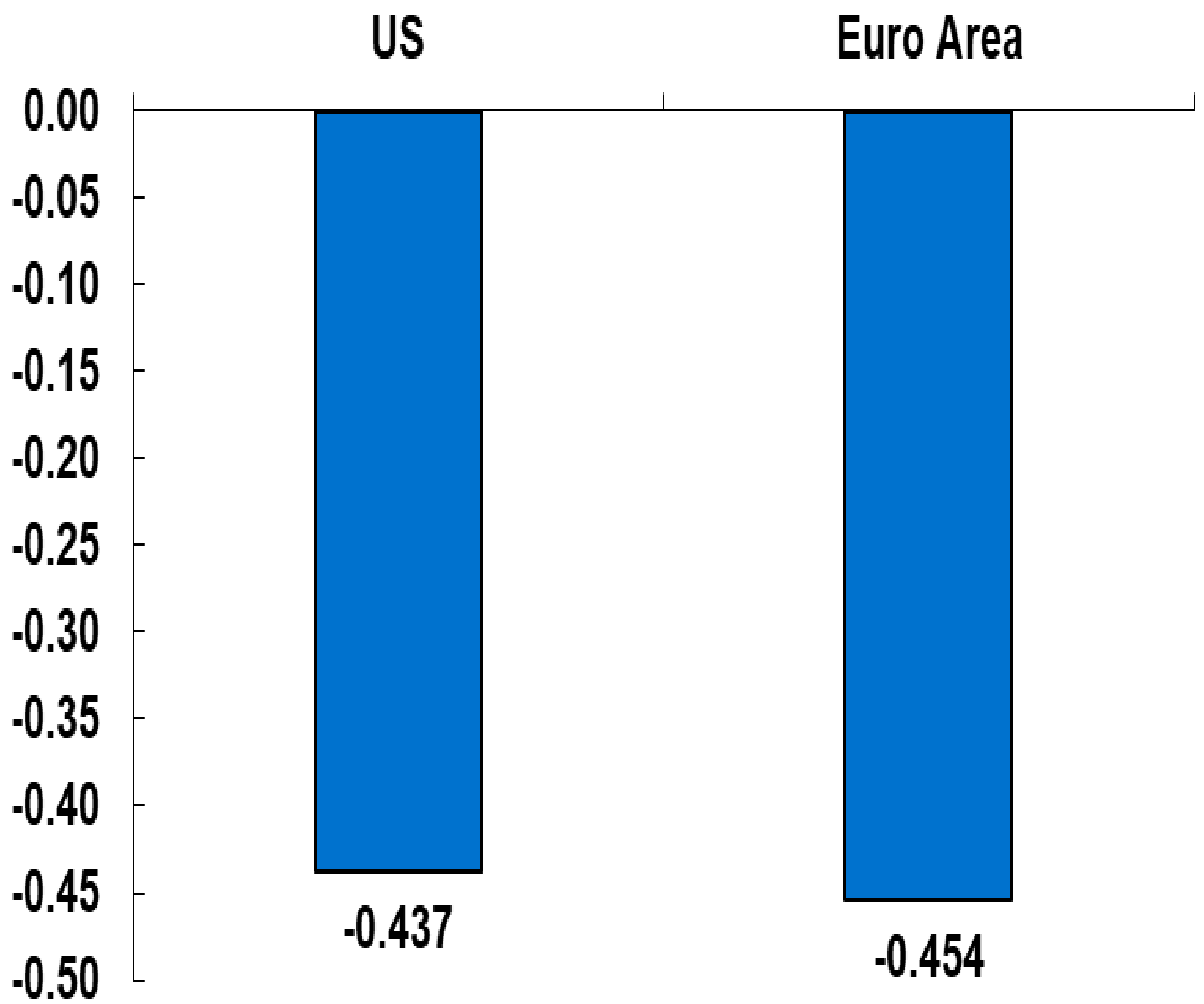
US Treasury 10-year to 3-month Spread
(Percent)



Contributor Factors to Lending Standards
(Index)



Impact of Bank Lending on Real GDP Level
(Percent, one-year ahead)

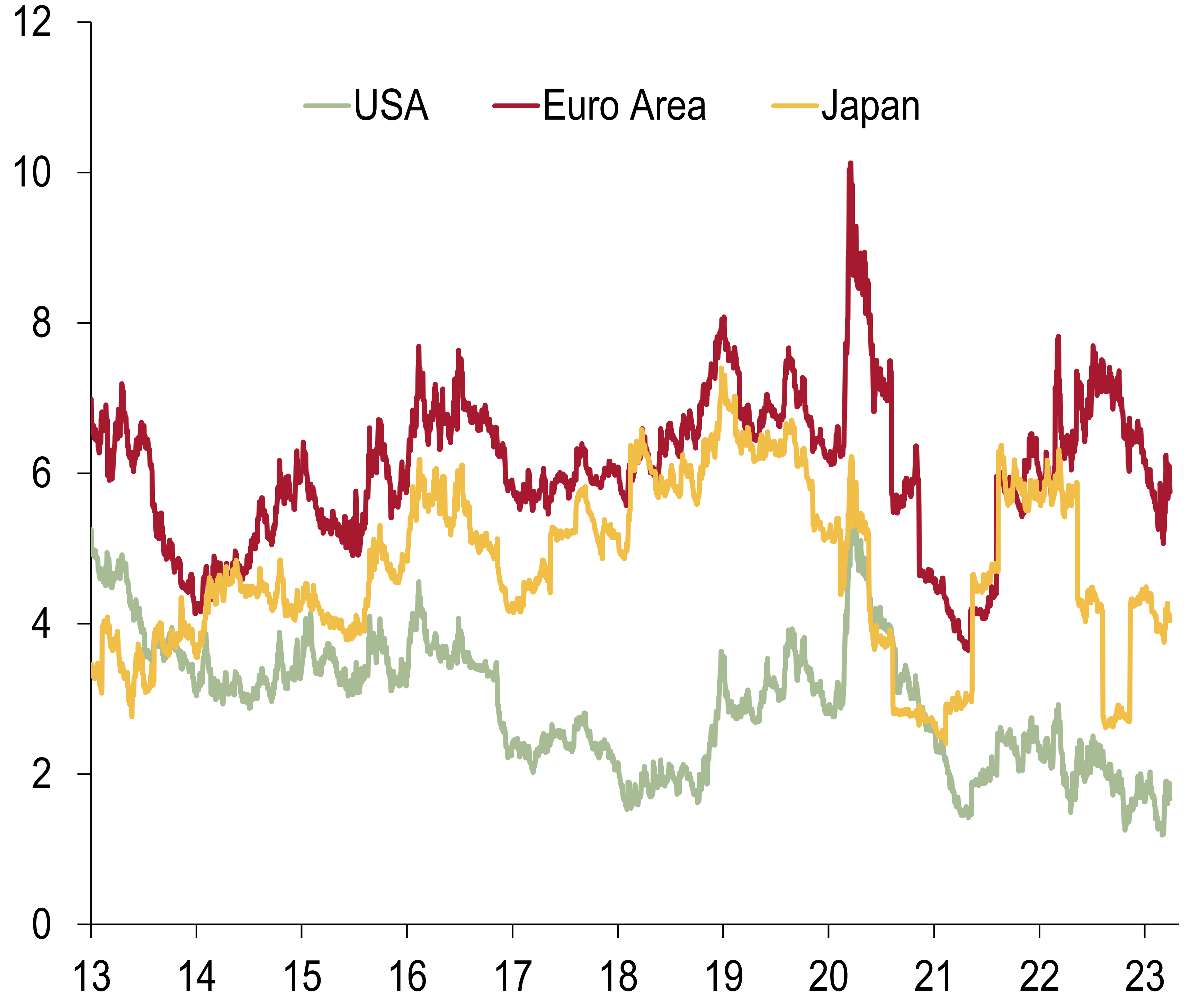


Markets May Be Challenged by a Deterioration of Fundamentals

The US equity rally was powered by falling risk premia and lower interest rates, which more than offset the weakening earnings outlook, but the recent market turmoil shows that risk premia could spike at short notice.

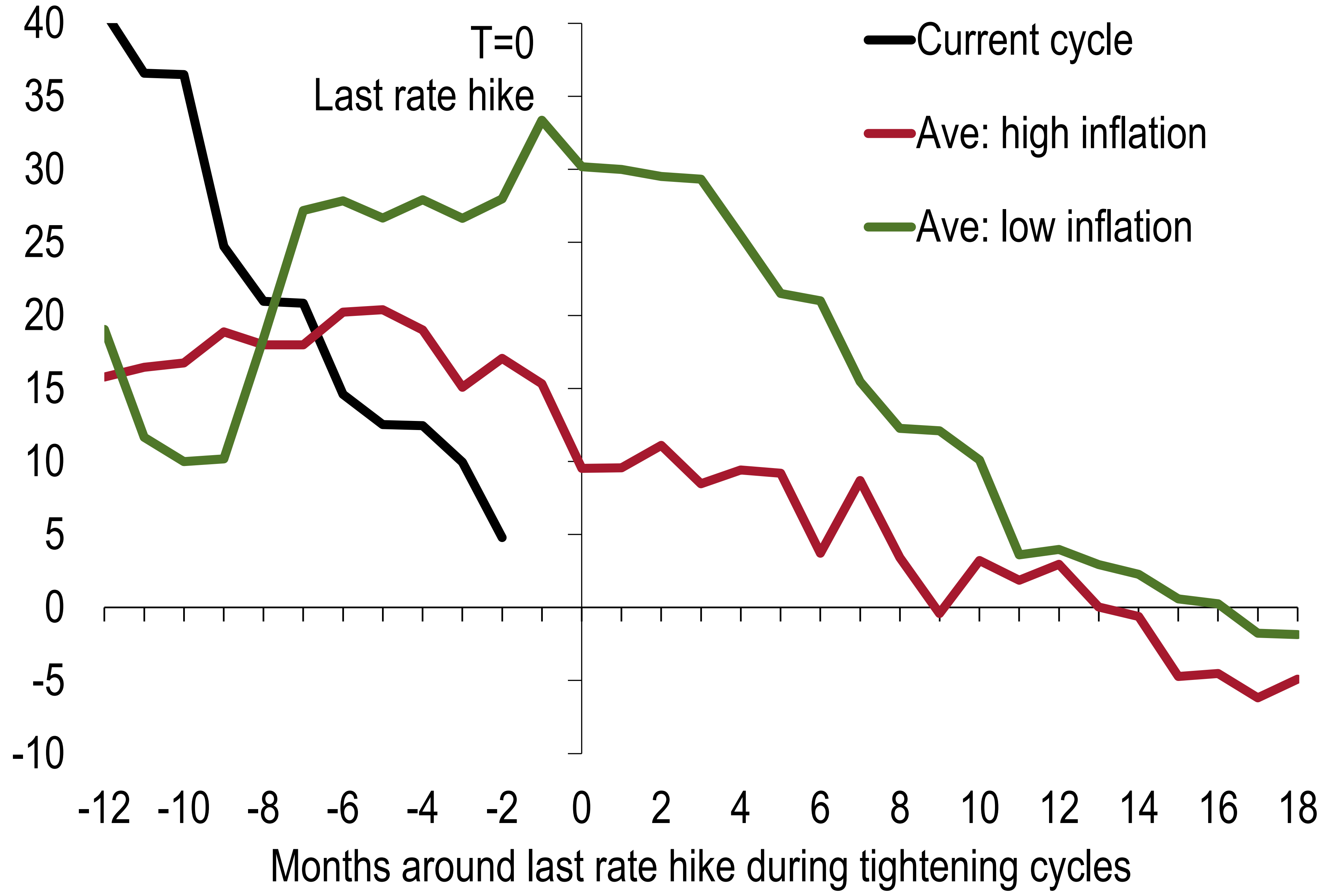
During past tightening cycles, corporate earnings underperformed in high-inflation episodes after the last rate hike.

Equity Risk Premiums
(Percent)



Note: Equity risk premium is calculated as earnings yield minus the 10-year local currency bond.

S&P 500 12-Month Trailing Earnings per Share Growth during Past Tightening Cycles
(Percent)



Real Estate Markets Could Face Further Headwinds

Rising financing costs are pressuring real estate markets

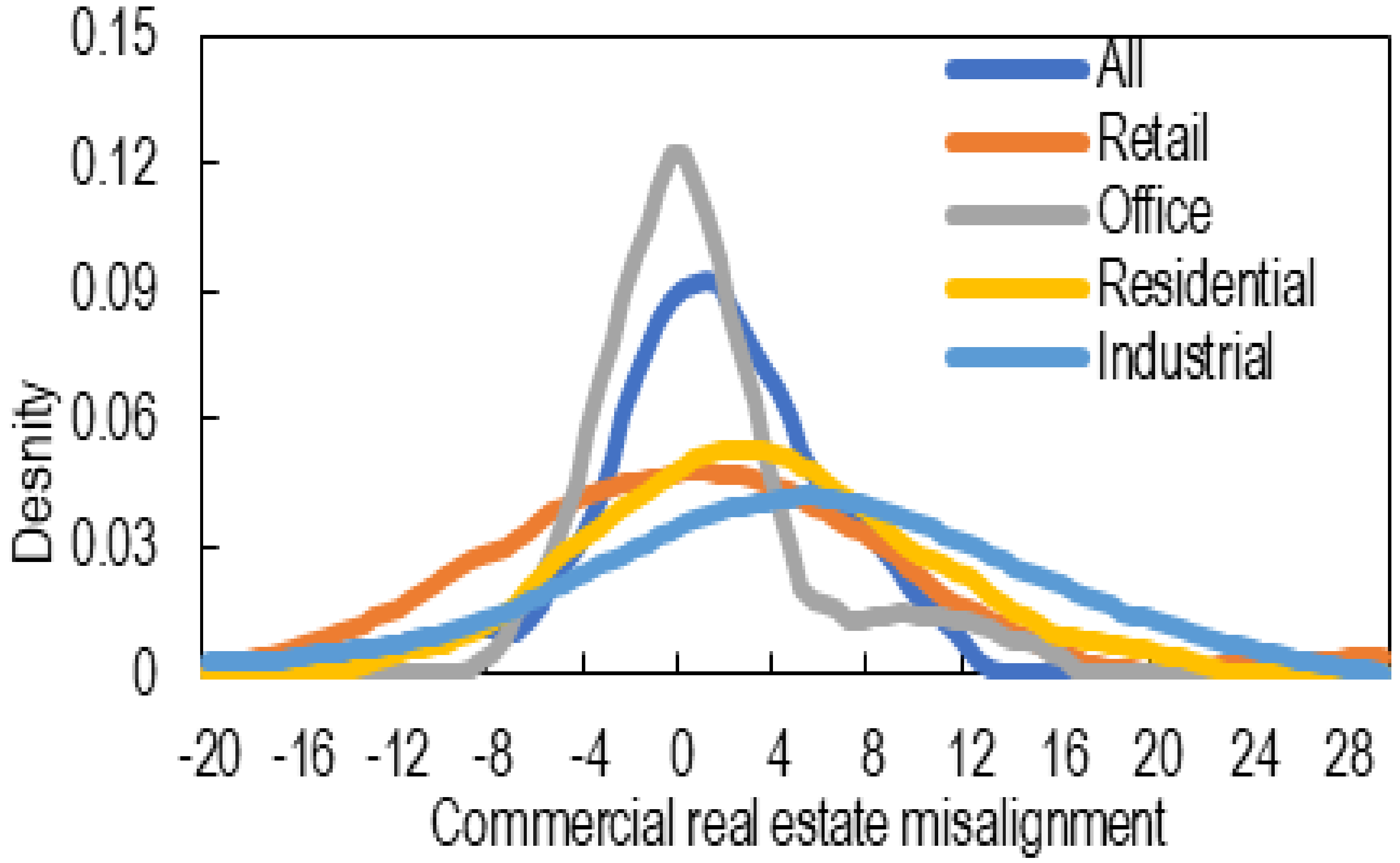
Real Estate Investment Trusts

(Year-on-year return)

Trends in commercial real estate capitalization rates suggest significant overvaluation in some segments of the market

Commercial Real Estate Overvaluation Across Countries

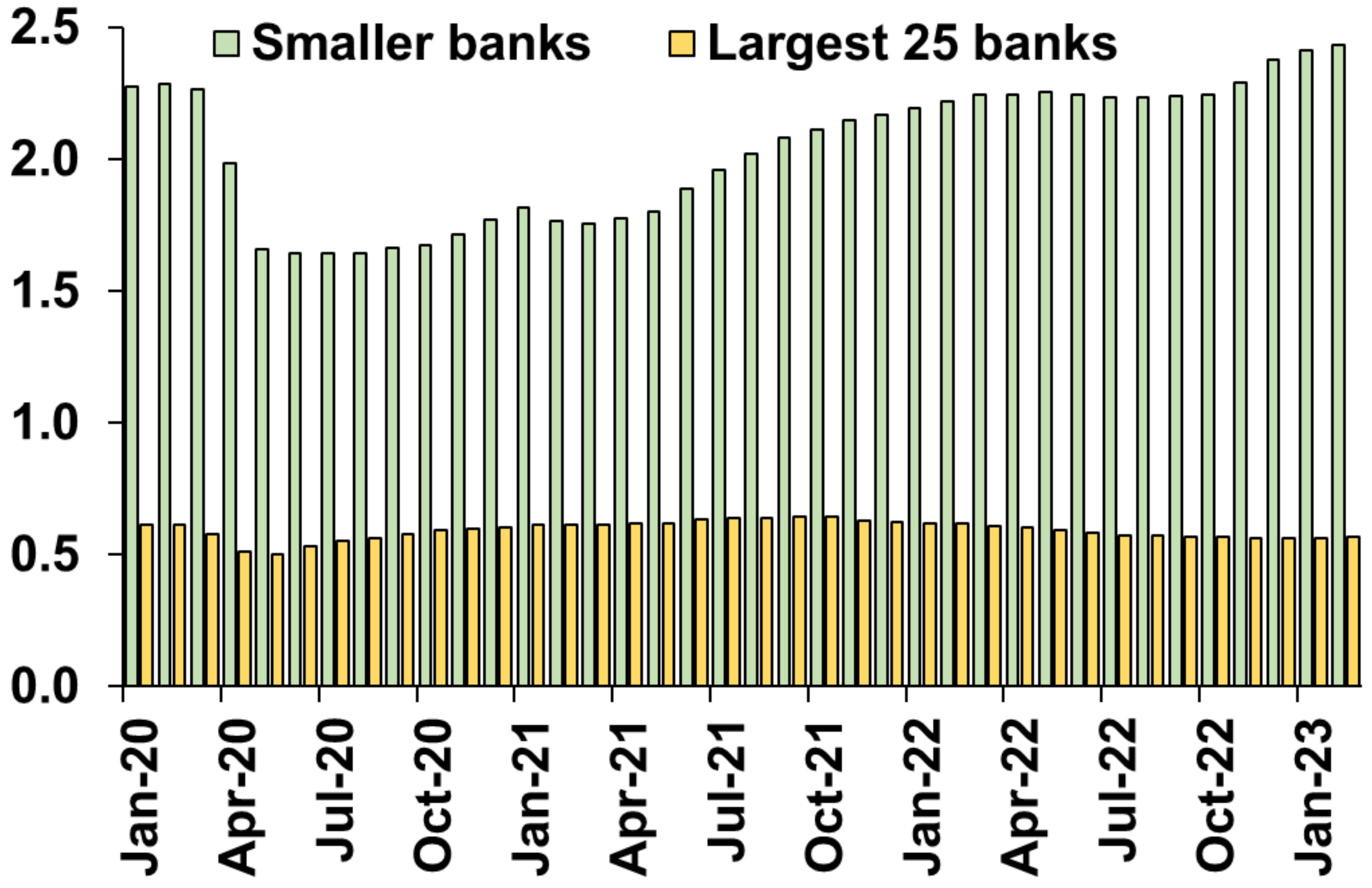
(Percent, latest)



The small bank-CRE nexus is a key risk as small banks dominate lending to the CRE sector.

CRE to C&I Loan Ratio, For Largest 25 Banks and Smaller Banks in the US

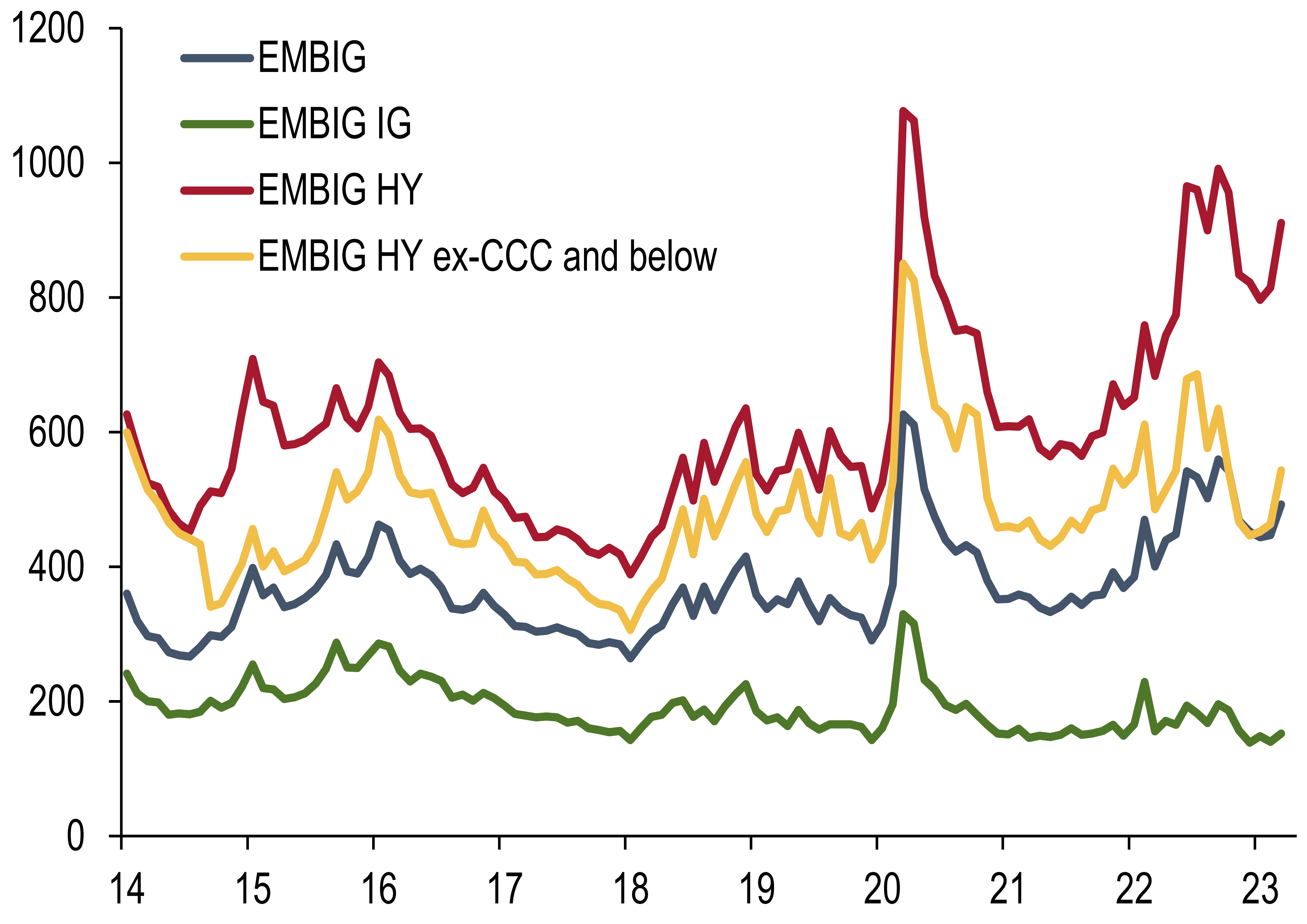
(Ratio)



EM and Frontiers Countries: Challenging Environment for Low-Rated Countries

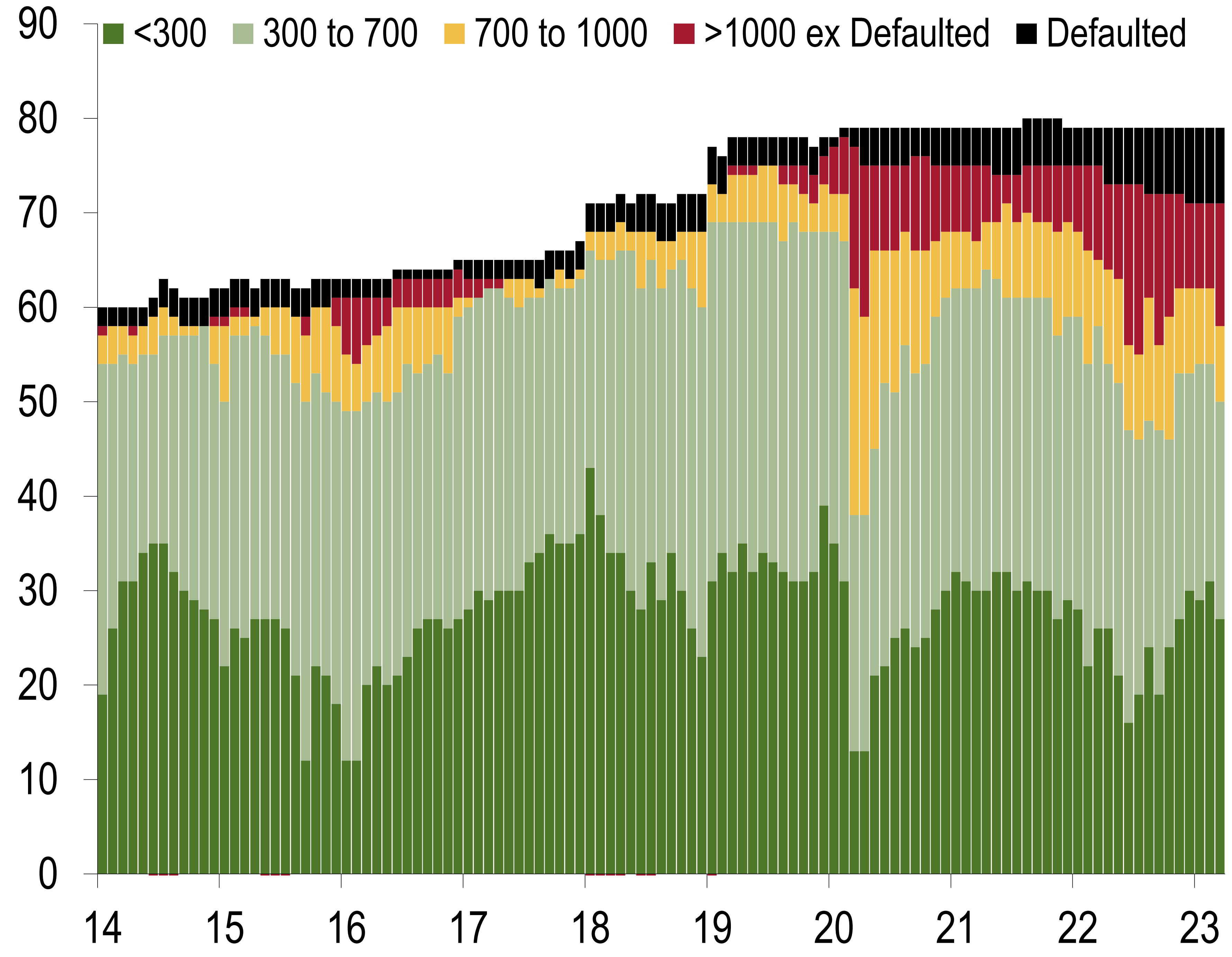
Sovereign spreads have widened, although investment grade countries have remained resilient so far.

Emerging Market Sovereign Spreads
(Basis points)



The number of distressed and defaulted sovereigns remains high compared with recent history.

Emerging Market Hard Currency Sovereign Spreads
(Number by spread in basis points)



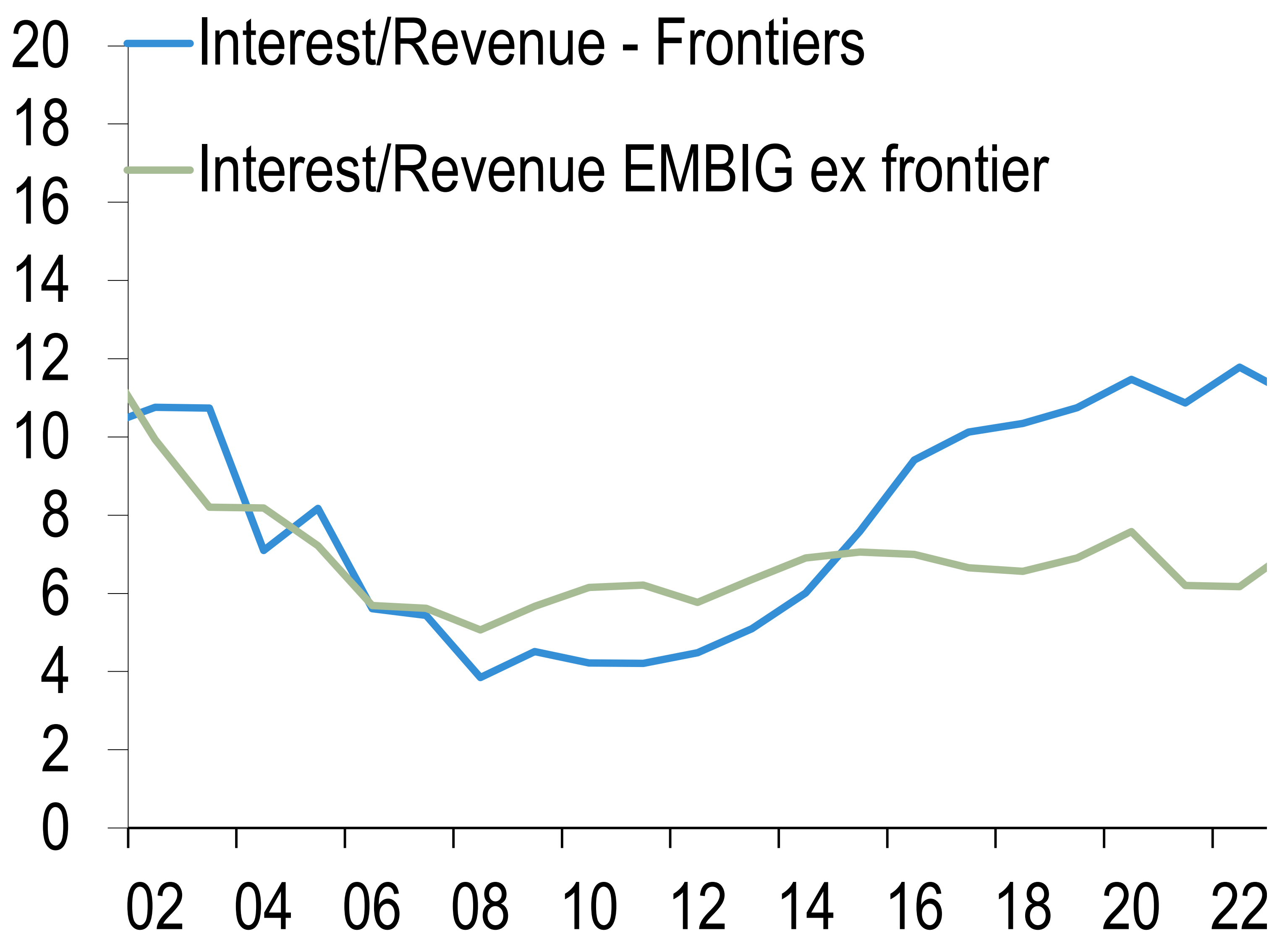
Financing and Debt Sustainability Challenges in Frontier and LICs

Frontier markets suffer from high levels of both debt and debt service.

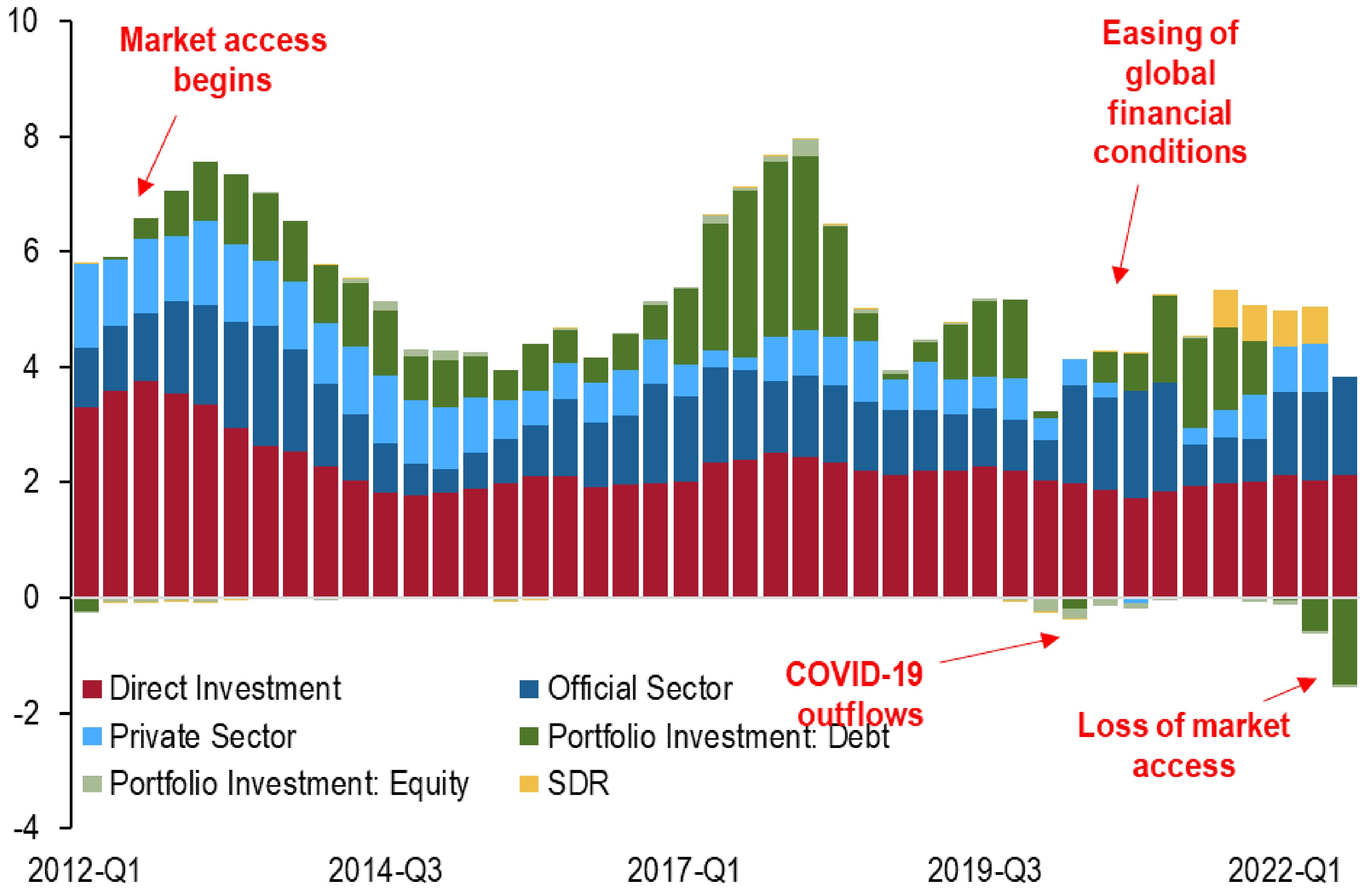
Access to capital markets remains limited, with official sector flows playing the dominant role.

The bank-sovereign nexus is increasing in low-income countries.

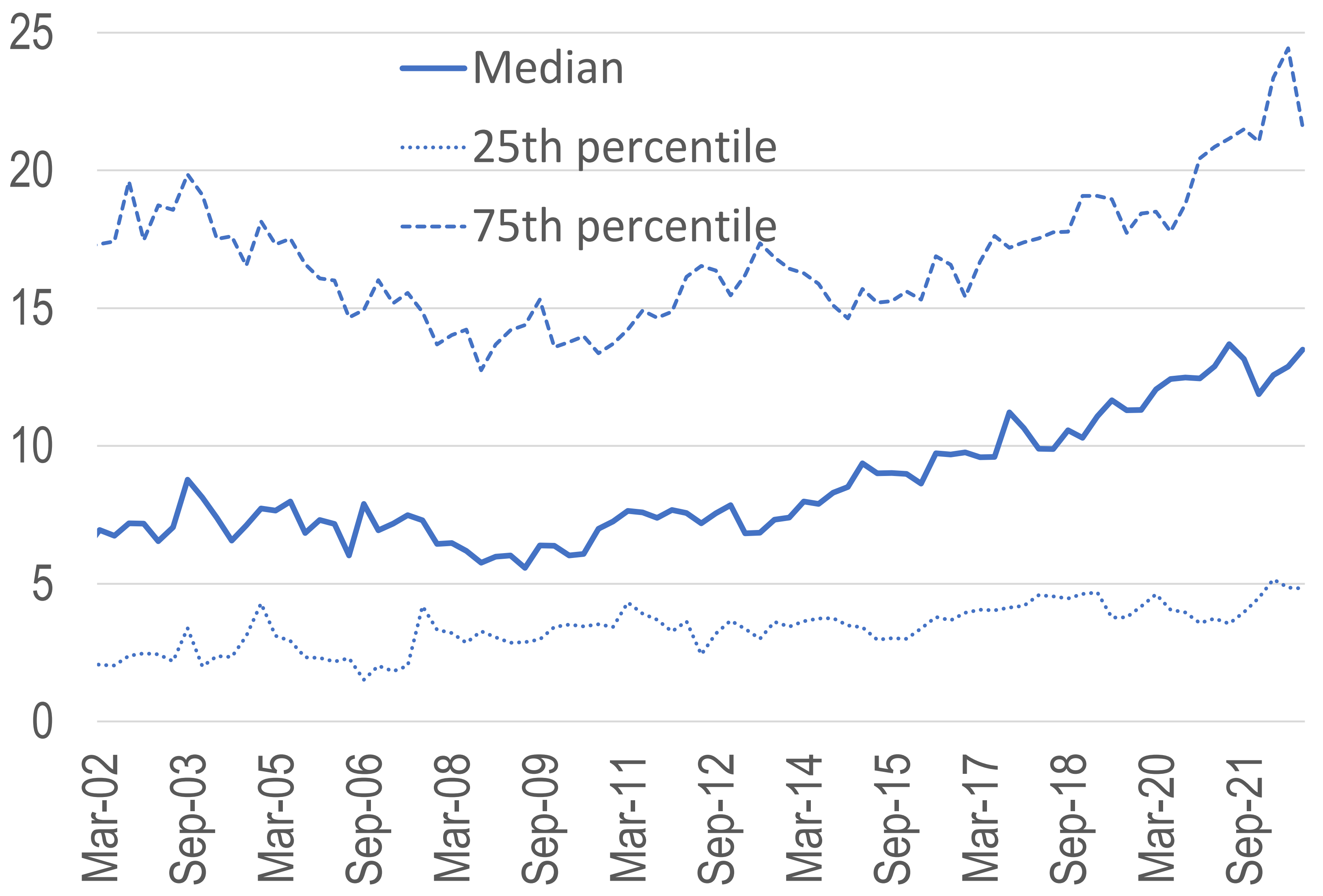
Fiscal Buffers
(Interest payments in percent of fiscal revenue, median)



Frontier Market Balance of Payments Nonresident Capital Flows
(Four-quarter rolling sum to GDP)



Banking Sector Claims on the Central Government
(Percent of total banking sector assets)



Geopolitics and Financial Fragmentation

-

Implication for Macro-Financial Stability?

How Geopolitics Can Impact Financial Fragmentation?

Is There A Threat to the Macro-Financial Stability?

Risks to financial stability

Geopolitical tensions are associated with…

- Lower portfolio and bank asset allocation by investing countries (LHS)
- Capital flow reversals
- Higher cost of funding for banks, and weaker bank profitability and domestic credit
- Disruption to cross-border payments

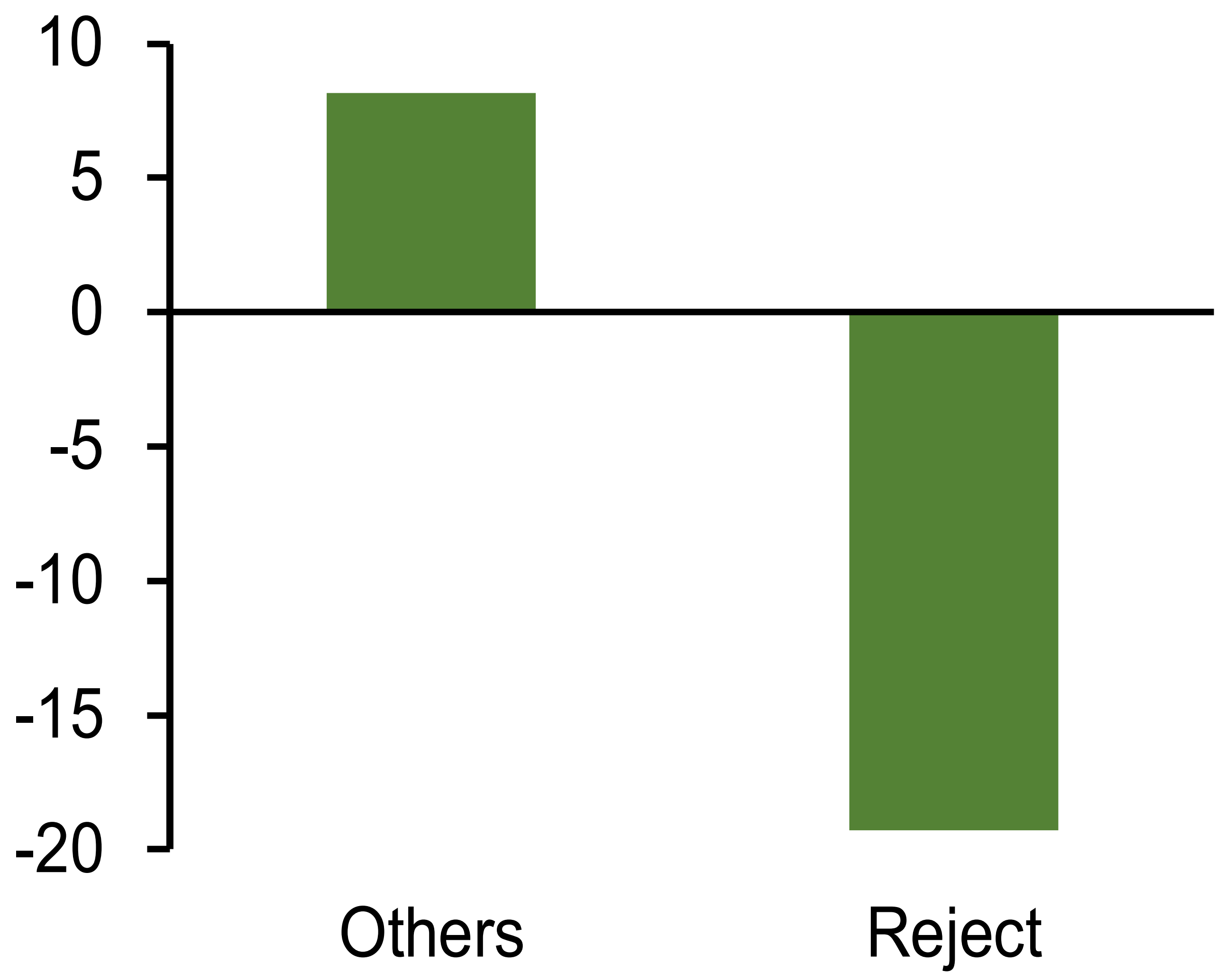
Policy recommendations

- Strengthen financial oversight (e.g., stress testing)
- Build adequate buffers and safety nets
- Strengthen international cooperation

Rising Concerns About Geo-Economic Fragmentation

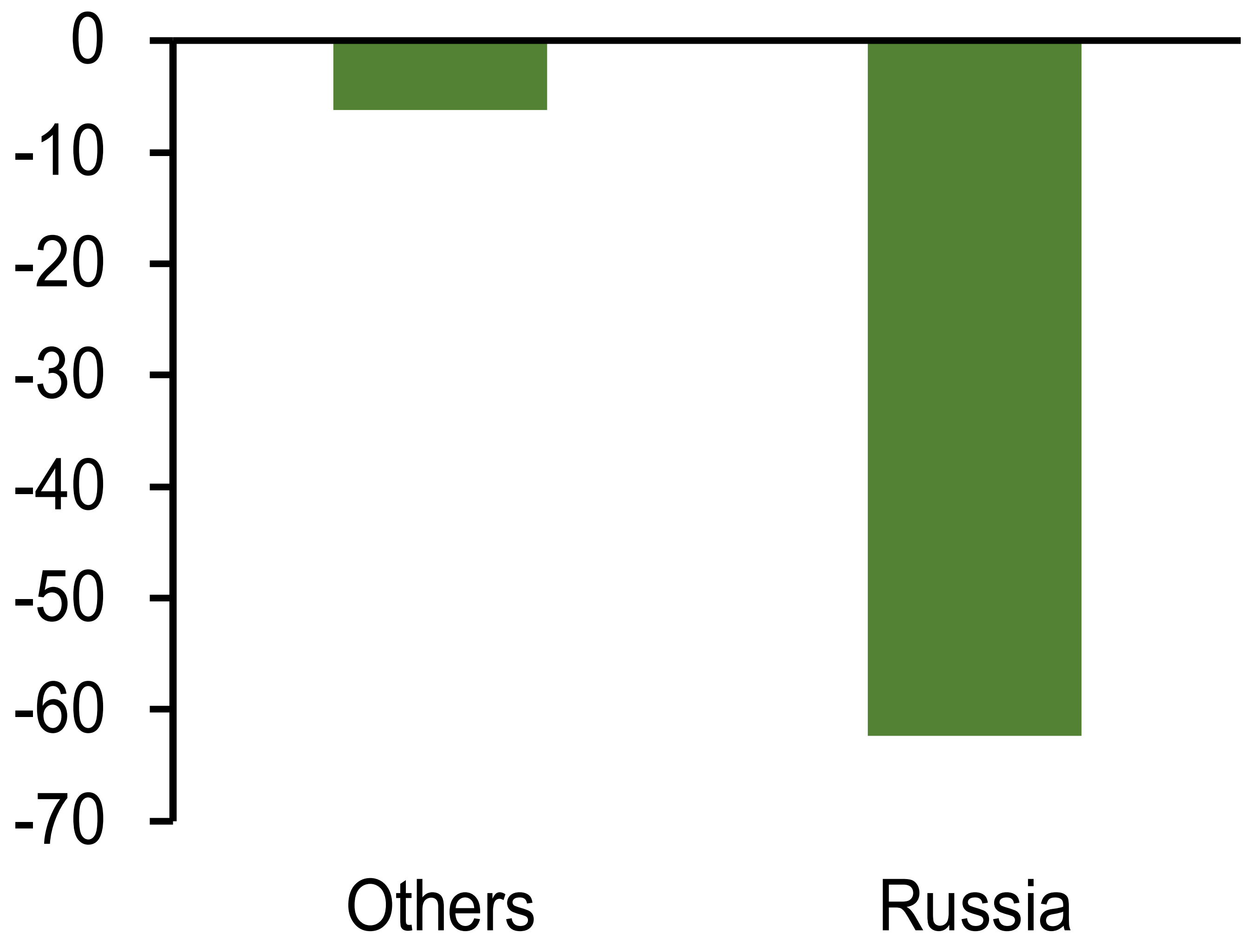
Since invading Ukraine, Russia has suffered a sharp decline in cross-border banking flows …

Cross-Border Banking Flows
(Cumulative 2022:H1 relative to prewar cross-border banking claims)



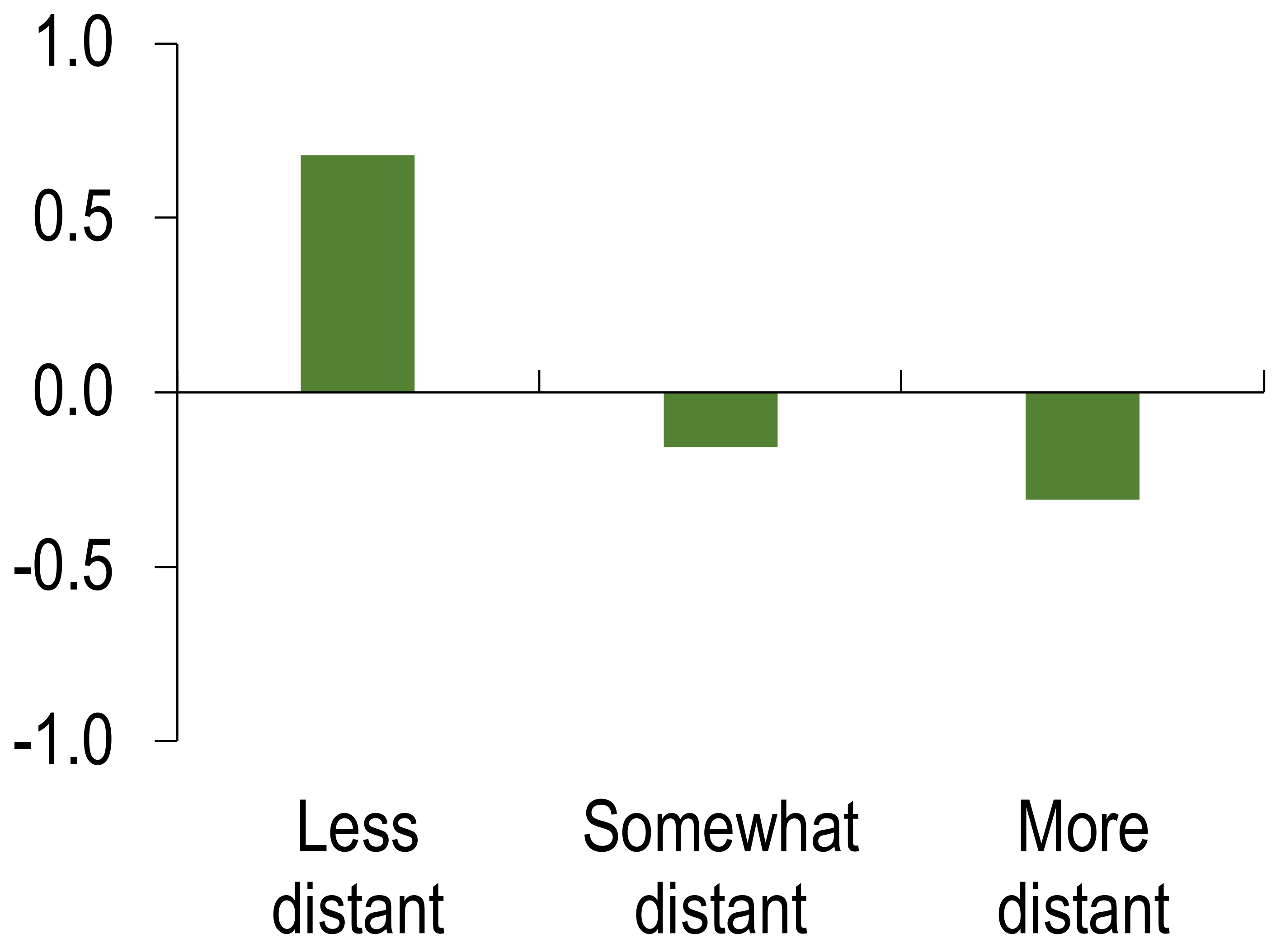
… as well as in portfolio flows.

Cross-Border Portfolio Debt Flows
(Cumulative from 2022:M3 to 2022:M11 relative to pre-war portfolio debt allocation)



Investing countries allocate smaller shares of portfolio investment to countries with less agreement on foreign policy issues.

Portfolio Investment, 2009–21
(Percentage points; relative to world portfolio)



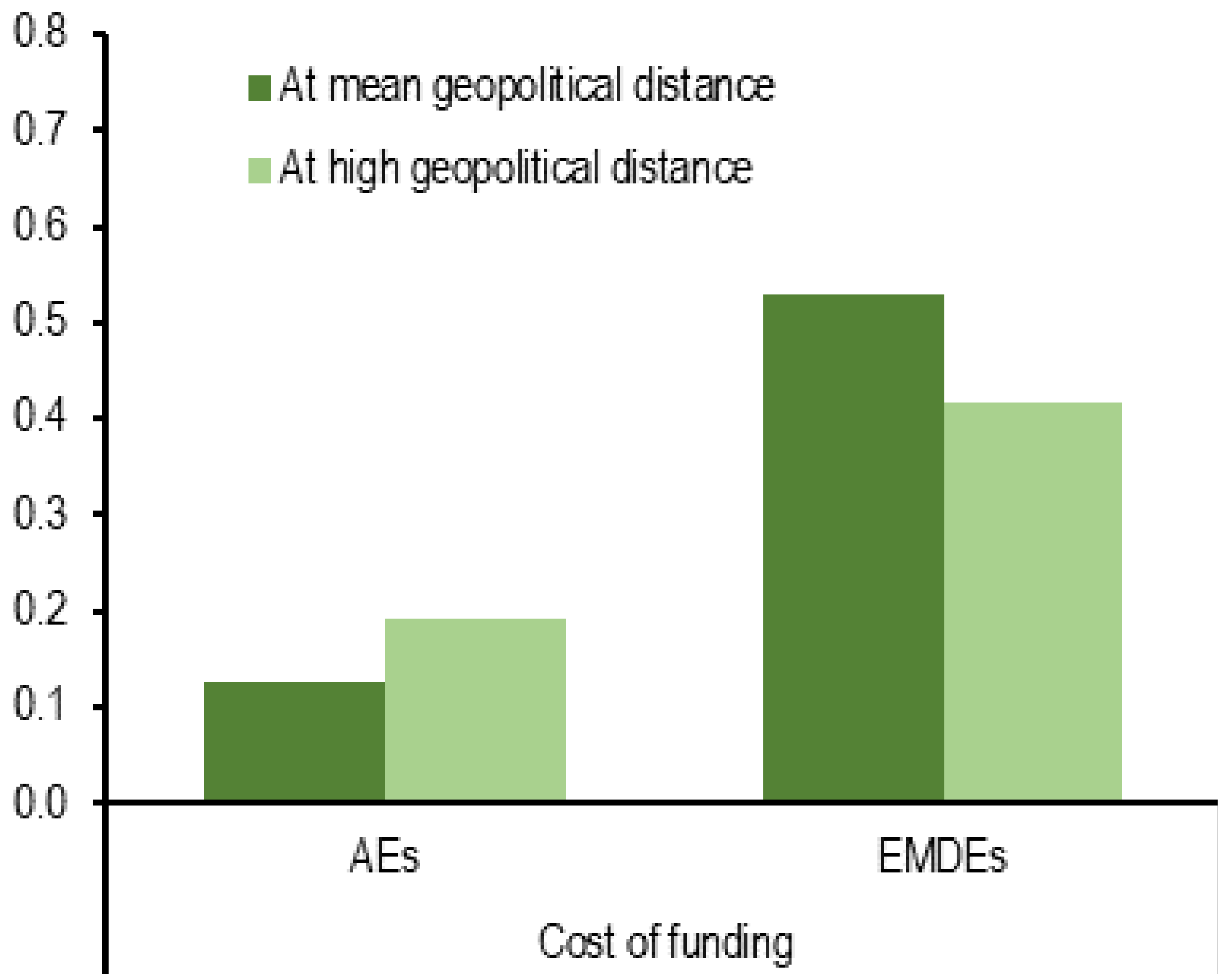
Effect of Geopolitical Tensions on Banks

After an increase in geopolitical distance with foreign lenders, especially in EMDEs, banks experience higher funding costs …

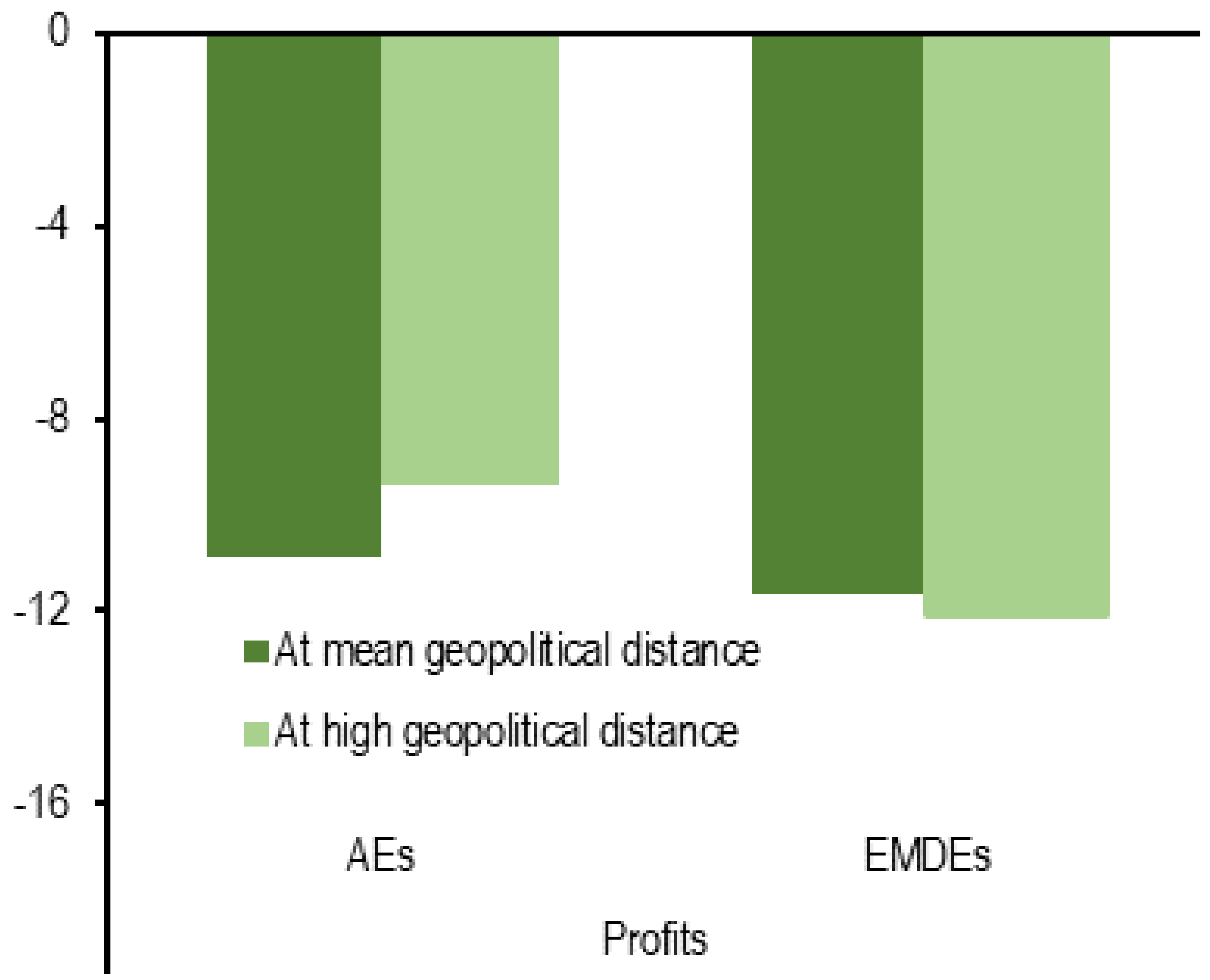
… as well as lower profitability …

… and in response, contract lending to the domestic economy.

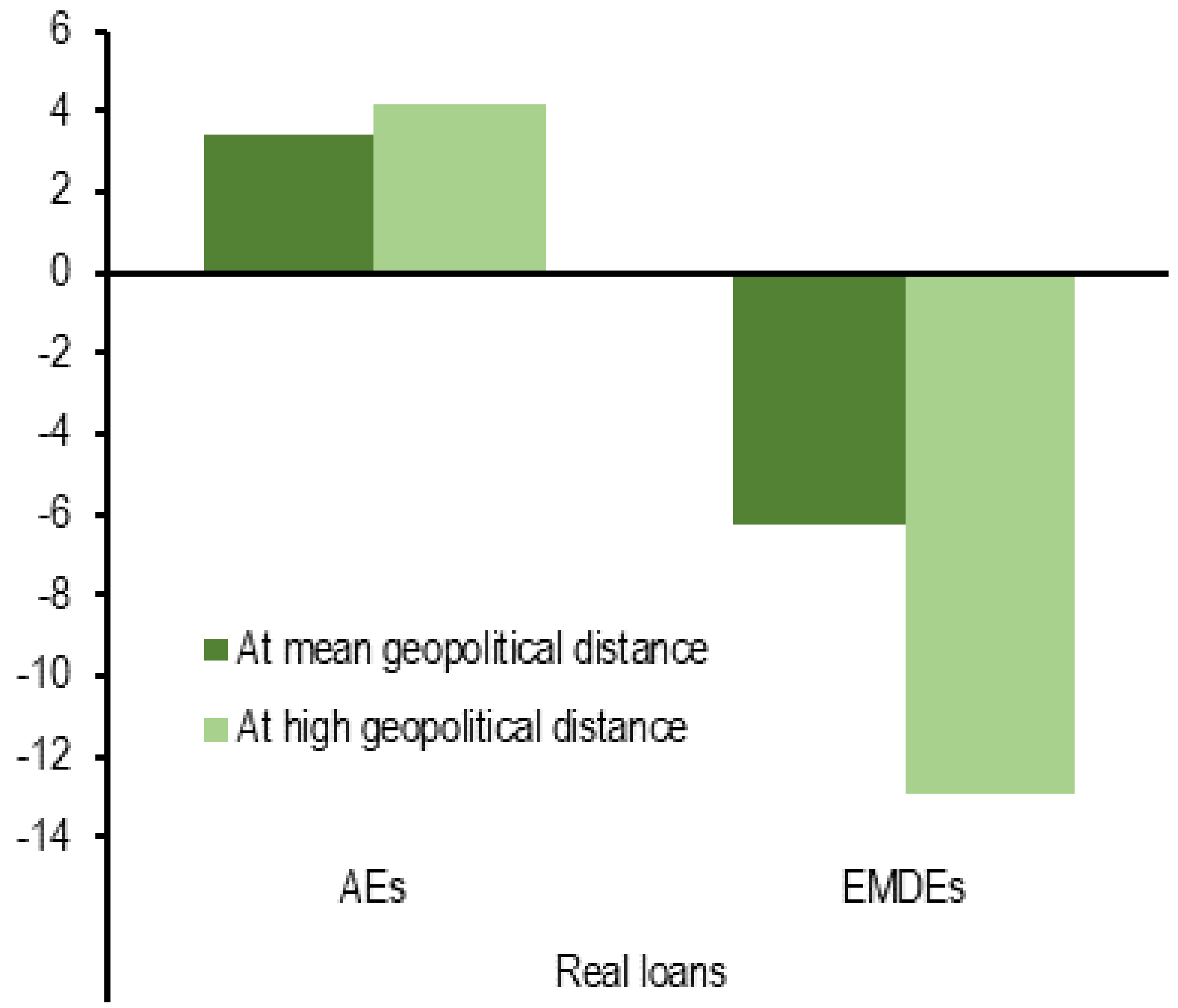
Effect on Banks' Cost of Funding (Percentage points)



Effect on Banks' Profitability (Percent)



Effect on Banks' Lending (Percent)



Note. "High geopolitical distance" corresponds to a level of geopolitical distance that is above the 75th percentile of the distribution of geopolitical distance. Solid bars indicate statistical significance at 10 percent level.

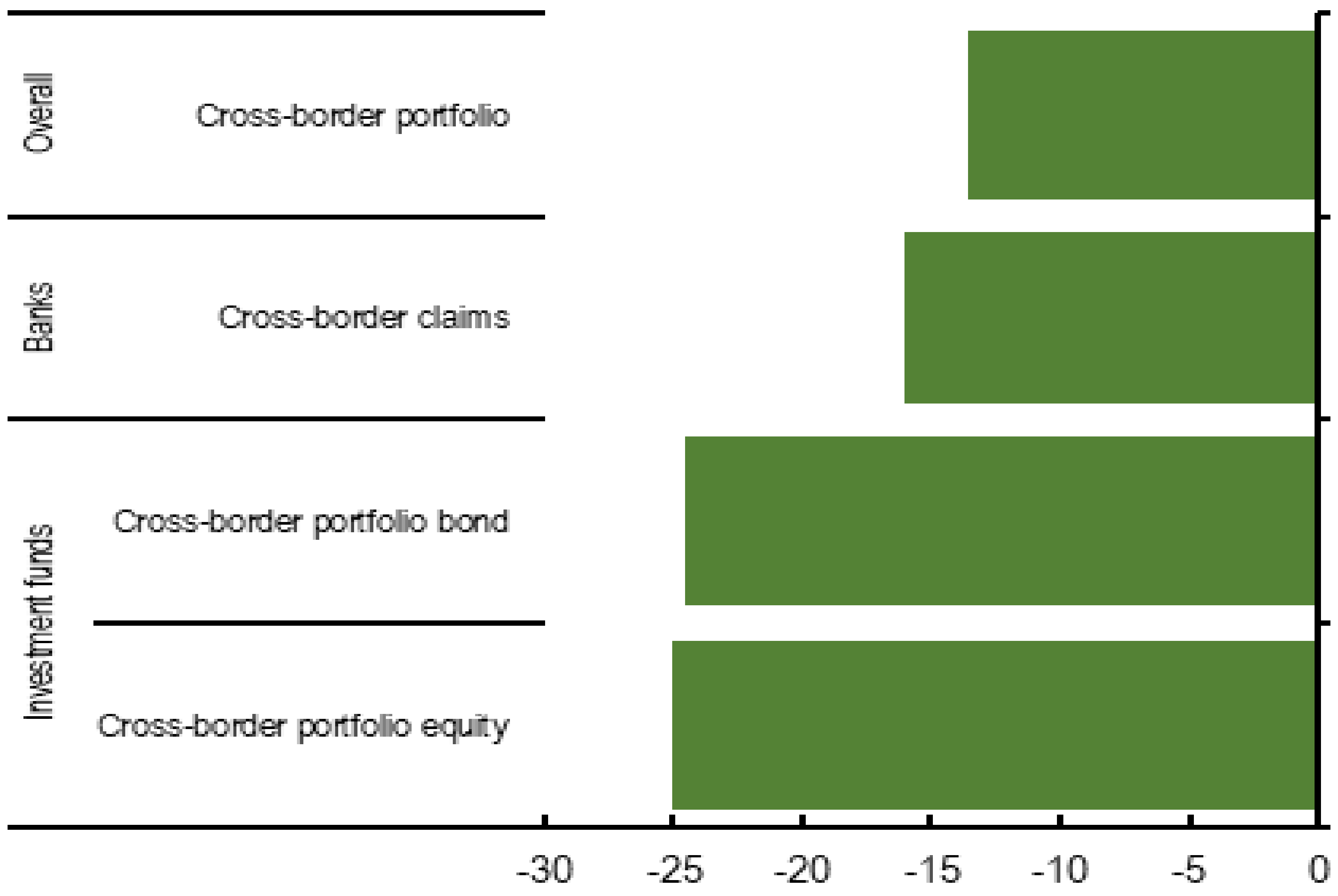
<u>Heterogeneity: larger effect on banks with lower capital ratios.</u>

Effect of geopolitical tensions on cross-border capital allocation

Greater geopolitical distance is associated with reduced (bilateral) cross-border banking and portfolio allocation by source to recipient countries.

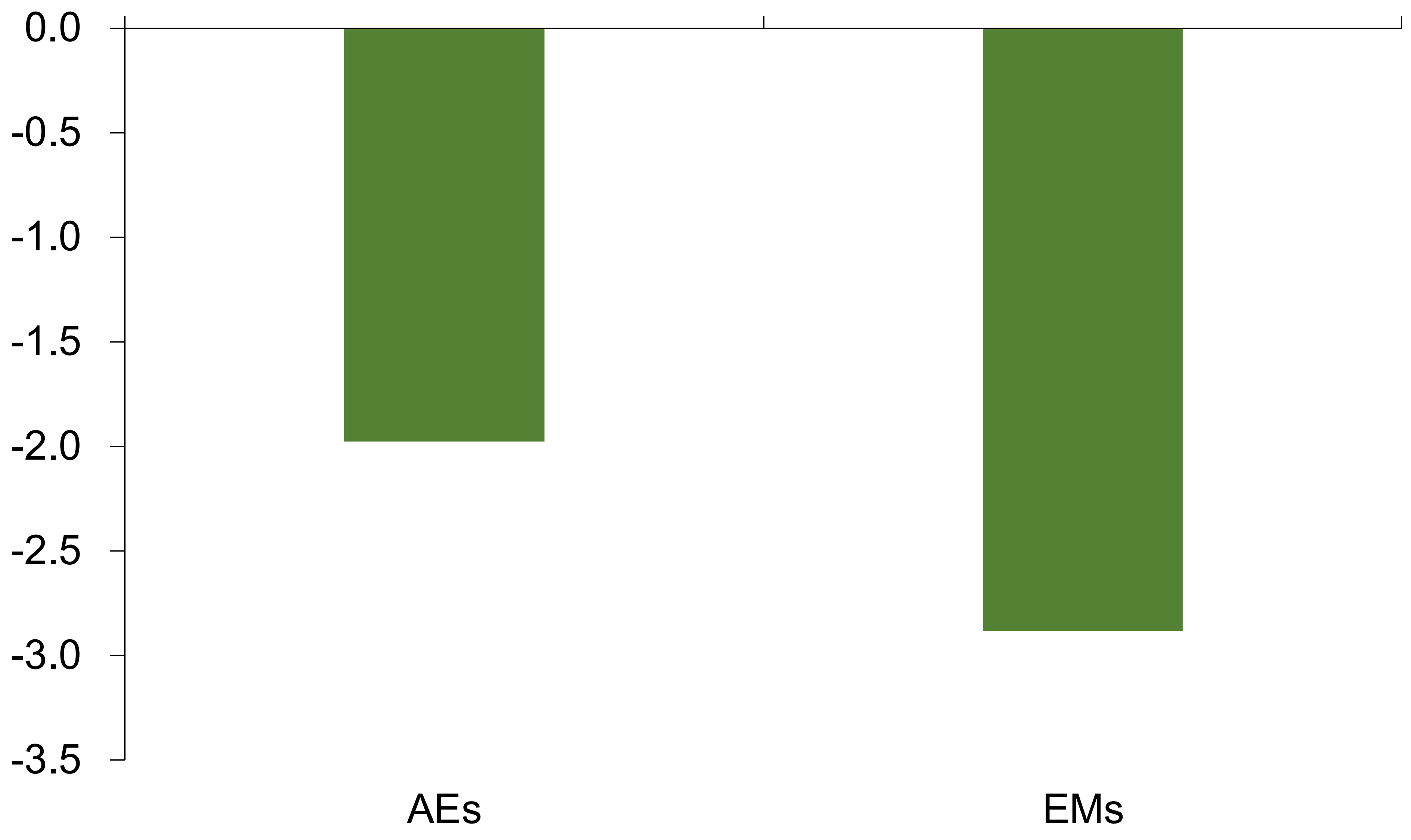
… and could result in a significant decline in (aggregate) capital flows, particularly in emerging market economies.

Change in Cross-Border Capital Allocation in response to an increase in geopolitical distance (Percent)



Note: Solid bars indicate statistical significance of at least 10 percent level.

Net Capital Flows to GDP (Percentage points)



Heterogeneity: smaller effect in economies with larger stocks of net foreign assets and international reserves, and more developed financial systems