



Financial Stability Report

November 2024

BOARD OF GOVERNORS OF THE FEDERAL RESERVE SYSTEM

Contents

Purpose and Framework	v
Corrections	ix
Overview	1
1 Asset Valuations	5
2 Borrowing by Businesses and Households	15
3 Leverage in the Financial Sector	25
4 Funding Risks	37
5 Near-Term Risks to the Financial System	45
Box 5.1. Survey of Salient Risks to Financial Stability	47
Appendix: Figure Notes	49

Purpose and Framework

This report presents the Federal Reserve Board’s current assessment of the stability of the U.S. financial system. By publishing this report, the Board intends to promote public understanding by increasing transparency around, and creating accountability for, the Federal Reserve’s views on this topic. Financial stability supports the objectives assigned to the Federal Reserve, including full employment and stable prices, a safe and sound banking system, and an efficient payments system.

A financial system is considered stable when banks, other lenders, and financial markets are able to provide households, communities, and businesses with the financing they need to invest, grow, and participate in a well-functioning economy—and can do so even when hit by adverse events, or “shocks.”

Consistent with this view of financial stability, the Federal Reserve Board’s monitoring framework distinguishes between shocks to, and vulnerabilities of, the financial system. Shocks are inherently difficult to predict, while vulnerabilities, which are the aspects of the financial system that would exacerbate stress, can be monitored as they build up or recede over time. As a result, the framework focuses primarily on assessing vulnerabilities, with an emphasis on four broad categories and how those categories might interact to amplify stress in the financial system.¹

More on the Federal Reserve’s Monitoring Efforts

See the [Financial Stability](#) section of the Federal Reserve Board’s website for more information on how the Federal Reserve monitors the stability of the U.S. and world financial systems.

The website includes:

- a more detailed look at our [monitoring framework](#) for assessing risk in each category;
- more data and research on related topics;
- information on how we coordinate, cooperate, and otherwise take action on financial system issues; and
- [public education resources](#) describing the importance of our efforts.

1. **Valuation pressures** arise when asset prices are high relative to economic fundamentals or historical norms. These developments are often driven by an increased willingness of investors to take on risk. As such, elevated valuation pressures may increase the possibility of outsized drops in asset prices (see Section 1, [Asset Valuations](#)).

¹ For a review of the research literature in this area, see Tobias Adrian, Daniel Covitz, and Nellie Liang (2015), “Financial Stability Monitoring,” *Annual Review of Financial Economics*, vol. 7 (December), pp. 357–95.

2. Excessive **borrowing by businesses and households** exposes the borrowers to distress if their incomes decline or the assets they own fall in value. In these cases, businesses and households with high debt burdens may need to cut back spending, affecting economic activity and causing losses for investors (see Section 2, [Borrowing by Businesses and Households](#)).
3. Excessive **leverage within the financial sector** increases the risk that financial institutions will not have the ability to absorb losses without disruptions to their normal business operations when hit by adverse shocks. In those situations, institutions will be forced to cut back lending, sell their assets, or even shut down. Such responses can impair credit access for households and businesses, further weakening economic activity (see Section 3, [Leverage in the Financial Sector](#)).
4. **Funding risks** expose the financial system to the possibility that investors will rapidly withdraw their funds from a particular institution or sector, creating strains across markets or institutions. Many financial institutions raise funds from the public with a commitment to return their investors' money on short notice, but those institutions then invest much of those funds in assets that are hard to sell quickly or have a long maturity. This liquidity and maturity transformation can create an incentive for investors to withdraw funds quickly in adverse situations. Facing such withdrawals, financial institutions may need to sell assets quickly at "fire sale" prices, thereby incurring losses and potentially becoming insolvent, as well as causing additional price declines that can create stress across markets and at other institutions (see Section 4, [Funding Risks](#)).

The Federal Reserve's monitoring framework also tracks domestic and international developments to identify near-term risks—that is, plausible adverse developments or shocks that could stress the U.S. financial system. The analysis of these risks focuses on assessing how such potential shocks may spread through the U.S. financial system, given our current assessment of vulnerabilities.

While this framework provides a systematic way to assess financial stability, some potential risks may be novel or difficult to quantify and therefore are not captured by the current approach. Given these complications, we rely on ongoing research by the Federal Reserve staff, academics, and other experts to improve our measurement of existing vulnerabilities and to keep pace with changes in the financial system that could create new forms of vulnerabilities or add to existing ones.

Federal Reserve actions to promote the resilience of the financial system

The assessment of financial vulnerabilities informs Federal Reserve actions to promote the resilience of the financial system. The Federal Reserve works with other domestic agencies directly and through the Financial Stability Oversight Council to monitor risks to financial stability and to undertake supervisory and regulatory efforts to mitigate the risks and consequences of financial instability.

Actions taken by the Federal Reserve to promote the resilience of the financial system include its supervision and regulation of financial institutions. In the aftermath of the 2007–09 financial crisis, these actions have included requirements for more and higher-quality capital, an innovative stress-testing regime, and new liquidity regulations applied to the largest banks in the United States. In addition, the Federal Reserve’s assessment of financial vulnerabilities informs decisions regarding the countercyclical capital buffer (CCyB). The CCyB is designed to increase the resilience of large banking organizations when there is an elevated risk of above-normal losses and to promote a more sustainable supply of credit over the economic cycle.





Corrections

On November 29, 2024, the label colors in figure 3.11 were corrected to show the top label corresponding to “Mean gross leverage” and the bottom label to “Mean balance sheet leverage.”

Overview

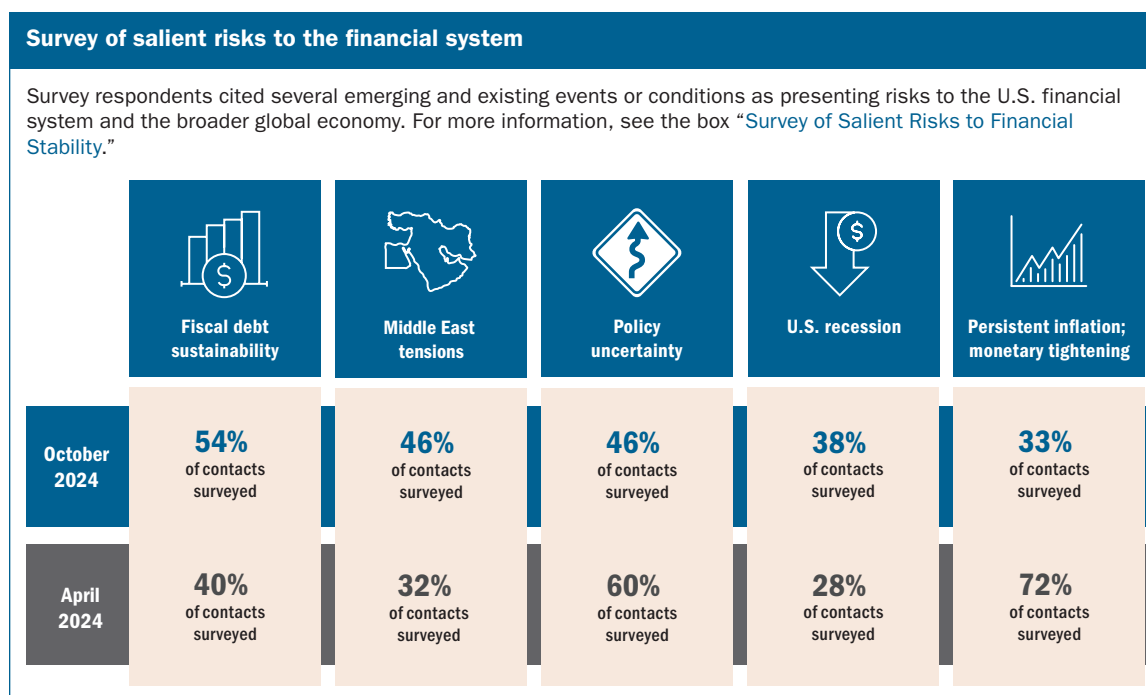
This report reviews vulnerabilities affecting the stability of the U.S. financial system related to valuation pressures, borrowing by businesses and households, financial-sector leverage, and funding risks. It also highlights several near-term risks that, if realized, could interact with these vulnerabilities.

A summary of the developments in the four broad categories of vulnerabilities since the April 2024 *Financial Stability Report* is as follows:

Overview of financial system vulnerabilities			
 Asset valuations	 Borrowing by businesses and households	 Leverage in the financial sector	 Funding risks
<ul style="list-style-type: none"> Valuation pressures remained elevated in a range of markets, including those for equity, corporate debt, and residential real estate. Liquidity in financial markets was generally low and can become strained during periods of volatility. Transaction-based prices for commercial properties changed little but fundamentals deteriorated across multiple sectors. 	<ul style="list-style-type: none"> Vulnerabilities from business and household debt remained moderate. Business leverage remained elevated by historical standards. Household debt was at modest levels relative to gross domestic product and mostly owed by prime-rated borrowers. Auto and credit card loan delinquencies remained above pre-pandemic levels, in part reflecting extension of credit to riskier borrowers. 	<ul style="list-style-type: none"> The banking system remained sound and resilient, with regulatory capital ratios approaching or exceeding historical highs. Banks' market-adjusted capital levels improved modestly, on net, and remain sensitive to changes in interest rates. Broker-dealer leverage continued to be low. Hedge fund leverage was at or near the highest level since 2013. 	<ul style="list-style-type: none"> Most domestic banks maintained high levels of liquid assets and stable funding. Uninsured deposits have decreased, but some banks have increased brokered and reciprocal deposits or short-term wholesale funding. Reforms implemented by the Securities and Exchange Commission have mitigated some vulnerabilities arising from institutional prime money market funds, but other short-term investment vehicles with structural vulnerabilities continued to grow. Nontraditional liabilities at life insurers continued to be higher than average.

1. **Asset valuations.** Valuation pressures remained elevated. The ratio of equity prices to earnings moved up toward the high end of its historical range, and an estimate of the equity premium—the compensation for risk in equity markets—remained well below average. Spreads between yields on corporate bonds and those on comparable-maturity Treasury securities were low compared to their history. Liquidity across many financial markets remained low, contributing to volatility during periods of high uncertainty. In U.S. property markets, home prices rose further, and the ratio of house prices to rents was near the highest levels on record. Transaction-based price indexes (adjusted for inflation) for commercial real estate (CRE) properties were little changed, while rent growth slowed and vacancy rates rose (see Section 1, [Asset Valuations](#)).
2. **Borrowing by businesses and households.** Vulnerabilities from business and household debt remained moderate. Total debt of households and businesses as a fraction of gross domestic product (GDP) continued to trend down to a level that is very low relative to the past two decades. Household debt relative to GDP is especially subdued relative to recent history, and most household debt is owed by prime-rated borrowers who are well positioned to meet their payment obligations. That said, delinquency rates on credit cards and auto loans among borrowers with nonprime credit ratings are above pre-pandemic levels. Indicators of business leverage remained elevated relative to historical levels, and private credit arrangements have been growing rapidly. Nonetheless, measures of the ability of businesses to service their debt have been stable within typical ranges, in part reflecting robust corporate earnings (see Section 2, [Borrowing by Businesses and Households](#)).
3. **Leverage in the financial sector.** Vulnerabilities associated with financial leverage remained notable. The banking sector remained sound and resilient overall, and most banks continued to report capital levels well above regulatory requirements. Fair value losses on fixed-rate assets were still sizable for some banks and remained sensitive to changes in interest rates. Further, some banks, insurers, and securitization vehicles continued to have concentrated exposures to CRE. Indicators suggest that hedge fund leverage was at or near the highest level in the past decade. Broker-dealer leverage stayed near historical lows (see Section 3, [Leverage in the Financial Sector](#)).
4. **Funding risks.** Funding risks have decreased some but overall remained notable. Liquidity at most domestic banks remained sound. Many banks have significantly reduced the fraction of assets funded with uninsured deposits, but use of short-term wholesale funding and brokered and reciprocal deposits has increased. The U.S. Securities and Exchange Commission (SEC) implemented reforms that reduced structural vulnerabilities among institutional prime and tax-exempt funds. However, other types of money funds and alternatives to money funds with similar vulnerabilities have grown and bond and loan funds that hold assets that can become illiquid during periods of stress remained susceptible to large redemptions. In addition, life insurers continued to rely on a higher-than-average share of nontraditional liabilities (see Section 4, [Funding Risks](#)).

This report also discusses potential near-term risks, based in part on the most frequently cited risks to U.S. financial stability as gathered from outreach to a wide range of researchers, academics, and market contacts conducted from late August through late October (discussed in the box “[Survey of Salient Risks to Financial Stability](#)”). In the fall survey, there were declines relative to spring in the share of respondents citing persistent inflation pressures and monetary tightening or generalized policy uncertainty as among the most notable risks to financial stability. At the same time, there were sizable increases in the share of respondents who noted among their top risks to financial stability fiscal debt sustainability, Middle East tensions, or a U.S. recession.



1 | Asset Valuations

Asset valuations remained elevated relative to fundamentals

Since the April report, valuations continued to rise in U.S. equity markets from already high levels and remained stretched in corporate debt markets. Across equity and some debt markets, liquidity remained low, which can amplify the impact of shocks on financial asset valuations. Indeed, there is some evidence that investors seeking to exit a trading strategy known as the yen-carry trade contributed to a temporary spike in market volatility at the start of August. The yen-carry trade is a leveraged trade relying on a large amount of borrowing in Japanese yen. Investors then use the borrowed funds to invest in other currencies to take advantage of interest rate differentials. Following the Bank of Japan's interest rate increase and weaker-than-expected labor market indicators in the U.S., investors sought to deleverage their yen-carry trades, leading to heightened volatility across many markets.

In U.S. property markets, residential real estate valuations remained near the peak levels seen in the mid-2000s. CRE market conditions continued to deteriorate, especially for the office and multifamily sectors. Farmland prices were historically elevated relative to rents, reflecting limited inventories of land.

Table 1.1 shows the sizes of the asset markets discussed in this section. The two largest asset markets are those for equities and residential real estate, which are substantially larger than the next two biggest markets, Treasury securities and CRE. The table also shows recent and historical growth rates for each asset class, because assets experiencing strong growth can be a sign of high risk appetite with respect to that sector.

Treasury yields fell but remained high relative to the past 15 years

Since the April report, the Treasury yield curve steepened, with the 2-year Treasury yield falling below the 10-year yield, owing in part to expectations that monetary policy would become less restrictive. However, yields remained well above their average levels over the past 15 years (figure 1.1). A model-based estimate of the nominal Treasury term premium—a measure of the compensation that investors require to hold longer-term Treasury securities rather than shorter-term ones—was near the top of its range since 2010 (figure 1.2). Interest rate volatility implied by options remained elevated by historical norms (figure 1.3), reflecting, in part, high uncertainty about the economic outlook and the associated path of monetary policy as well as heightened sensitivity to news about output growth, inflation, and the supply of Treasury securities.

Table 1.1. Size of selected asset markets

Item	Outstanding (billions of dollars)	Growth, 2023:Q2–2024:Q2 (percent)	Average annual growth, 1998–2024:Q2 (percent)
Equities	64,379	20.5	8.7
Residential real estate	59,774	6.0	6.4
Treasury securities	26,903	8.6	8.4
Commercial real estate	21,828	–10.8	5.8
Investment-grade corporate bonds	7,820	6.2	7.9
Farmland	3,515	6.6	5.8
High-yield and unrated corporate bonds	1,627	–1.6	6.1
Leveraged loans ¹	1,392	–1	12.4
Price growth (real)			
Commercial real estate ²		–2.0	3.0
Residential real estate ³		1.7	2.7

Note: The data extend through 2024:Q2. Outstanding amounts are in nominal terms. Growth rates are nominal and are measured from Q2 of the year immediately preceding the period through Q2 of the final year of the period. Equities, real estate, and farmland are at nominal market value; bonds and loans are at nominal book value.

¹ The amount outstanding shows institutional leveraged loans and generally excludes loan commitments held by banks. For example, lines of credit are generally excluded from this measure. Average annual growth of leveraged loans is from 2001 to 2024:Q2, as this market was fairly small before then.

² One-year growth of commercial real estate prices is from June 2023 to June 2024, and average annual growth is from June 1999 to June 2024. Both growth rates are calculated from equal-weighted nominal prices deflated using the consumer price index (CPI).

³ One-year growth of residential real estate prices is from June 2023 to June 2024, and average annual growth is from June 1998 to June 2024. Nominal prices are deflated using the CPI.

Source: For leveraged loans, PitchBook Data, Leveraged Commentary & Data; for corporate bonds, Mergent, Inc., Fixed Income Securities Database; for farmland, Department of Agriculture; for residential real estate price growth, CoreLogic, Inc.; for commercial real estate price growth, CoStar Group, Inc., CoStar Commercial Repeat Sale Indices; for all other items, Federal Reserve Board, Statistical Release Z.1, “Financial Accounts of the United States.”

Figure 1.1. Nominal Treasury yields fell but remained high

Source: Federal Reserve Board, Statistical Release H.15, “Selected Interest Rates.”

Figure 1.2. An estimate of the nominal Treasury term premium was near the top of its range since 2010

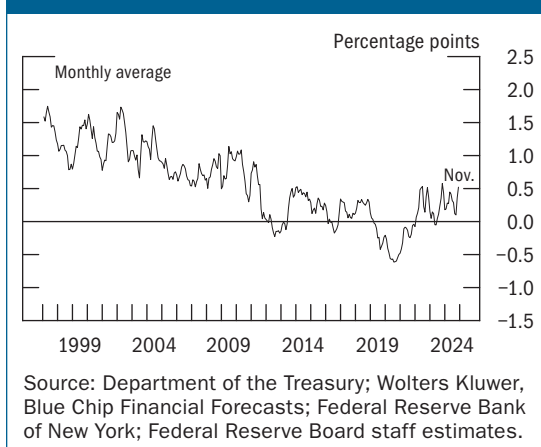
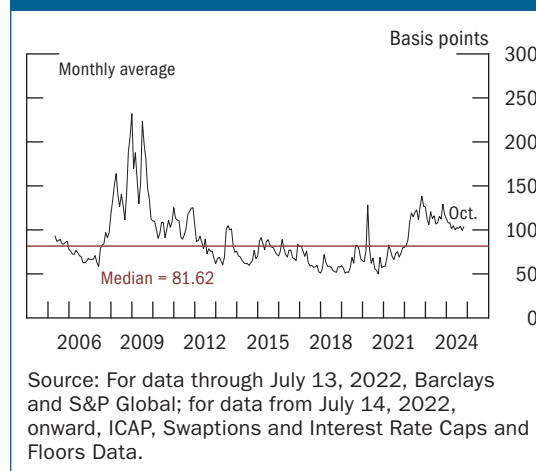


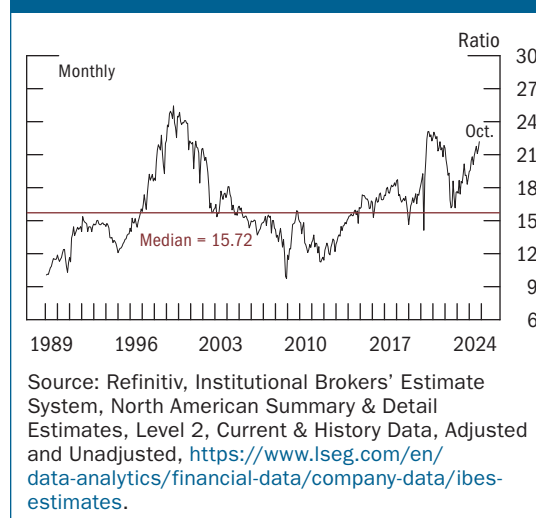
Figure 1.3. Interest rate volatility remained well above its median since 2005



Equity market valuations are elevated

The ratio of equity prices to expected 12-month earnings, or the P/E ratio, which at the time of the April report was already in the upper end of its range since 1989, continued to climb (figure 1.4). The difference between the forward P/E ratio and the real 10-year Treasury yield—a measure of the additional return that investors require for holding stocks relative to risk-free bonds (the equity premium)—remained well below its historical median (figure 1.5).² Option-implied equity market volatility rose, on net, after briefly spiking in early August (figure 1.6, black line).³ That said, it remains near the median of its historical distribution.

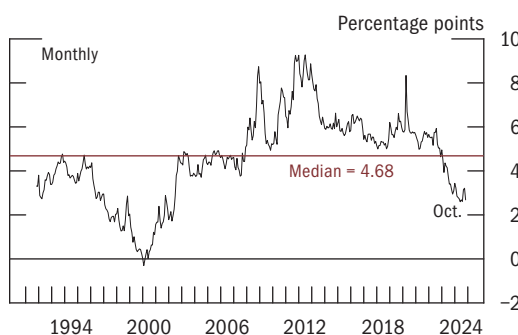
Figure 1.4. The price-to-earnings ratio of S&P 500 firms climbed to the upper end of its historical range



² This estimate is constructed based on expected corporate earnings for 12 months ahead.

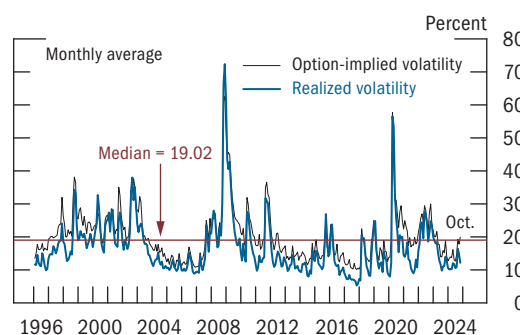
³ Realized volatility also briefly spiked in August (figure 1.6, blue line), and market-based perceptions of downside risk, which are measured as the cost of insurance against a 10 percent price decline in equities over a monthly horizon, rose, on net, since the April report.

Figure 1.5. An estimate of the equity premium remained well below its long-run median



Source: Refinitiv, Institutional Brokers' Estimate System, North American Summary & Detail Estimates, Level 2, Current & History Data, Adjusted and Unadjusted, <https://www.iiseg.com/en/data-analytics/financial-data/company-data/ibes-estimates>.

Figure 1.6. Volatility in equity markets remained near its historical median

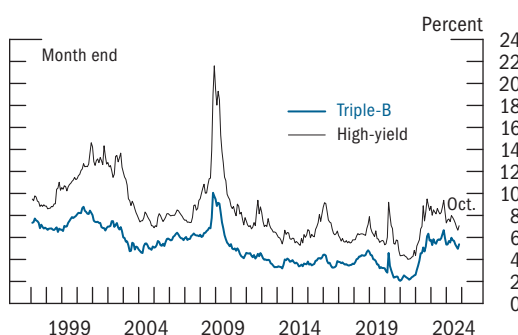


Source: Cboe Volatility Index® (VIX®) accessed via Bloomberg Finance L.P.; Federal Reserve Board staff estimates.

Spreads in corporate debt markets remained low

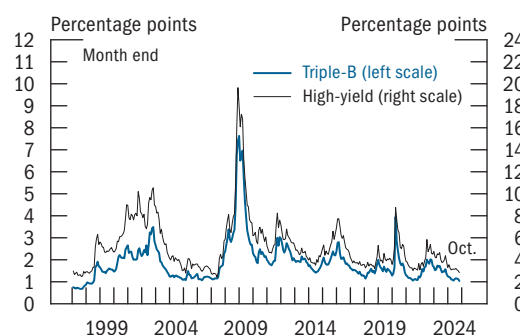
Yields for investment- and speculative-grade bonds fell moderately since the April report (figure 1.7) and more than comparable-maturity Treasury securities, resulting in slightly lower spreads. Corporate bond spreads remained low relative to their historical distributions (figure 1.8). However, the excess bond premium for all nonfinancial corporate bonds—a measure of the risk premium required by bond investors after controlling for bond characteristics and credit quality—stayed around its long-run mean (figure 1.9). In addition, nonprice indicators did not

Figure 1.7. Corporate bond yields fell somewhat and were near their median for the past 30 years

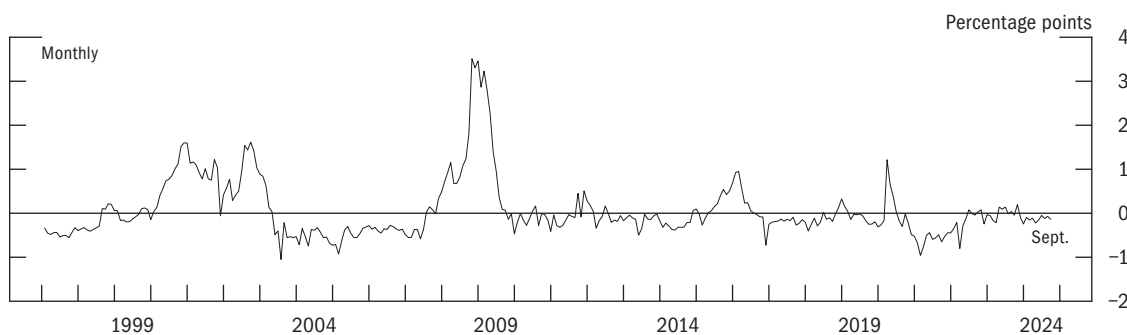


Source: ICE Data Indices, LLC, used with permission.

Figure 1.8. Corporate bond spreads went down a little and were at low levels



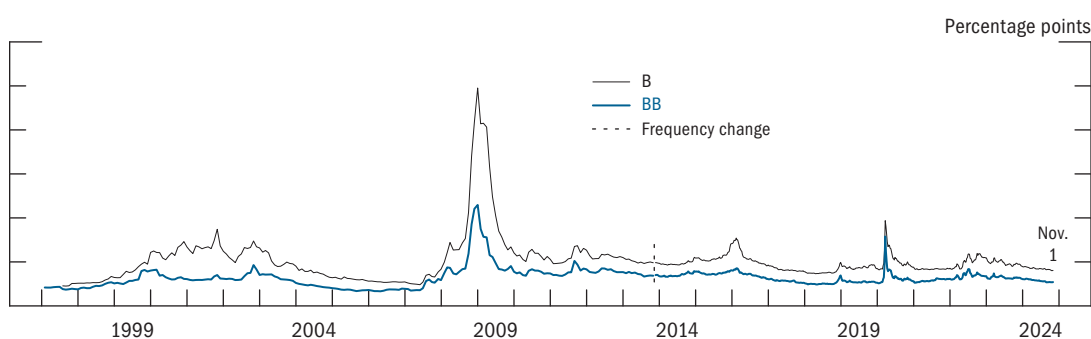
Source: ICE Data Indices, LLC, used with permission.

Figure 1.9. The excess bond premium remained just below its long-run average

Source: Federal Reserve Board staff calculations based on Lehman Brothers Fixed Income Database (Warga); Intercontinental Exchange, Inc., ICE Data Services; Center for Research in Security Prices, CRSP/Compustat Merged Database, Wharton Research Data Services; S&P Global, Compustat.

suggest elevated risk appetite. For example, the share of deep junk corporate bond issuance—the fraction of bonds rated B- or lower relative to total non-investment-grade issuance—hovered around low levels in the second quarter of 2024. Market-based forecasts of one-year-ahead default probabilities (a forward-looking indicator of credit quality) of nonfinancial firms remained somewhat elevated by historical standards.

Since the last report, the average spread on leveraged loans in the secondary market stayed moderately below its average over the past decade (figure 1.10), and the year-ahead expected default rate remained somewhat elevated relative to its historical average level.

Figure 1.10. Spreads on leveraged loans stayed moderately below their averages over the past decade

Source: PitchBook Data, Leveraged Commentary & Data.

Market liquidity remained low by historical standards

Market liquidity refers to the ease of buying and selling an asset. Low liquidity can amplify the volatility of asset prices and result in larger price moves in response to shocks. In extreme cases, low liquidity can threaten continued market functioning, leading to a situation in which participants are unable to trade without incurring a significant cost.

Treasury market liquidity is important because of the key role these securities play in the financial system. Various measures of market liquidity, such as market depth, suggested that liquidity in the Treasury cash market remained low by historical standards, especially in the on-the-run segment (figures 1.11 and 1.12). However, liquidity is affected by volatility, and recent levels of liquidity partly reflected elevated measures of interest rate volatility. The effect of low levels

Figure 1.11. Treasury market depth remained below historical norms

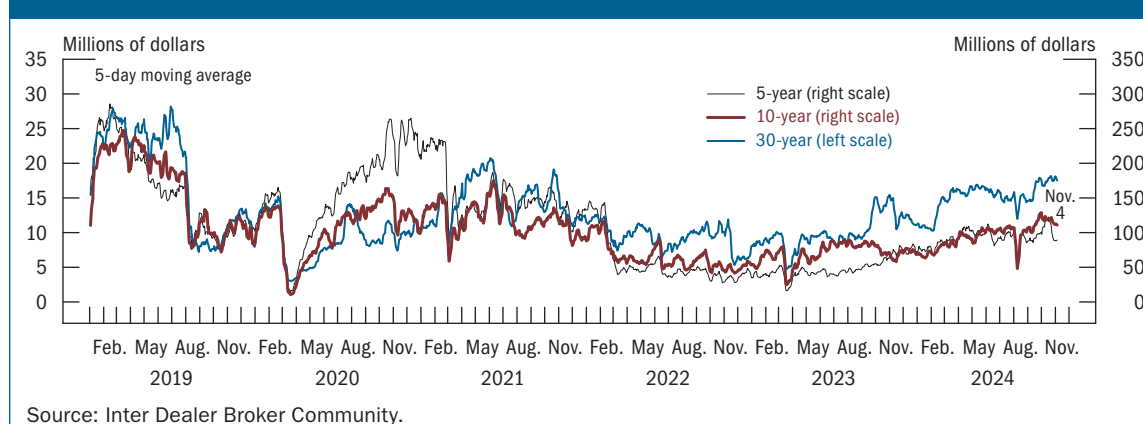
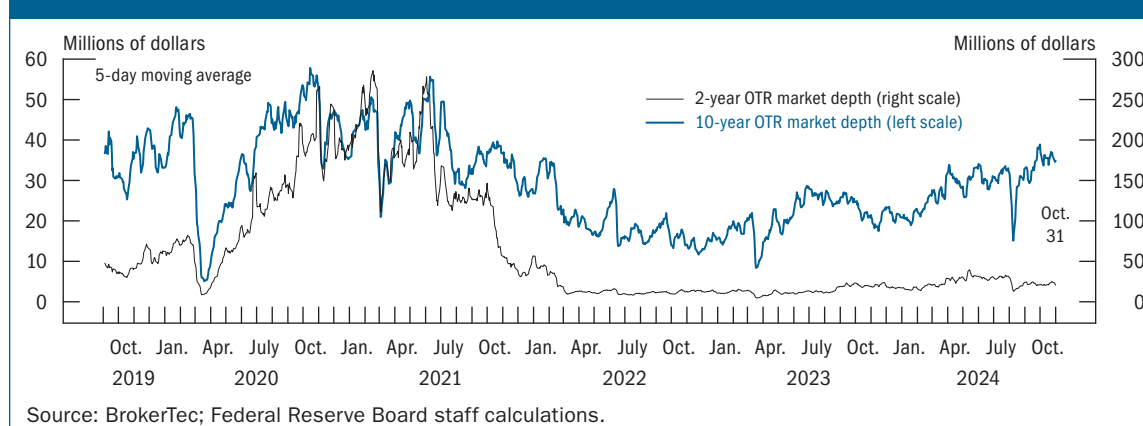


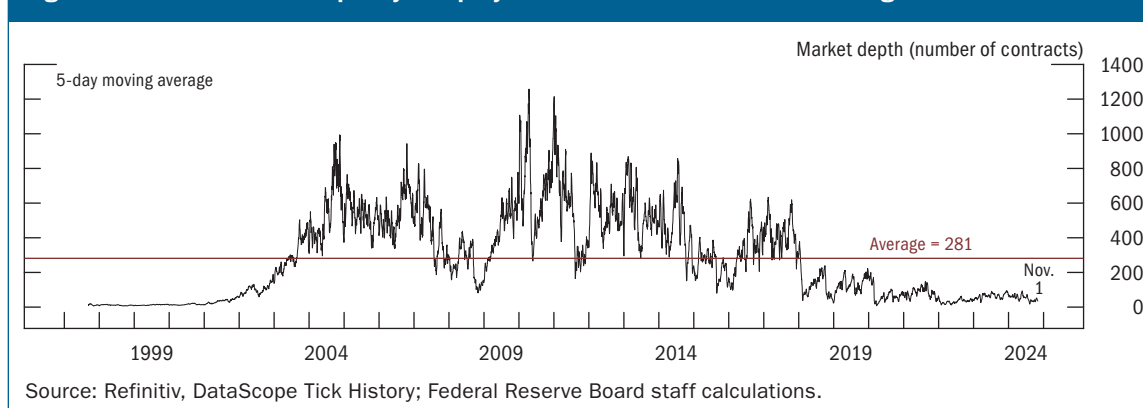
Figure 1.12. On-the-run market depth continued to be below historical norms



of market depth on price impact has been limited because market participants split trades into smaller quantities, and liquidity providers have responded to orders quickly enough to prevent trades from exhausting best-price quotes and amplifying volatility in Treasury markets. Overall, liquidity conditions in the Treasury cash market appear challenged and could amplify shocks.

In other markets, liquidity conditions present a mixed picture. Liquidity in corporate bond markets remained in line with the average level observed in recent years, and bid-ask spreads stayed close to their lowest levels since the 2007–09 financial crisis. In contrast, liquidity conditions in equity markets remained low relative to their longer-term distribution since the financial crisis and deteriorated somewhat further after the early August spike in equity volatility (figure 1.13).

Figure 1.13. A measure of liquidity in equity markets remained below its average



Commercial real estate prices were little changed

Aggregate CRE prices measured in inflation-adjusted terms were little changed since the April report, with the previous pace of declines appearing to have slowed over the past six months broadly across CRE sectors (figure 1.14). However, these transaction-based prices still may not fully reflect the deterioration in CRE market prices because, rather than realizing losses, many owners wait for more favorable conditions to put their properties on the market. The strains on the office sector resulting from an ongoing post-pandemic adjustment have

Figure 1.14. Commercial real estate prices adjusted for inflation were little changed

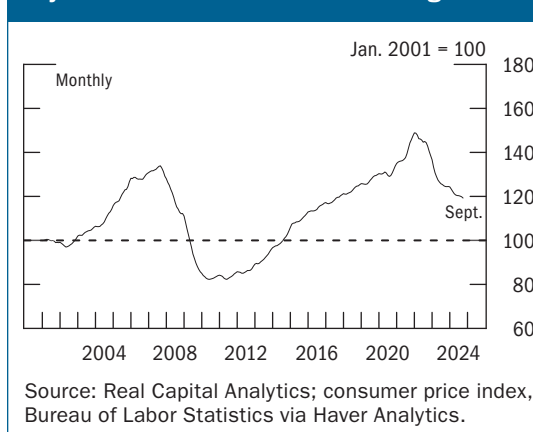
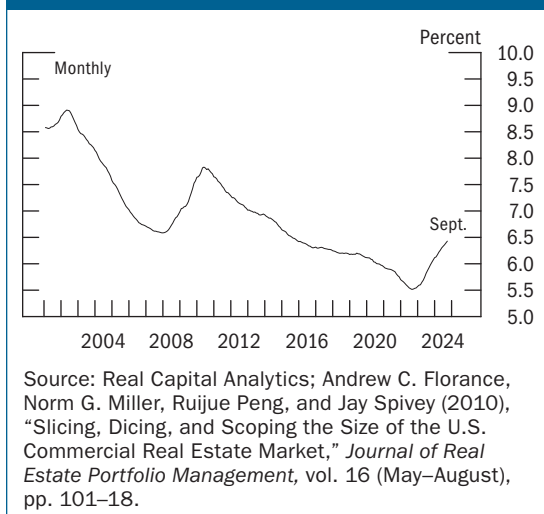


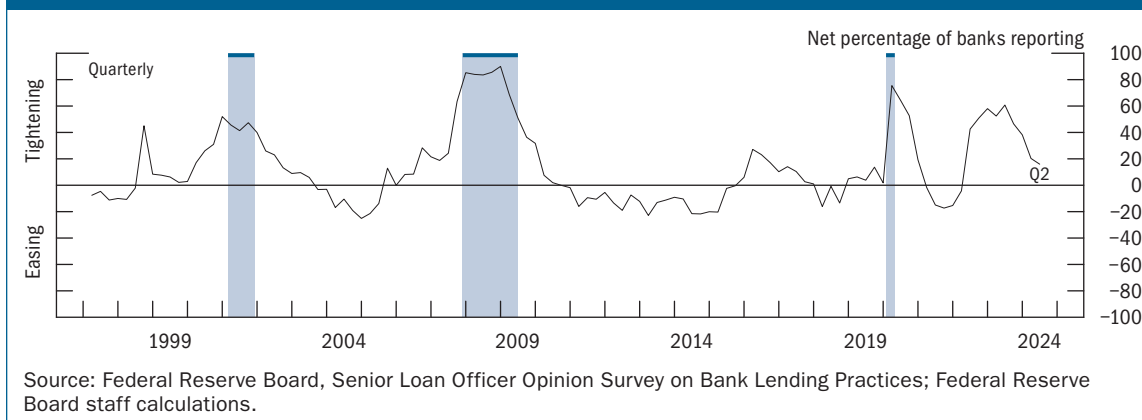
Figure 1.15. Income of commercial properties relative to prices increased but remained below its historical average



continued to mount. Vacancy rates for offices located in central business districts increased further, albeit at a slower pace, and nominal rents were about flat since the April report. Vacancy rates also have risen for multifamily and industrial properties, and rent growth has weakened for these types of properties. Capitalization rates at the time of property purchase, which measure the annual income of commercial properties relative to their prices, remained near the low end of the historical distribution, but the high uncertainty about lags in the declines registered by CRE price indexes and fundamentals across CRE markets makes them less reliable in assessing CRE valuation pressures (figure 1.15). In the July 2024 Senior Loan Officer Opinion Survey

on Bank Lending Practices (SLOOS), banks reported having tightened standards for all CRE loan categories again in the second quarter of 2024 (figure 1.16).⁴ Most banks indicated that the current levels of standards for CRE loans were at least somewhat tighter than the midpoint of their historical distribution over the past 20 years.

Figure 1.16. Banks reported having tightened lending standards for commercial real estate loans

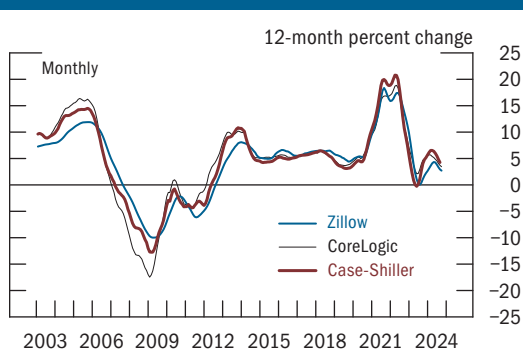


⁴ The SLOOS results reported in this report are based on banks' responses weighted by each bank's outstanding loans in the respective loan category and might therefore differ from the results reported in the published SLOOS, which are based on banks' unweighted responses.

Residential real estate prices remained high relative to fundamentals

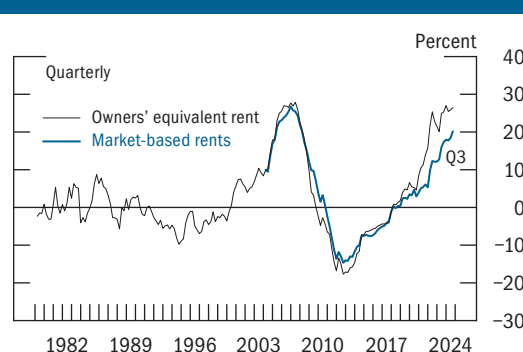
Valuations in the residential real estate sector continued to increase since the April report from levels that were already elevated relative to historical standards. The growth of house prices continued through August of this year (figure 1.17). A model of house price valuation based on prices relative to market rents and the real 10-year Treasury yield suggests that valuations in housing markets remained stretched. Moreover, an alternative measure of valuation pressures (which uses owners' equivalent rent instead of market rents and has a longer history) also suggested elevated valuations (figure 1.18). The median price-to-rent ratio measured across a wide distribution of geographic areas was little changed over the first half of 2024, around its previous peak in the mid-2000s (figure 1.19). In contrast to the early-to-mid 2000s, lenders have not shown

Figure 1.17. Nominal house prices continued to increase in recent months



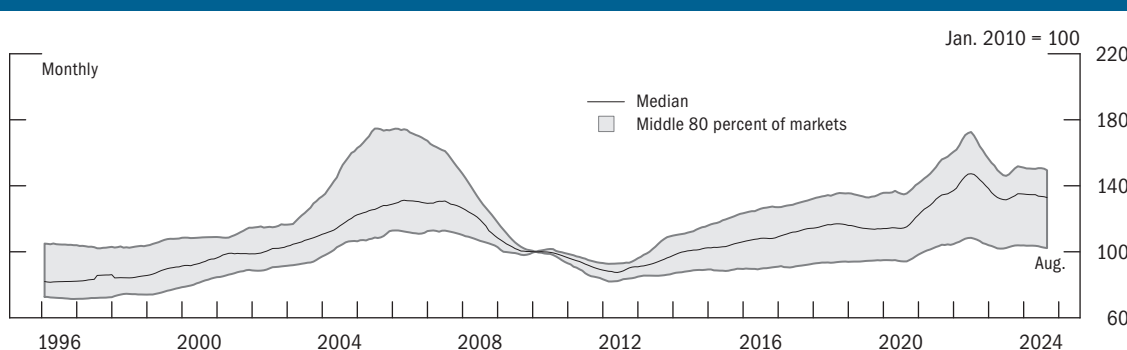
Source: Zillow, Inc., Real Estate Data; CoreLogic, Inc., Real Estate Data; S&P Case-Shiller Home Price Indices.

Figure 1.18. Model-based measures of house price valuations climbed to historically high levels



Source: For house prices, Zillow, Inc., Real Estate Data; for rent data, Bureau of Labor Statistics.

Figure 1.19. House price-to-rent ratios remained elevated across geographic areas



Source: For house prices, Zillow, Inc., Real Estate Data; for rent data, Bureau of Labor Statistics.

the high risk appetite that fueled excessive borrowing in that earlier period, suggesting that weak credit standards are not driving recent house price growth. For example, banks reported in the SLOOS that standards for residential real estate loans were on the tighter end of their historical range since 2005.

Farmland valuations remained high relative to farm income

Farmland valuations remained elevated, as in 2024 U.S. farmland prices continued to rise past the previous peak of the historical distribution (figure 1.20). Farmland price-to-rent ratios hovered around a level roughly twice the median of their historical distribution (figure 1.21). Prices continued to be sustained in the short run by limited farmland inventory despite declining farm income, elevated interest rates, and higher operating costs.

Figure 1.20. Inflation-adjusted farmland prices rose further from already-elevated levels

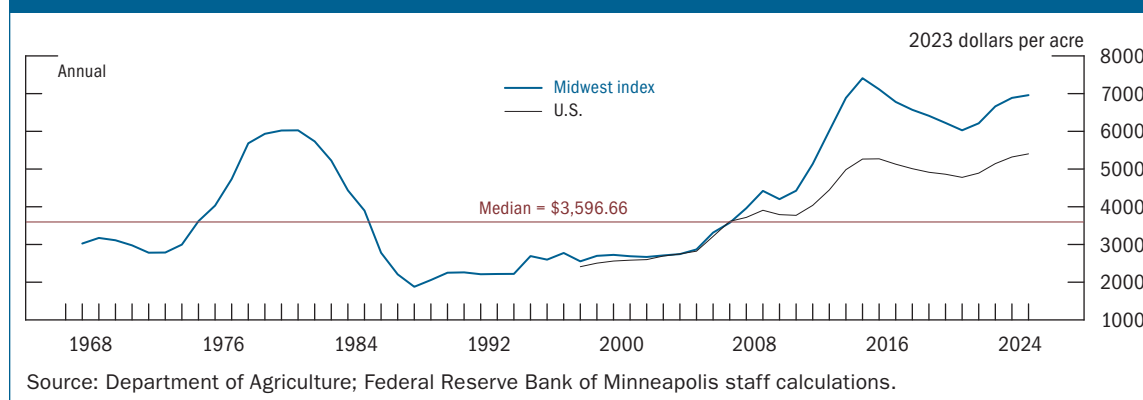
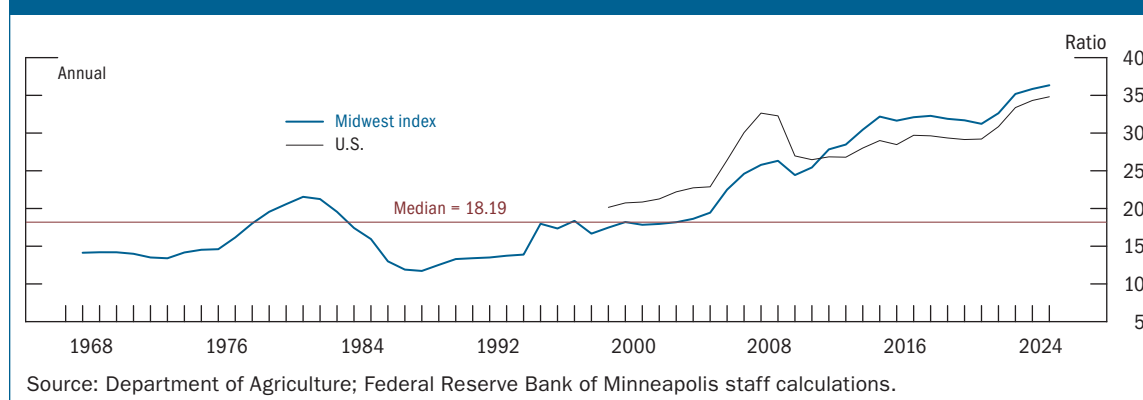


Figure 1.21. Farmland prices relative to rents increased to historical highs



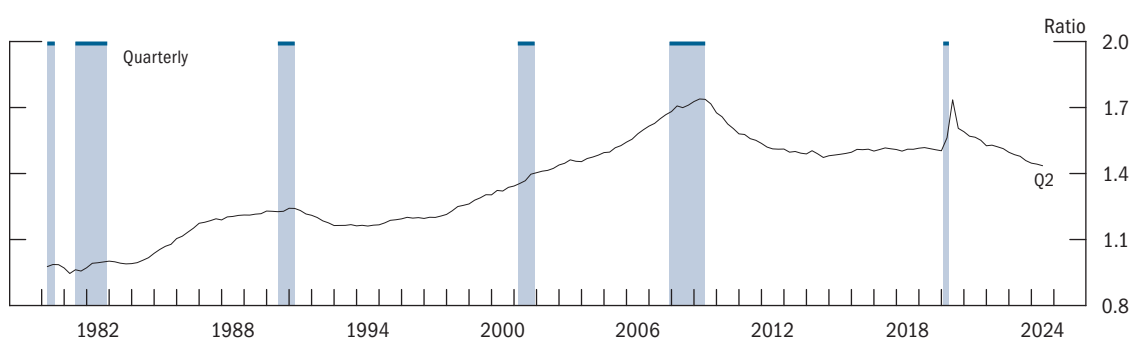
2 | Borrowing by Businesses and Households

Vulnerabilities from business and household debt remained moderate

The balance sheet conditions of households and businesses continued to improve on net. Growth in nominal GDP has outpaced the modest growth in total private nonfinancial-sector debt in recent years. As a result, the debt-to-GDP ratio has declined to the lowest level in two decades (figure 2.1). Trends in both the household and business sectors contributed to the decline in the overall debt-to-GDP ratio.

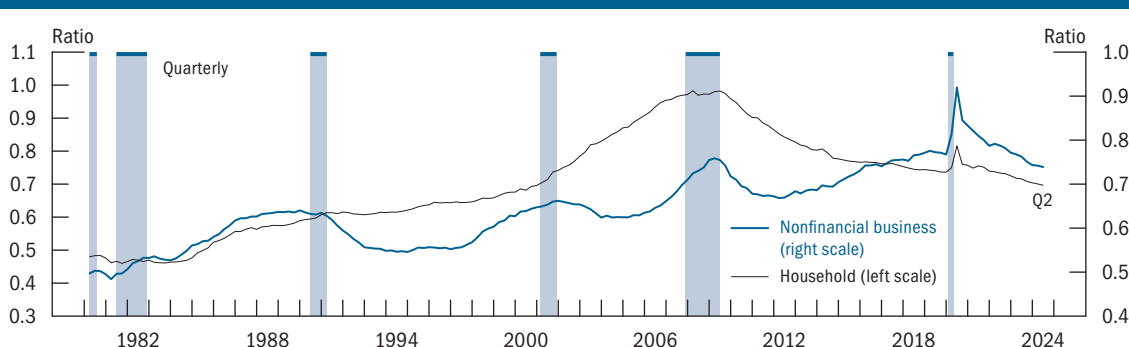
Business debt-to-GDP (figure 2.2, blue line) and gross leverage of publicly traded corporations remained at levels near the top of their respective historical ranges. Interest coverage ratios (ICRs)—defined as the ratio of earnings before interest and tax to interest expense—remained flat at moderate levels, partly reflecting resilient earnings.

Figure 2.1. The total debt of businesses and households relative to GDP declined to its lowest level in 20 years



Source: Federal Reserve Board staff calculations based on Bureau of Economic Analysis, national income and product accounts, and Federal Reserve Board, Statistical Release Z.1, "Financial Accounts of the United States."

Figure 2.2. Both business and household debt-to-GDP ratios continued to edge down



Source: Federal Reserve Board staff calculations based on Bureau of Economic Analysis, national income and product accounts, and Federal Reserve Board, Statistical Release Z.1, "Financial Accounts of the United States."

The household debt-to-GDP ratio continued to edge down to near 20-year lows (figure 2.2, black line). Homeowners have solid equity cushions, and many households have been benefiting from lower interest rate payments associated with refinancing or home purchases several years ago. That said, delinquency rates for credit cards and auto loans to nonprime borrowers were above their pre-pandemic levels.

While balance sheets in the nonfinancial business and household sectors remained sound, a sharp downturn in economic activity would depress business earnings and household incomes and reduce the debt-servicing capacity of smaller, riskier businesses with already low ICRs as well as particularly financially stretched households.

For additional context, table 2.1 shows the amounts outstanding and recent historical growth rates of different forms of debt owed by nonfinancial businesses and households as of the second quarter of 2024.

Table 2.1. Outstanding amounts of nonfinancial business and household credit

Item	Outstanding (billions of dollars)	Growth, 2023:Q2–2024:Q2 (percent)	Average annual growth, 1998–2024:Q2 (percent)
Total private nonfinancial credit	41,542	2.6	5.4
Total nonfinancial business credit	21,407	2.3	5.8
Corporate business credit	13,835	2.5	5.4
Bonds and commercial paper	8,420	2.8	5.6
Bank lending	2,207	2.1	4.2
Leveraged loans ¹	1,354	–.3	12.6
Noncorporate business credit	7,571	2.0	6.8
Commercial real estate credit	3,196	1.3	6.0
Total household credit	20,136	2.8	5.1
Mortgages	13,140	2.6	5.0
Consumer credit	5,023	1.7	5.2
Student loans	1,745	–.9	7.4
Auto loans	1,563	1.8	5.3
Credit cards	1,307	6.7	3.7
Nominal GDP	28,652	5.9	4.7

Note: The data extend through 2024:Q2. Outstanding amounts are in nominal terms. Growth rates are nominal and are measured from Q2 of the year immediately preceding the period through Q2 of the final year of the period. The table reports the main components of corporate business credit, total household credit, and consumer credit. Other, smaller components are not reported. The commercial real estate (CRE) row shows CRE debt owed by both nonfinancial corporate and noncorporate businesses as defined in Table L.220: Commercial Mortgages in the “Financial Accounts of the United States.” Total household-sector credit includes debt owed by other entities, such as nonprofit organizations. GDP is gross domestic product.

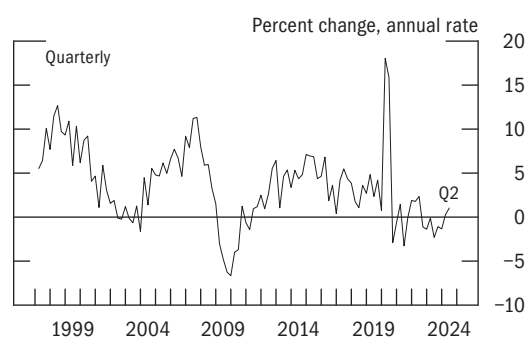
¹ Leveraged loans included in this table are an estimate of the leveraged loans that are made to nonfinancial businesses only and do not include the small amount of leveraged loans outstanding for financial businesses. The amount outstanding shows institutional leveraged loans and generally excludes loan commitments held by banks. For example, lines of credit are generally excluded from this measure. Average annual growth of leveraged loans is from 2001 to 2024:Q2, as this market was fairly small before then.

Source: For leveraged loans, PitchBook Data, Leveraged Commentary & Data; for GDP, Bureau of Economic Analysis, national income and product accounts; for all other items, Federal Reserve Board, Statistical Release Z.1, “Financial Accounts of the United States.”

Business debt vulnerabilities remained moderate

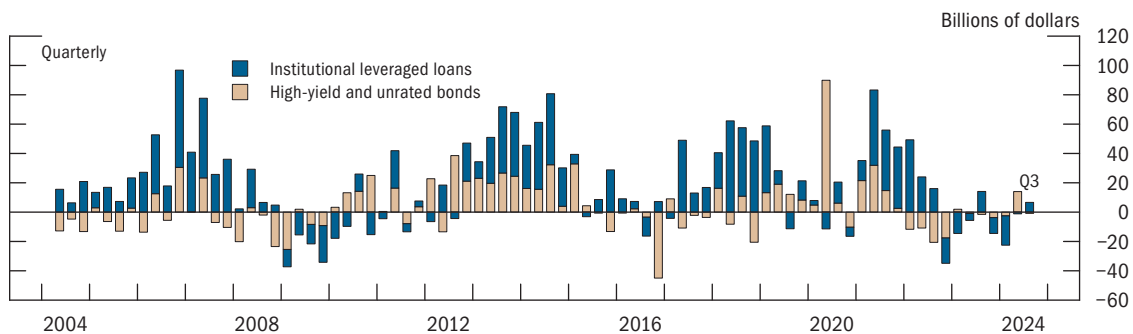
Nonfinancial business debt adjusted for inflation grew modestly in the first half of this year after declining in 2023 (figure 2.3). Traditional sources of business debt, such as corporate bonds and bank-intermediated loans, have grown slowly in recent quarters. Net issuance of risky debt—defined as issuance of speculative-grade bonds, unrated bonds, and leveraged loans minus retirements and repayments—edged up in the second and third quarters of 2024, partially reversing declines in previous quarters (figure 2.4). The net issuance of institutional leveraged loans, which has been particularly weak since late 2022, was moderately positive in the third quarter. In contrast to traditional forms of business credit, private credit has grown quickly recently and constitutes about 7 percent of total outstanding nonfinancial corporate debt.

Figure 2.3. Business debt adjusted for inflation grew modestly



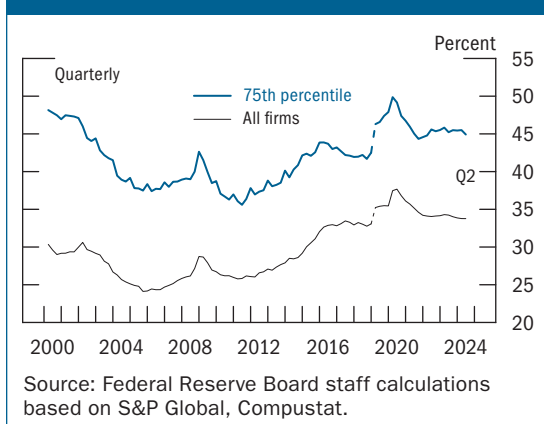
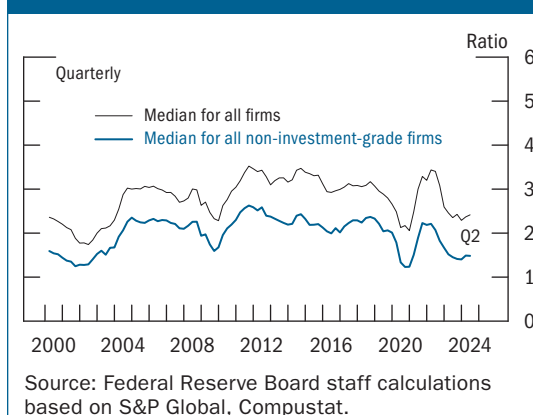
Source: Federal Reserve Board, Statistical Release Z.1, "Financial Accounts of the United States."

Figure 2.4. Net issuance of risky debt remained subdued



Source: Mergent, Inc., Fixed Income Securities Database; PitchBook Data, Leveraged Commentary & Data.

Gross leverage—the ratio of debt to assets—of all publicly traded nonfinancial firms remained high by historical standards in the second quarter of 2024 (figure 2.5), though significantly lower than record highs seen at the onset of the pandemic. Net leverage—the ratio of debt less cash to total assets—also stayed elevated among large publicly traded businesses. Overall, corporate profits remained robust, and firms continued to be well placed to service their debt, despite some emerging signs of weakness among riskier firms. The median ICR for all publicly traded firms and for publicly traded firms rated below-investment-grade was flat in the first half

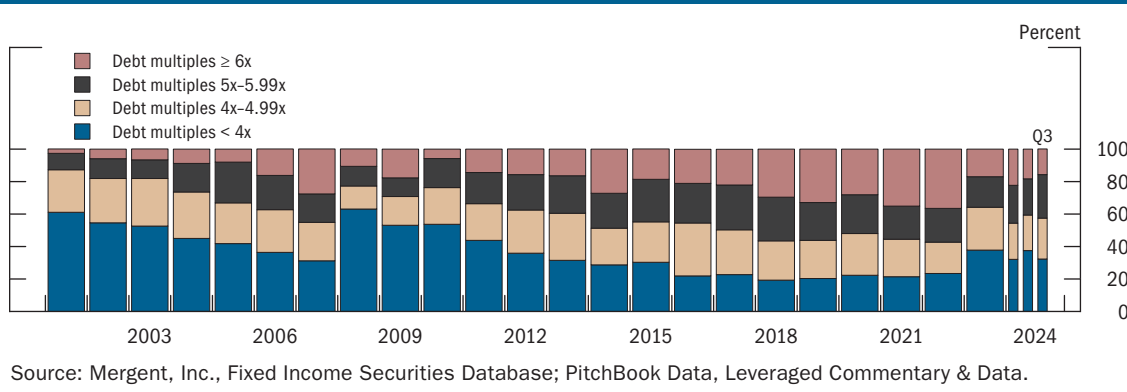
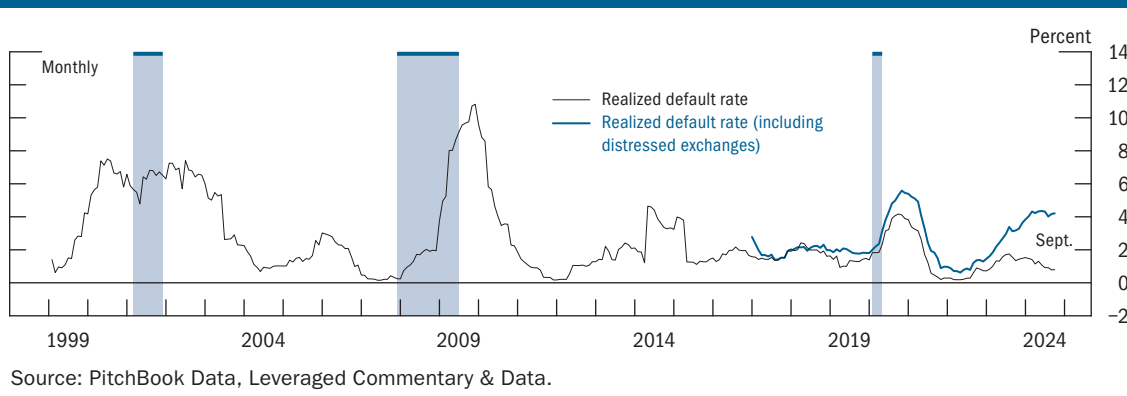
Figure 2.5. Gross leverage of large businesses stayed high by historical standards**Figure 2.6. Interest coverage ratios, which indicate firms' ability to service their debt, have changed little**

of 2024, around levels that were well below post-pandemic peaks and somewhat below the level that prevailed from 2011 to 2020 (figure 2.6). The pass-through of higher interest rates to firms' borrowing costs remained moderate, reflecting record fixed-rate debt issuance by firms during the pandemic when interest rates were low.⁵ The 12-month trailing corporate bond default rate was little changed, on net, around the median of its historical distribution. Expectations of year-ahead defaults remained somewhat elevated relative to their history.

Credit quality of leveraged loans remained below historical norms. The share of newly issued loans to large corporations with debt multiples—defined as the ratio of debt to earnings before interest, taxes, depreciation, and amortization—greater than 4 fell in 2023 to its lowest level in the past decade and it hovered around that level through the third quarter of 2024 (figure 2.7). ICRs on outstanding leveraged loans remained in the low end of their historical distribution for the past decade, and ICRs on newly issued leveraged loans were also near their historical lows since 2006. The volume-weighted default rate on leveraged loans stayed well below previous peaks. However, the number of defaults and distressed loans that have been worked out (that is, renegotiated between the borrower and the lender) has been elevated relative to history (figure 2.8).

Small and middle-market firms that are privately held—which have less access to capital markets and primarily borrow from banks, private credit funds, and other sophisticated investors (such as insurance companies)—account for roughly 60 percent of the total outstanding debt of U.S. non-financial firms. While data for these firms are not as comprehensive as those for larger firms, vulnerabilities for these firms continued to edge up throughout the second quarter of 2024. Median

⁵ Only about 8 percent of outstanding bonds rated triple-B and 4 percent of outstanding high-yield bonds are due within a year. That said, about 16 percent of outstanding bonds rated triple-B and 20 percent of outstanding high-yield bonds are due within one to three years, indicating that pass-through may be higher if borrowing costs stay elevated for longer.

Figure 2.7. New leveraged loans with debt multiples greater than 4 have been near their lowest levels in a decade**Figure 2.8. The default rate on leveraged loans remained well below its previous peaks**

gross and net leverage of private firms continued to inch up in the second quarter of 2024 but remained a bit below their historical medians. The ICR for the median firm in this category kept its downward trend from its peak in 2022 and currently stands only slightly above pre-pandemic levels, as higher interest rates started to reduce earnings and raise the cost of debt servicing. The average ICR at issuance for private credit is below 2, indicating debt-servicing capacity in the range of below-investment-grade public firms.

Delinquencies at small businesses were above pre-pandemic levels, and credit availability tightened

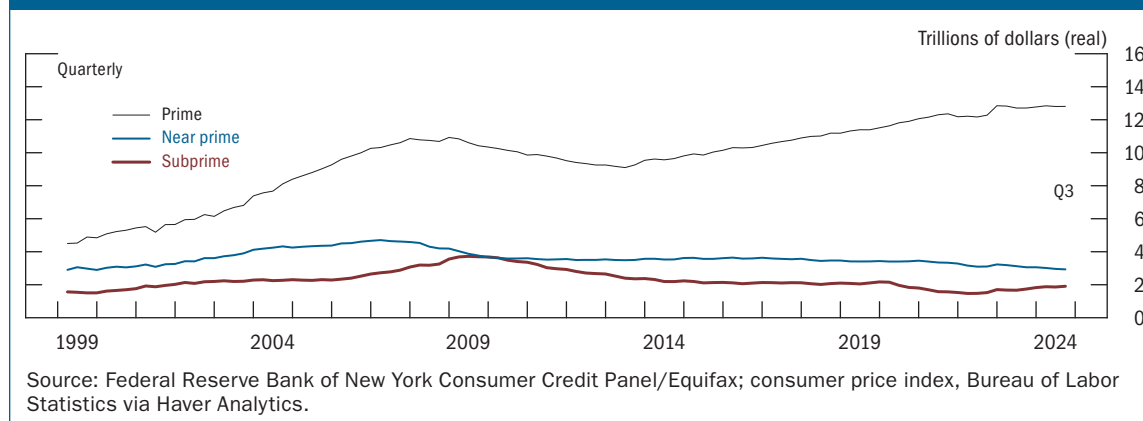
Interest rates on small business loans have been largely stable in recent months and remained near the top of the range observed since 2008. According to the National Federation of Independent Business's Small Business Economic Trends Survey, the share of firms that borrow regularly has fallen in recent months and sits in the lower range of its historical distribution in

September 2024.⁶ Credit availability appeared to tighten for small firms in recent months. Data from the Small Business Lending Survey showed that banks continued to tighten standards on loans to small businesses.⁷ Further, measures of small business loan originations declined through September 2024. Small business credit quality has deteriorated in recent quarters, as both short-term (up to 90 days) and long-term (more than 90 days) delinquency rates rose from the historically low levels reached in spring 2022 to above their pre-pandemic levels.

Vulnerabilities from household debt remained moderate

Outstanding household debt adjusted for inflation has been little changed since the April report (figure 2.9). The ratio of total required household debt payments to total disposable income (the household debt-service ratio) was little changed at modest levels. As most household debt carries fixed interest rates, the increase in interest rates over 2022 and 2023 has only partially passed through to household interest expenses.

Figure 2.9. Inflation-adjusted household debt has been little changed

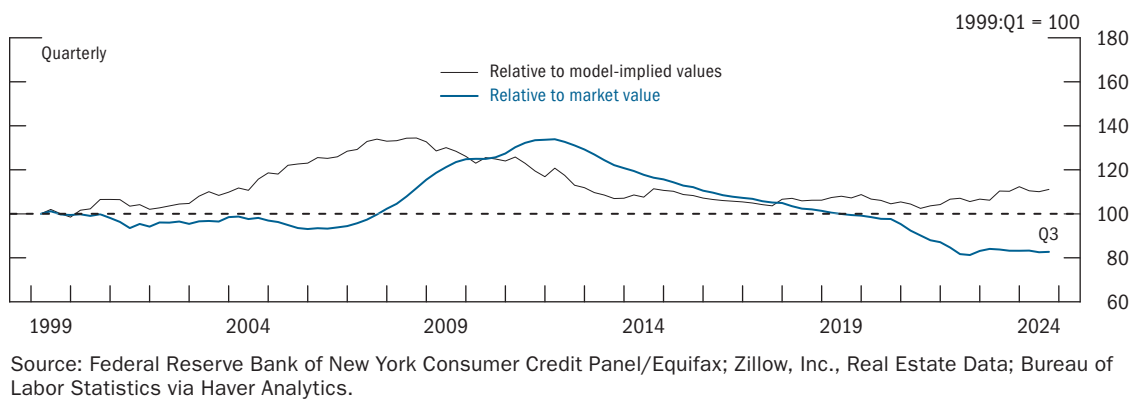


Mortgage credit risk remained low

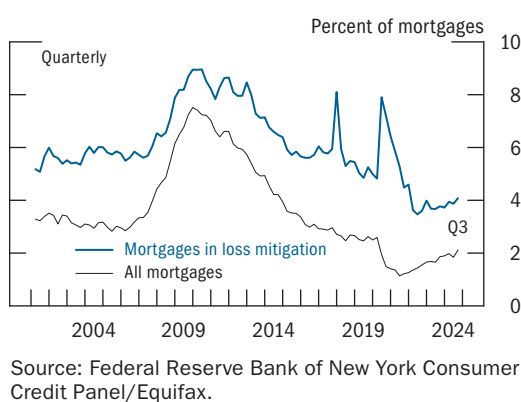
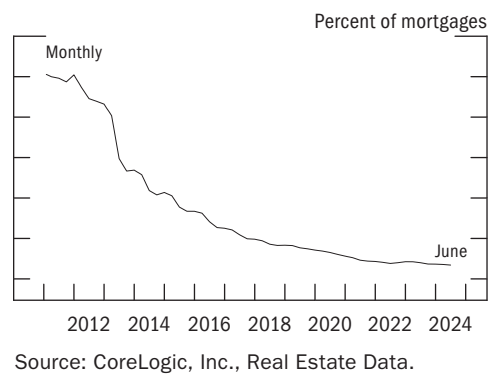
Mortgage debt accounts for roughly three-fourths of total household debt. Since the April report, estimates of housing leverage, which measure outstanding mortgage loan balances relative to home values, stayed significantly below their previous peaks (figure 2.10). The model-based

⁶ This survey's data are available on the National Federation of Independent Business's website at <https://www.nfib.com/surveys/small-business-economic-trends>.

⁷ This survey's data are available on the Federal Reserve Bank of Kansas City's website at <https://www.kansascityfed.org/surveys/small-business-lending-survey/>.

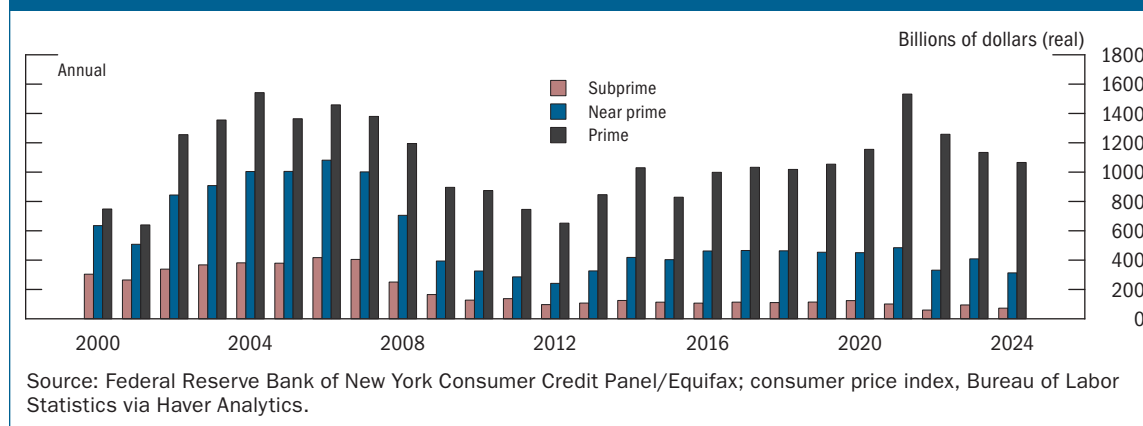
Figure 2.10. A model-based estimate of housing leverage stayed significantly below its peak levels

measure (black line), which measures home values as a function of rents and other market fundamentals, indicated higher leverage than the market-based measure (blue line), suggesting that homeowners' current large equity cushions are vulnerable to a future price correction. However, the model-based measure was only modestly elevated relative to its history. The overall mortgage delinquency rate and the share of mortgage balances in loss-mitigation programs in the third quarter remained close to the lower end of their historical distribution (figure 2.11). Delinquency rates have been held in check by large home equity cushions (figure 2.12) and strong underwriting standards.

Figure 2.11. Mortgage delinquency rates remained close to the low end of their historical distribution**Figure 2.12. Very few homeowners had negative equity in their homes**

New mortgage extensions, which have been skewed heavily toward prime borrowers over the past decade, continued to decline in the second quarter of 2024 amid elevated mortgage rates and high house prices (figure 2.13). In the fourth quarter of 2023, the early payment delinquency rate—the share of balances becoming delinquent within one year of mortgage origination—remained somewhat above the median of its historical distribution, possibly reflecting higher house prices and interest rates and the corresponding financial strains on newly originated mortgages.

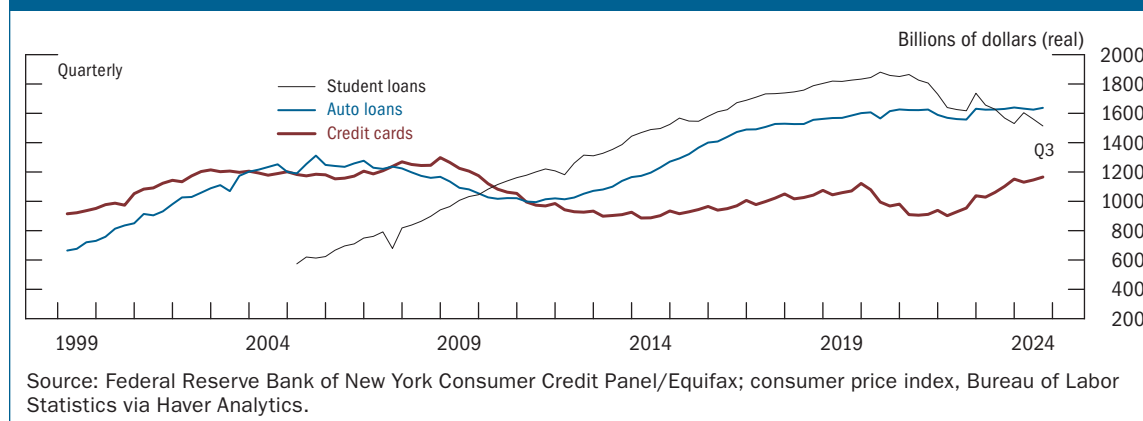
Figure 2.13. New mortgage extensions declined across all borrower categories



Credit risk of consumer debt edged up, with some signs of stress among borrowers with lower credit scores

Consumer debt—which accounts for the remaining one-fourth of household debt and consists primarily of student, auto, and credit card loans—was about flat in inflation-adjusted terms since the last report (figure 2.14). However, delinquency rates for auto loans and credit cards remained

Figure 2.14. Inflation-adjusted consumer credit has been about flat since late last year



above average, particularly among borrowers with lower credit scores. These borrowers hold a relatively small share of aggregate debt, and their high delinquency rates reportedly reflect, in part, increased borrowing by some households during and after the pandemic, rather than an abrupt broad-based weakening in households' ability to repay. Partly in response, lenders have tightened credit standards on those types of loans.

Inflation-adjusted auto loan balances were about flat since the last report at levels below their recent highs. Continued growth for subprime borrowers offset small declines for near-prime borrowers. The average maturity of auto loans at origination remained elevated in recent quarters, particularly for lower-credit score borrowers (figure 2.15). On balance, long-maturity loans tend to have higher default risks, partly because such loans have higher risk of falling deep into a negative equity position, which can be a factor that influences consumer defaults. The share of auto loans in delinquent status stayed at a level somewhat above its historical median (figure 2.16) after having increased moderately in recent years, largely owing to a more significant rise in auto loan delinquencies for subprime borrowers throughout 2023. The rise in delinquencies for

Figure 2.15. Average maturity of auto loans at origination for used cars remained elevated

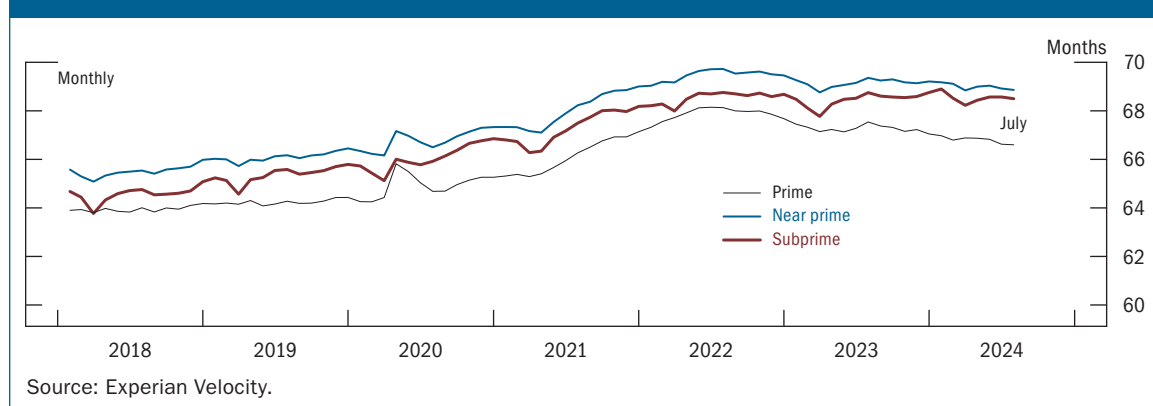
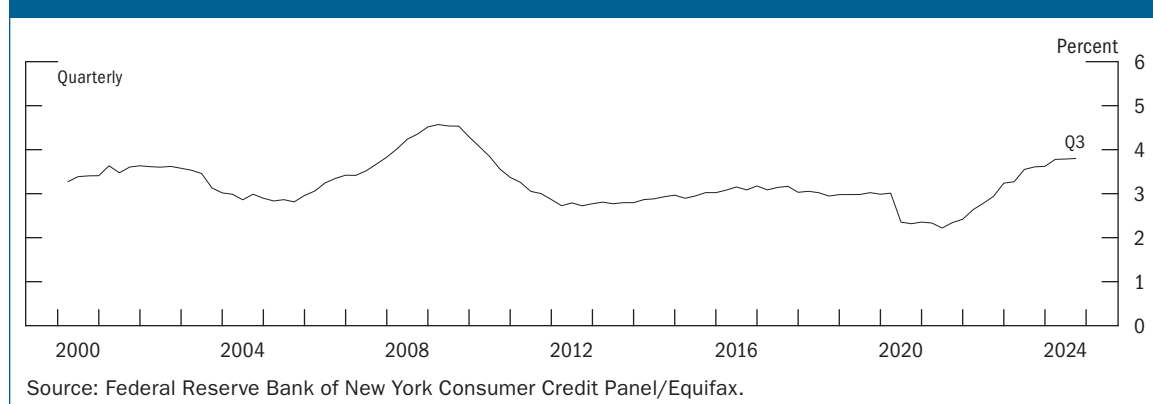


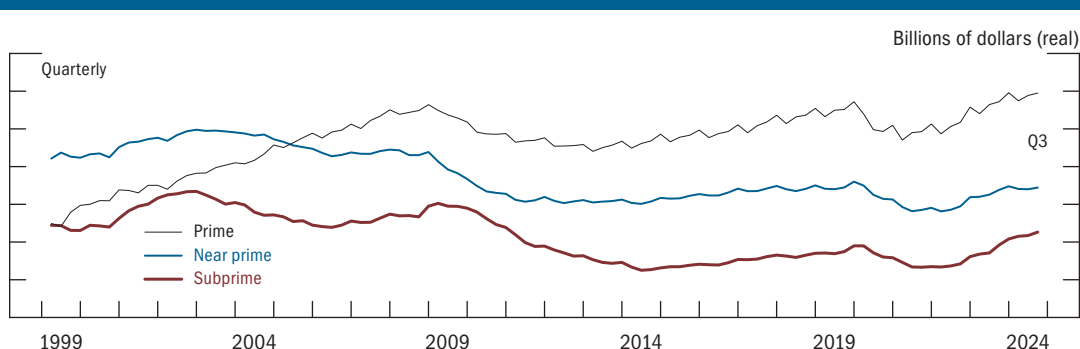
Figure 2.16. Auto loan delinquencies have been somewhat above normal levels



subprime borrowers likely owes to a combination of factors, such as high car prices, loosened underwriting, higher interest rates, and elevated loan maturities.

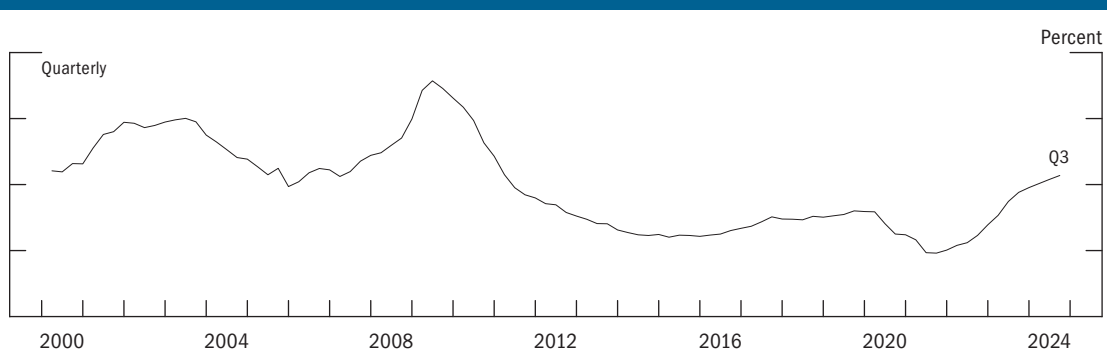
Aggregate inflation-adjusted credit card balances were little changed for prime and near-prime borrowers through the third quarter of 2024 but continued to inch up for subprime borrowers (figure 2.17). Credit card delinquency rates moved up further in the third quarter and have reached their highest level since 2010 (figure 2.18), which largely owes to elevated delinquencies among nonprime borrowers.

Figure 2.17. Inflation-adjusted credit card balances for subprime borrowers trended higher but remained well below previous peaks



Source: Federal Reserve Bank of New York Consumer Credit Panel/Equifax; consumer price index, Bureau of Labor Statistics via Haver Analytics.

Figure 2.18. Credit card delinquencies rose further to somewhat above their pre-pandemic levels



Source: Federal Reserve Bank of New York Consumer Credit Panel/Equifax.

3 | Leverage in the Financial Sector

Vulnerabilities associated with financial leverage remained notable

The banking system, overall, remained sound and resilient. Measures of regulatory capital for banks increased further over the first half of 2024, and indicators of profitability were near average levels. However, fair value losses on banks' fixed-rate assets as of the start of November remained sizable, the fair value of banks' assets continued to be sensitive to movements in long-term interest rates, and some banks still had concentrated exposures to loans backed by CRE.

Outside the banking sector, leverage at broker-dealers was stable near historically low levels, but uncertainties around dealers' intermediation capacity during periods of market stress remained a vulnerability to Treasury markets. Life insurers' leverage was little changed and continued to hold a significant share of illiquid and risky assets. In the first quarter of 2024, measures of hedge fund leverage that account for hedge fund size were at or near the highest level observed since the data became available in 2013.

Table 3.1 shows the sizes and growth rates of the assets of financial institutions discussed in this section.

Bank profitability remained solid

Measures of bank profitability over the first half of 2024 were within typical ranges, and third-quarter earnings reports showed that overall profitability remained robust. Banks' average rate on interest-earning assets continued to sit well above the average interest rate paid on liabilities as of the second quarter of 2024 (figure 3.1). The gap between the two rates, known as the net interest margin, narrowed slightly in the first half of 2024 relative to its levels in 2023. The narrowing reflected some further pass-through to bank funding rates of higher rates on short-term instruments that outpaced the pass-through to interest rates on assets.

Measures of banks' regulatory capital increased further

The common equity Tier 1 (CET1) ratio—a regulatory risk-based measure of bank capital adequacy—increased further during the first half of 2024 across all bank-size categories (figure 3.2). CET1 ratios for global systemically important banks (G-SIBs) and for the other bank holding companies group (those not considered G-SIBs or large non-G-SIBs) reached the highest levels recorded in the past decade, while the average CET1 ratio for large non-G-SIBs has surpassed pre-pandemic levels. Third-quarter earnings reports suggest that most banks further increased their regulatory capital positions.

Table 3.1. Size of selected sectors of the financial system, by types of institutions and vehicles

Item	Total assets (billions of dollars)	Growth, 2023:Q2–2024:Q2 (percent)	Average annual growth, 1998–2024:Q2 (percent)
Banks and credit unions	27,717	1.7	5.6
Mutual funds	20,995	11.4	8.3
Insurance companies	13,337	5.8	5.4
Life	9,963	5.5	5.4
Property and casualty	3,373	6.7	5.6
Hedge funds ¹	10,938	16.3	8.3
Broker-dealers ²	5,952	8.8	4.8
Outstanding (billions of dollars)			
Securitization	13,579	1.0	5.4
Agency	12,037	.7	5.8
Non-agency ³	1,542	3.7	3.6

Note: The data extend through 2024:Q2 unless otherwise noted. Outstanding amounts are in nominal terms. Growth rates are nominal and are measured from Q2 of the year immediately preceding the period through Q2 of the final year of the period. Life insurance companies' assets include both general and separate account assets.

¹ Hedge fund data start in 2012:Q4 and are updated through 2024:Q1. Growth rates for the hedge fund data are measured from Q1 of the year immediately preceding the period through Q1 of the final year of the period.

² Broker-dealer assets are calculated as unnetted values.

³ Non-agency securitization excludes securitized credit held on balance sheets of banks and finance companies.

Source: Federal Reserve Board, Statistical Release Z.1, "Financial Accounts of the United States"; Federal Reserve Board, "Enhanced Financial Accounts of the United States."

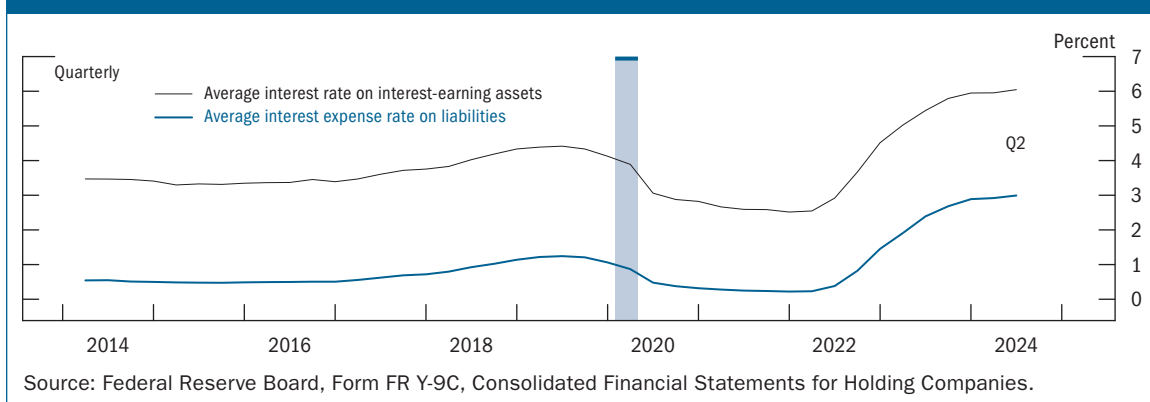
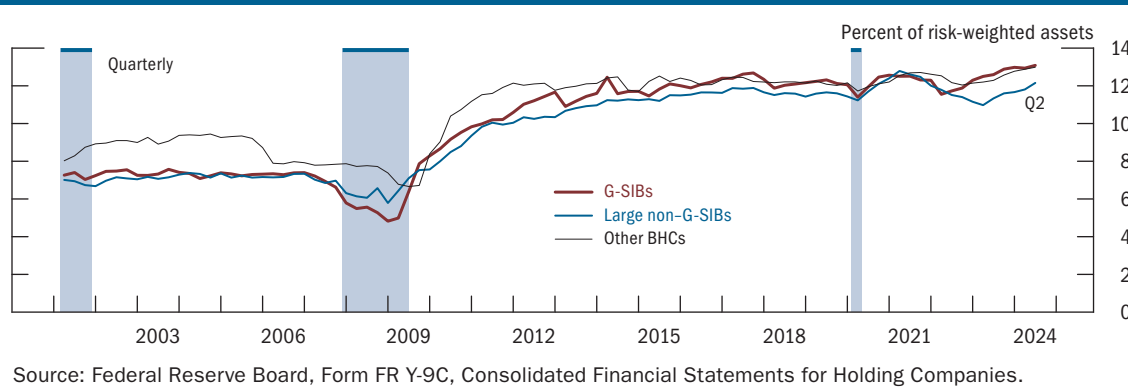
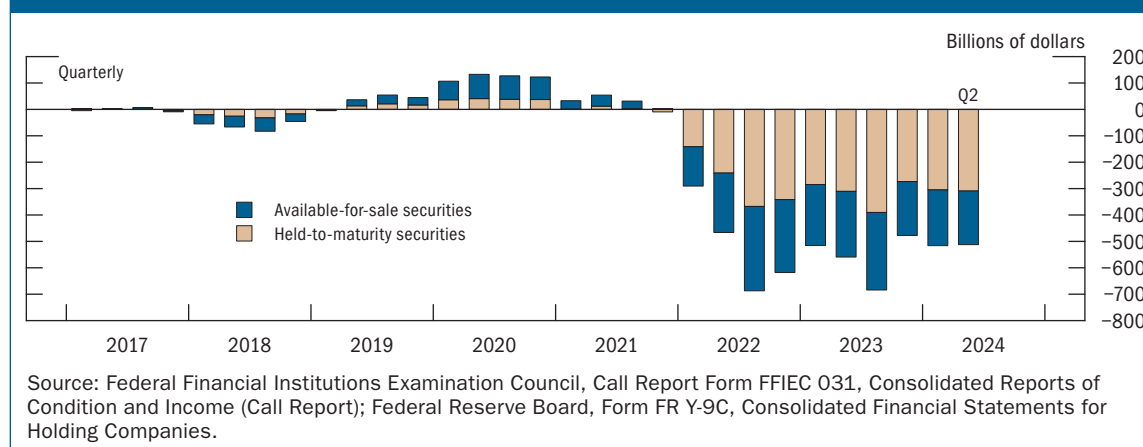
Figure 3.1. Banks maintained sound net interest margins

Figure 3.2. Banks' average risk-based capital ratios were above pre-pandemic levels

Fair value losses in fixed-rate assets remained sizable, and the sensitivity of the values of those assets to interest rates remained high

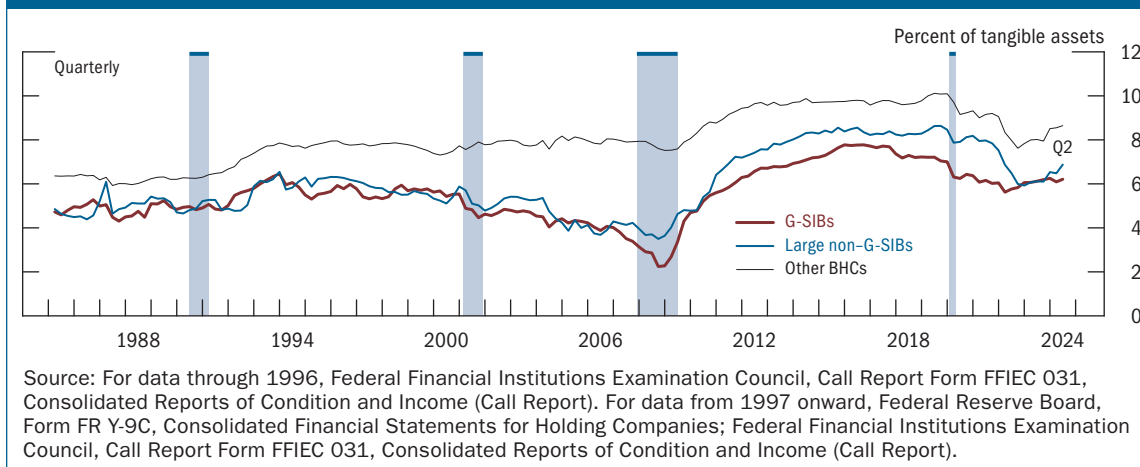
As interest rates rose from pandemic lows over 2022 and the first part of 2023, the fair value of banks' fixed-rate assets declined substantially. However, with interest rates leveling off in recent quarters, these declines started to moderate, and fair values were basically flat, on net, during the first half of 2024. At the end of the second quarter of 2024, the fair value of banks' available-for-sale (AFS) and held-to-maturity (HTM) portfolios were below their book values by \$203 billion and \$308 billion, respectively (figure 3.3).

The tangible common equity (TCE) ratio, which corresponds to the ratio of TCE to total tangible assets, is an alternative measure of bank capital. The TCE ratio has similarities to the CET1 ratio in that both exclude intangible items such as goodwill from the measurement of capital, but there

Figure 3.3. The fair value losses of banks' securities portfolios remained sizable

are also important differences between the two. In contrast with the CET1 ratio, the TCE ratio does not account for the riskiness of assets but does include fair value declines on AFS securities for all banks. The TCE ratio moved up across all bank-size categories in the second quarter of 2024, reflecting increased bank capital from retained earnings during this period and a slight improvement in the fair value of the AFS securities portfolio (figure 3.4).

Figure 3.4. The ratio of tangible common equity to tangible assets increased for banks of all categories



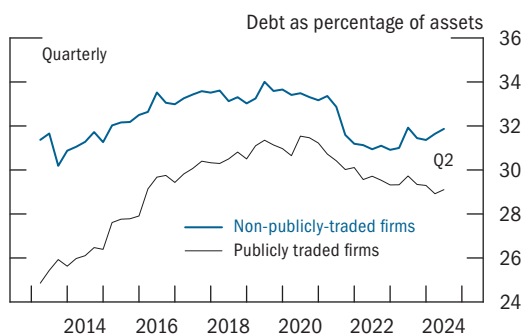
While most banks have reduced their exposure to interest rate risk over the past year, primarily by shortening the average maturity of their securities portfolios, some banks' vulnerability to changes in interest rates remained higher than normal. Interest rates declined significantly in the third quarter but reversed much of that decline in October. As a result, reflecting the continued elevated sensitivity of fixed-rate asset values to interest rates, fair value losses by the beginning of November likely were only modestly below their levels at the end of the second quarter.

Credit quality at banks remained sound overall despite some pockets of concern

By the end of the second quarter of 2024, banks' overall credit quality was sound. Third-quarter earnings showed that credit quality was little changed but that some segments of CRE continued to be a watchpoint. The aggregate bank-loan delinquency rate remained at historically low levels, despite being a notch higher than the record lows observed at the end of 2022. Contributing to the low aggregate delinquency rate are the low delinquency rates on residential real estate and commercial and industrial (C&I) loans. In the case of C&I loans, the quality of the loans is solid,

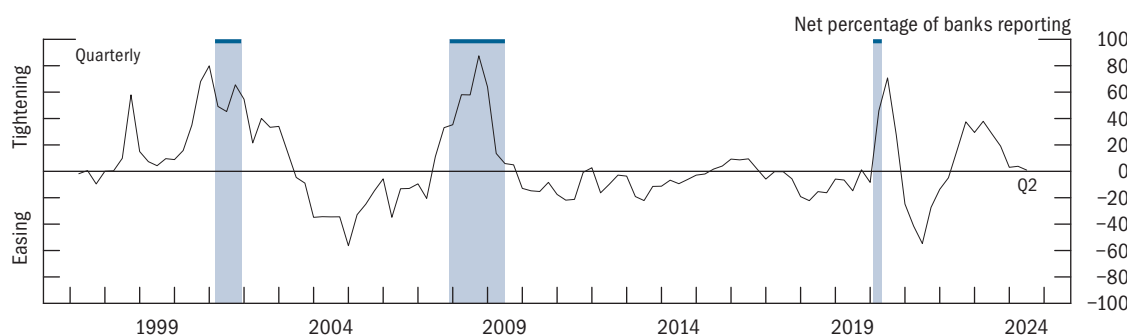
as borrower leverage for all outstanding bank C&I loans is relatively low (figure 3.5) and recent SLOOS responses indicate that, after tightening over most of 2022 and 2023, credit standards for C&I loans have been little changed this year (figure 3.6). However, the delinquency rates for credit card and auto loans are somewhat elevated and increased further in the first half of 2024. Of note, exposures in credit card loans remained concentrated in a few large banks that are subject to regular stress testing and are therefore expected to be better prepared to manage losses in their loan portfolios.

Figure 3.5. The financial condition of firms with commercial and industrial bank loans remained sound



Source: Federal Reserve Board, Form FR Y-14Q (Schedule H.1), Capital Assessments and Stress Testing.

Figure 3.6. Credit standards for commercial and industrial loans were little changed in the first half of 2024



Source: Federal Reserve Board, Senior Loan Officer Opinion Survey on Bank Lending Practices; Federal Reserve Board staff calculations.

In the aggregate, the delinquency rate on CRE loans held on banks' books was still at historically low levels at the end of the second quarter, especially among regional and community banks. Over the past several quarters, however, delinquency rates at larger banks have been showing a modest upward trend. These increases reflect significant deterioration in the credit quality of certain components of some banks' CRE portfolios. Most notably, delinquency rates in CRE loans backed by office properties increased further at large banks in the first half of 2024, as the adjustment to new patterns of work continued to put downward pressure on prices and operating income of office buildings. The delinquency rate on CRE loans backed by multifamily properties

has remained low, reflecting the conservative CRE bank lending standards of recent years, but developments in this sector also pose some concern, as rental market fundamentals, such as vacancy rates and rent growth, have been deteriorating. The *Supervision and Regulation Report* discusses ways that supervisors are monitoring and addressing these risks with banks.⁸

Leverage at broker-dealers remained low

Risks posed to the financial system by broker-dealer leverage remained low on balance. Despite ticking up in recent quarters, the ratio of assets to equity stood near historically low levels by the end of the first half of 2024, as dealers increased equity to keep up with an expansion in assets (figure 3.7). Dealers' profits were up year-over-year and were slightly above pre-pandemic levels (figure 3.8). The most recent data on broker-dealers' trading profits continued to show a relatively even distribution of the shares of profits coming from equity; fixed income, rates, and credit; and other lines of business (figure 3.9). Dealers' intermediation activity increased to record highs, driven mainly by higher Treasury positions and secured financing amid rising volumes of outstanding Treasury securities and elevated Treasury issuance. Nonetheless, during periods of market stress, broker-dealers may not be able to meet increased intermediation demand, as their capacity to intermediate may become reduced due to internal risk limits, a factor that has been a structural vulnerability for the Treasury market.

Figure 3.7. Leverage at broker-dealers remained near historical lows

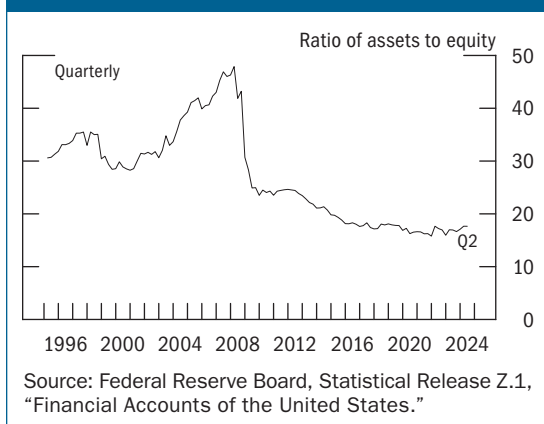
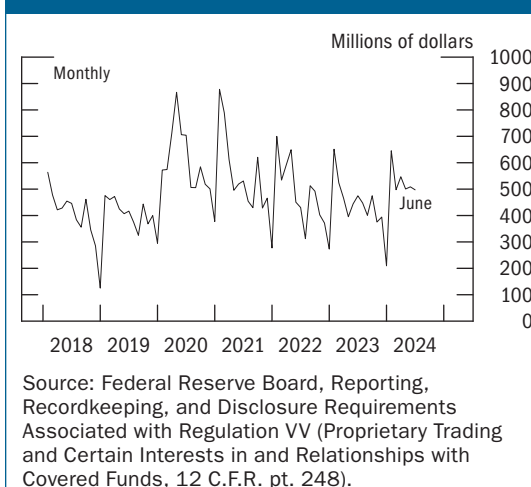
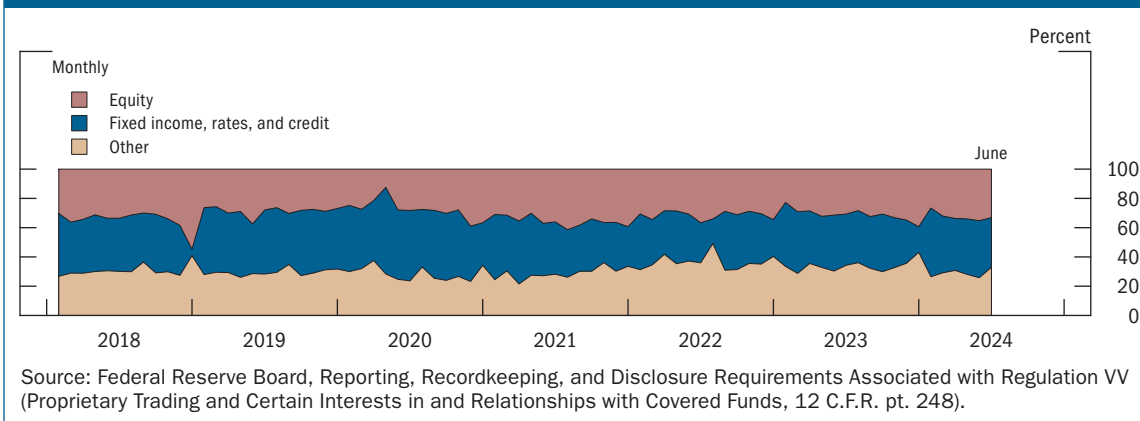


Figure 3.8. Trading profits in the first half of 2024 were within the range of the past 5 years



⁸ The most recent *Supervision and Regulation Report* is available on the Federal Reserve Board's website at <https://www.federalreserve.gov/publications/supervision-and-regulation-report.htm>.

Figure 3.9. The current distribution of the sources of broker-dealer trading profits was in line with recent averages



In both the June and September 2024 Senior Credit Officer Opinion Survey on Dealer Financing Terms (SCOOS), dealers reported that use of financial leverage and terms on securities financing transactions and over-the-counter derivatives remained approximately unchanged.⁹ Responses to special questions in the June survey indicated that most dealers increased capacity to provide financing collateralized by Treasury securities in the past two years. Those moves responded to increased demand for Treasury financing from customers, and dealers expect those demands to increase further in the near future. For those dealers offering the enhanced service of immediate execution in Treasury securities markets, about half responded that they increased their capacity during the same period, while the other half kept their capacity unchanged. For the September SCOOS special questions, respondents indicated significant use of volatility strategies and products across most client classes, most notably by hedge funds. In terms of net positions, hedge funds tended to have a net-long volatility exposure, whereas mutual funds and exchange-traded funds tended to have net-short volatility positions.¹⁰ The use of net-short volatility strategies has the potential to make volatility artificially lower during calmer times and amplify large volatility shocks due to funds quickly unwinding their positions to limit their losses.

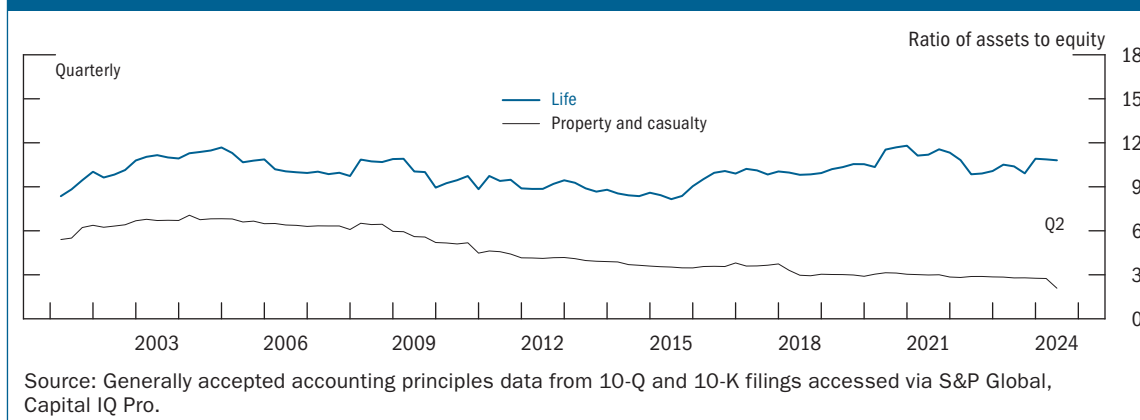
Insurance company leverage was little changed

Relative to the previous report, leverage at life insurers moved sideways and continued to be above average relative to the values that prevailed in the previous 15 years, while leverage at property and casualty (P&C) insurers remained at historically low levels (figure 3.10).¹¹ Life insurers continued to allocate a substantial percentage of assets to risky and less liquid instruments,

⁹ The SCOOS is available on the Federal Reserve Board's website at <https://www.federalreserve.gov/data/scoos.htm>.

¹⁰ Buying volatility, or taking long positions in volatility, refers to taking positions that increase in value when volatility increases. Selling volatility, or taking short positions in volatility, refers to taking positions that decrease in value when volatility increases.

¹¹ The steep decline of P&C insurers' leverage in the second quarter results from AIG, which is considered a P&C insurer in our sample, having spun off its life insurance business in June.

Figure 3.10. Leverage at life insurers remained above the average observed in the previous 15 years

such as leveraged loans, collateralized loan obligations (CLOs), high-yield corporate bonds, privately placed corporate bonds, and alternative investments. Moreover, life insurance companies have material direct exposures to commercial mortgages and are large holders of commercial mortgage-backed securities (CMBS). This exposure to illiquid and risky assets makes life insurers vulnerable to an array of adverse shocks, including that of an economic downturn or of a significant further deterioration of the CRE market.

Hedge funds' leverage was at or near its highest level in available data

Comprehensive data collected through SEC Form PF indicated that measures of leverage averaged across all hedge funds were at or near the highest level observed since these data became available in 2013. Relative to the previous report, leverage increased when measured using either average on-balance-sheet leverage (blue line in figure 3.11)—which captures financial leverage from secured financing transactions, such as repurchase agreements and margin loans, but does not capture leverage embedded through derivatives—or average gross leverage of hedge funds (black line in figure 3.11), a broader measure that also incorporates off-balance-sheet derivatives exposures, but which does not account for netting of offsetting exposures. On-balance-sheet leverage at the largest funds remained elevated at about 15-to-1 in the first quarter of 2024, despite having declined in the most recent reading (figure 3.12). Leverage for the group of hedge funds ranked 15 to 50 increased notably in the first quarter of 2024, with their ratio reaching around 10-to-1, a level that is at the high end of the range since 2013. Small haircuts on Treasury collateral in some markets where many funds obtain short-term financing contributed to these high levels of leverage.¹² More recent data from the September SCOOS suggested that hedge

¹² See Ayelen Banegas and Phillip Monin (2023), “Hedge Fund Treasury Exposures, Repo, and Margining,” FEDS Notes (Washington: Board of Governors of the Federal Reserve System, September 8), <https://doi.org/10.17016/2380-7172.3377>, or Samuel Hempel, R. Jay Kahn, Robert Mann, and Mark Paddrik (2023), “Why Is So Much Repo Not Centrally Cleared?” OFR Brief 23-01 (Washington: Office of Financial Research, US Department of the Treasury, May 12), <https://www.financialresearch.gov/the-ofr-blog/2023/05/12/why-is-so-much-repo-not-centrally-cleared/>.

Figure 3.11. Hedge funds' leverage was at or near its highest level since data became available

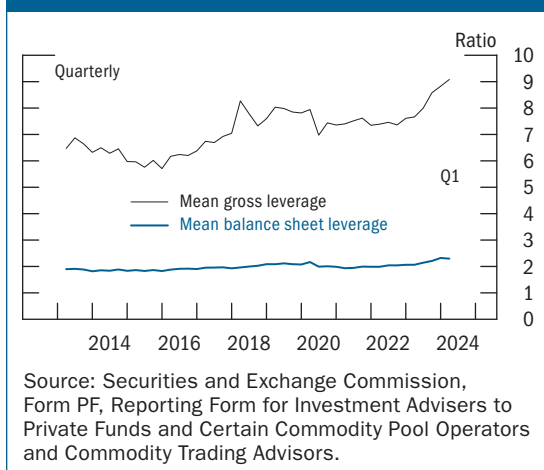
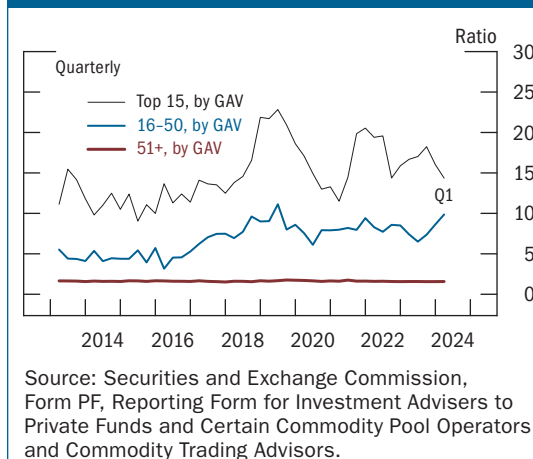


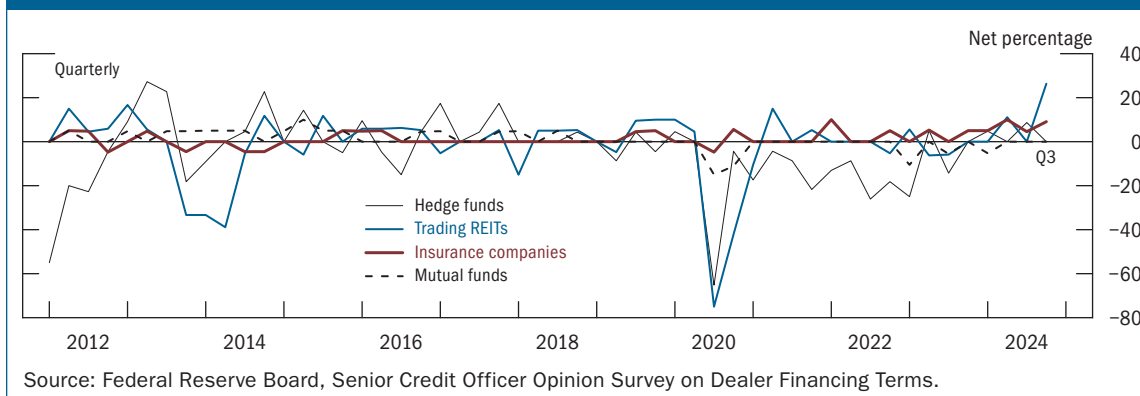
Figure 3.12. Balance sheet leverage at the 15 largest hedge funds declined



fund leverage was stable, on net, as dealers reported the use of financial leverage by their hedge fund clients remained largely unchanged between May and August 2024.

Of note, about one-fourth of dealers reported in the SCOOS that leverage at trading real estate investment trusts (REITs) had increased somewhat between May and August (figure 3.13).¹³ While this development warrants monitoring, the relatively small size of the trading REIT sector should limit spillovers from this sector to broader financial markets.

Figure 3.13. Dealers indicated that the use of leverage by hedge funds remained largely unchanged for most clients



¹³ A trading REIT, also known as a mortgage REIT, is a company that invests in mortgage-related assets such as mortgages, mortgage-backed securities, and mortgage servicing rights. A company that elects to be taxed as a REIT receives favorable tax treatment in exchange for concentrating its investments in real estate-related assets and distributing most of its taxable income to shareholders.

The high level of leverage of hedge funds partly reflects elevated U.S. Treasury cash-futures basis trading activity

As of the first quarter of 2024, data from Form PF showed that net repurchase agreement borrowing, one measure of the Treasury cash-futures basis trade, edged down but still stood near historical highs. Two other indicators, the leveraged funds' short Treasury futures positions and a basis trade proxy from Treasury TRACE, also declined in the first quarter but then showed leverage increasing again between April and September.¹⁴ This highly leveraged trade involves shorting a Treasury futures contract and purchasing a Treasury note deliverable into that contract, with the note typically financed in bilateral repurchase agreement markets. This trade was popular among hedge funds between mid-2018 and February 2020, and its subsequent unwinding contributed to the Treasury market turmoil in March 2020.

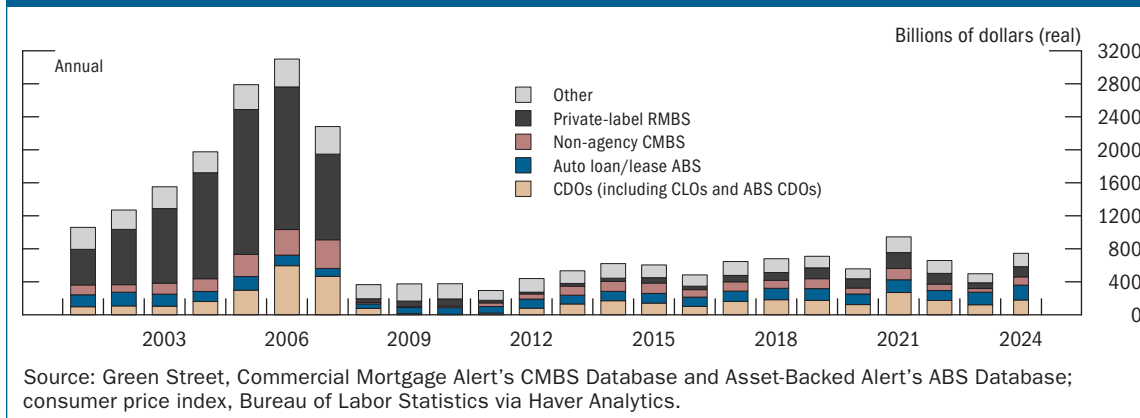
The volatility spike in early August, discussed earlier in the report, did not appear to have led to a significant unwinding of the basis trade. Instead, that spike appeared to be related to some highly leveraged hedge funds having to quickly deleverage other positions, largely to meet internal volatility targets rather than because of margin or funding pressures from creditors. During this event, liquidity in the Treasury market, as well as in other markets, deteriorated markedly, but market conditions improved rapidly following favorable data releases the following week. Nevertheless, this episode showed once again how high leverage can amplify adverse shocks.

Issuance of non-agency securities was strong

Non-agency securitization issuance—which increases the amount of leverage in the financial system—was strong in the first three quarters of 2024 and was on pace to reach the second-highest level observed in the past 15 years (figure 3.14).¹⁵ Credit spreads on most major securitized products generally decreased since the April report. The declines in the spreads were most pronounced for lower-rated tranches of CMBS deals, which suggested some improvement in investor sentiment regarding CRE. However, credit performance across securitized products backed by riskier loan collateral generally showed signs of further deterioration. For instance, the loan delinquency rate in CMBS deals continued to increase, standing at close to 4.5 percent at

¹⁴ For a discussion of the net repurchase agreement, Treasury futures, and TRACE proxy measure of the Treasury cash-futures basis trade, see Jonathan Glicoes, Benjamin Iorio, Phillip Monin, and Lubomir Petrusek (2024), “Quantifying Treasury Cash-Futures Basis Trades,” FEDS Notes (Washington: Board of Governors of the Federal Reserve System, March 8), <https://www.federalreserve.gov/econres/notes/feds-notes/quantifying-treasury-cash-futures-basis-trades-20240308.html>. Data and reports on Treasury futures positions are available on the Commodity Futures Trading Commission's website at <https://www.cftc.gov/MarketReports/CommitmentsofTraders/index.htm>.

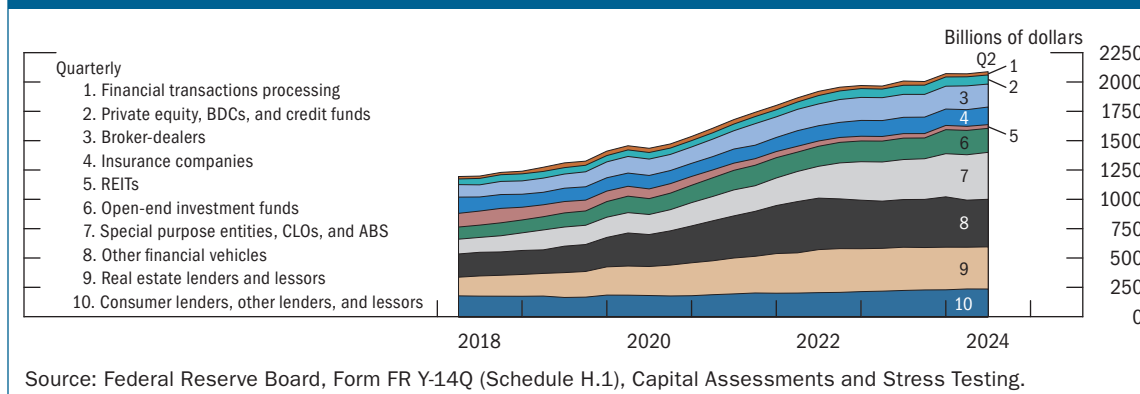
¹⁵ Securitization allows financial institutions to bundle loans or other financial assets and sell claims on the cash flows generated by these assets as tradable securities, much like bonds. By funding assets with debt issued by investment funds known as special purpose entities (SPEs), securitization can add leverage to the financial system, in part because SPEs are generally subject to regulatory regimes, such as risk retention rules, that are less stringent than banks' regulatory capital requirements. Examples of the resulting securities include CLOs (predominantly backed by leveraged loans), asset-backed securities (often backed by credit card and auto debt), CMBS, and residential mortgage-backed securities.

Figure 3.14. The pace of issuance of securitized products in 2024 has been strong

the end of August. For consumer asset-backed securities (ABS) deals, the delinquency rate for auto ABS deals continued to trend up for both prime and subprime borrowers. Similarly, the loan delinquency rate on credit card ABS deals increased, on balance, since the April report, standing at the end of August at just over 1.5 percent.

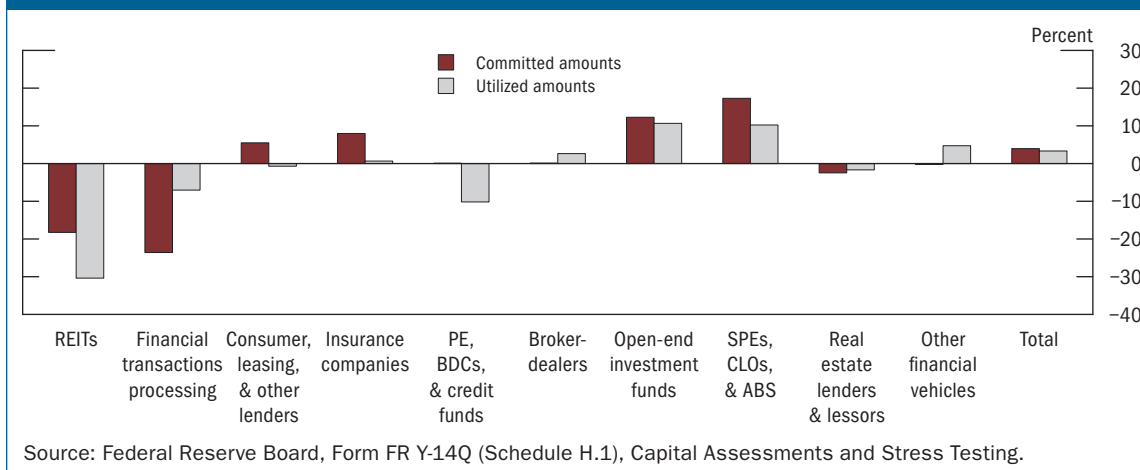
Bank lending to nonbank financial institutions increased slightly

Bank lending to nonbank financial institutions (NBFIs) can be informative about the amount of leverage used by NBFIs and shed light on the interconnectedness of these financial institutions with the banking system. After the strong growth of 2021 and 2022, the four-quarter growth rate of bank credit commitments to NBFIs stepped down substantially in 2023, and a similar lower pace of growth was observed through the end of the second quarter of 2024 (figure 3.15). The four-quarter growth in committed amounts was largely due to loans to structured finance

Figure 3.15. Growth of bank credit commitments to nonbank financial institutions slowed in recent quarters

vehicles—such as SPEs, CLOs, and ABS—and to open-end investment funds (figure 3.16). This growth was partially offset by declines in commitments to financial transactions processing and in commitments to REITs. Delinquency rates on banks' lending to NBFIs continued to be very low, but they have increased for real estate lenders and lessors in the second quarter of 2024 relative to 2023.

Figure 3.16. Aggregate credit commitments to special purpose entities, collateralized loan obligations, and asset-backed securities grew rapidly as commitments to real estate investment trusts shrank between 2023:Q2 and 2024:Q2



4 | Funding Risks

Vulnerabilities from funding risks remained notable

Funding risks for most banks remained low, but some banks' reliance on less-stable forms of funding remained a concern. On the asset side, large banks that are subject to the liquidity coverage ratio (LCR) continued to maintain sound levels of high-quality liquid assets (HQLA).

Money market funds (MMFs) and other cash-management vehicles remained susceptible to runs owing to structural vulnerabilities. The recent SEC MMF reforms made prime and tax-exempt MMFs more resilient, but government MMFs and other short-term investment funds that were not covered by the SEC reforms have continued to grow.

Some open-end bond mutual funds remained vulnerable to significant withdrawals, as they are required to permit daily redemptions despite holding assets that can suffer losses and become illiquid under stress. Meanwhile, life insurers continued to be exposed to funding risks due to their reliance on funding from nontraditional liabilities.

In total, estimated runnable money-like financial liabilities increased about 7.5 percent over the past year, surpassing \$22 trillion. This growth was mostly driven by an increase in assets under management (AUM) at domestic MMFs and in repurchase agreements. As a percentage of GDP, runnable liabilities have been relatively stable at 76 percent, a level around the historical median (see table 4.1 and figure 4.1).

Reliance on funding from uninsured deposits decreased for most banks, but reliance on other types of funding—less stable than core insured deposits—increased

Aggregate liquidity in the banking system remained sound, as HQLA measured relative to total assets was still at or above pre-pandemic levels at most banks (figure 4.2). Moreover, U.S. G-SIBs held, on average, 18 percent more HQLA than required by their LCR—the requirement that ensures banks hold sufficient HQLA to fund estimated cash outflows for 30 days during a hypothetical stress event—an amount that is a little below that of a year ago. Other banks that are required to meet minimum LCR requirements, those in Categories II and III, also continued to maintain a reasonable amount of HQLA above requirements, despite their HQLA levels being somewhat lower than a year ago. As of the end of the third quarter, banks in Categories I, II, and III had about 20 percent of HQLA booked in HTM accounts. Securities held in HTM accounts are accounted at book value when used in the calculation of regulatory capital and book equity, but they are valued for LCR purposes at fair value, and therefore fluctuations in the value of these

Table 4.1. Size of selected instruments and institutions

Item	Outstanding/total assets (billions of dollars)	Growth, 2023:Q2–2024:Q2 (percent)	Average annual growth, 1997–2024:Q2 (percent)
Total runnable money-like liabilities ¹	22,078	7.6	4.9
Uninsured deposits	6,716	.9	10.8
Domestic money market funds ²	6,053	12.7	6.2
Government	4,893	9.7	15.2
Prime	1,032	29.4	3.1
Tax exempt	128	14.4	-1.1
Repurchase agreements	4,963	9.8	5.9
Commercial paper	1,295	8.7	2.8
Securities lending ³	995	5.1	7.3
Bond mutual funds	4,525	6.2	8.0

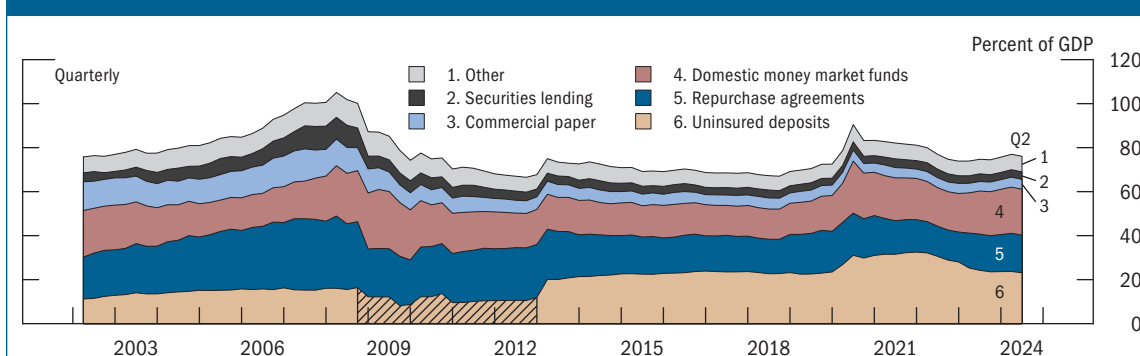
Note: The data extend through 2024:Q2 unless otherwise noted. Outstanding amounts are in nominal terms. Growth rates are nominal and are measured from Q2 of the year immediately preceding the period through Q2 of the final year of the period. Total runnable money-like liabilities exceed the sum of listed components. Unlisted components of runnable money-like liabilities include variable-rate demand obligations, federal funds, funding-agreement-backed securities, private liquidity funds, offshore money market funds, short-term investment funds, local government investment pools, and stablecoins.

¹ Average annual growth is from 2003:Q1 to 2024:Q2.

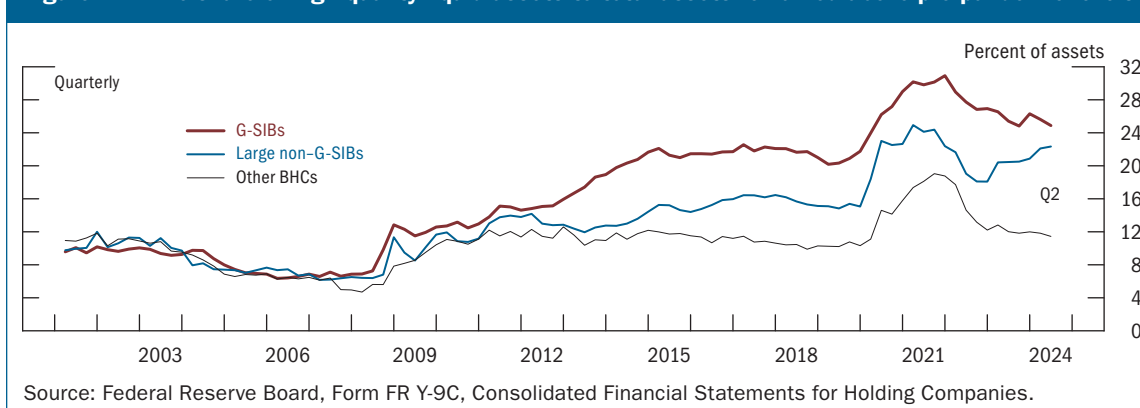
² Average annual growth is from 2001:Q1 to 2024:Q2.

³ Average annual growth is from 2000:Q1 to 2024:Q1. Securities lending includes only lending collateralized by cash.

Source: Securities and Exchange Commission, Private Funds Statistics; iMoneyNet, Inc., Offshore Money Fund Analyzer; Bloomberg Finance L.P.; Securities Industry and Financial Markets Association: U.S. Municipal Variable-Rate Demand Obligation Update; DTCC Solutions LLC, an affiliate of the Depository Trust & Clearing Corporation: commercial paper data; Federal Reserve Board staff calculations based on Risk Management Association, Securities Lending Report; Markit Securities Finance; Investment Company Institute; Federal Reserve Board, Statistical Release Z.1, "Financial Accounts of the United States"; Federal Financial Institutions Examination Council, Consolidated Reports of Condition and Income (Call Report); Morningstar, Inc., Morningstar Direct; Llama Corp, DeFiLlama.

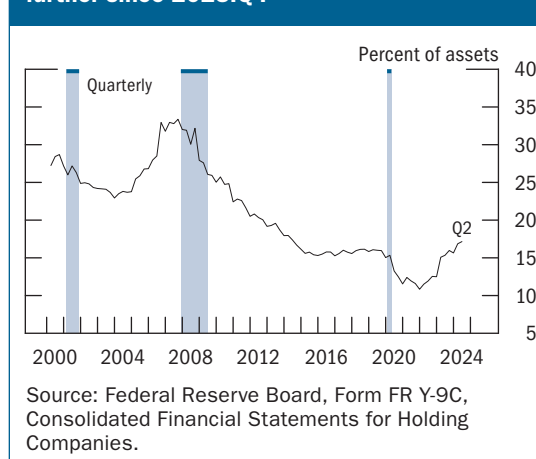
Figure 4.1. Ratio of runnable money-like liabilities to GDP remained around its historical median

Source: Securities and Exchange Commission, Private Funds Statistics; iMoneyNet, Inc., Offshore Money Fund Analyzer; Bloomberg Finance L.P.; Securities Industry and Financial Markets Association: U.S. Municipal Variable-Rate Demand Obligation Update; DTCC Solutions LLC, an affiliate of the Depository Trust & Clearing Corporation: commercial paper data; Federal Reserve Board staff calculations based on Risk Management Association, Securities Lending Report; Markit Securities Finance; Investment Company Institute; Federal Reserve Board, Statistical Release Z.1, "Financial Accounts of the United States"; Federal Financial Institutions Examination Council, Consolidated Reports of Condition and Income (Call Report); gross domestic product, Bureau of Economic Analysis via Haver Analytics; Llama Corp, DeFiLlama.

Figure 4.2. The share of high-quality liquid assets to total assets remained above pre-pandemic levels

securities will affect banks' LCR levels. HTM securities can be pledged at the Federal Reserve discount window or in repurchase agreements at their market value, but banks cannot sell any of those assets outright without allowing losses (or gains) on the whole HTM portfolio to flow through to equity.

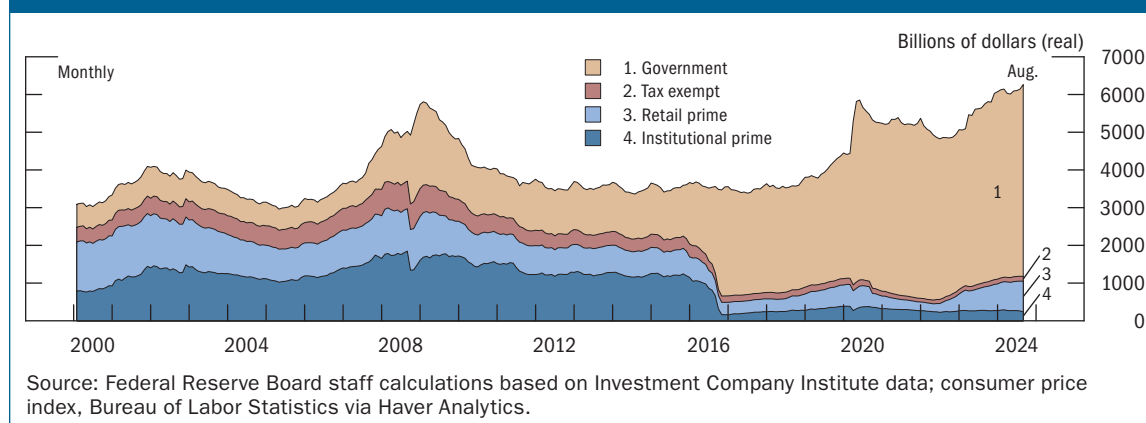
During the March 2023 banking-sector stresses, high reliance on funding from uninsured deposits was a key vulnerability among some of the most affected banks, including those that failed. Since then, the share of uninsured deposits relative to total bank funding has decreased for most banks, especially at those that previously relied heavily on uninsured deposits. However, a significant portion of the decrease in funding from uninsured deposits was replaced by short-term nondeposit funding at large banks and by brokered and reciprocal deposits at regional and community banks. Most brokered and reciprocal deposits in the banking system are insured, but the stability of this type of funding during periods of stress may be lower than that of traditional core insured deposits. Banks' reliance on short-term wholesale funding increased further over the first half of the year and is concentrated at some of the very largest banks (figure 4.3). Although such funding can become expensive or unreliable during periods of market stress, the levels remain much lower than they were before the 2007–09 financial crisis, and post-crisis reforms, such as the LCR requirement, are intended to limit the spillovers from such an event.

Figure 4.3. Banks' reliance on short-term wholesale funding stayed low but increased further since 2023:Q4

Money market funds and other cash-management vehicles remained susceptible to runs owing to structural vulnerabilities

Assets managed by MMFs increased since the April report to more than \$6.25 trillion by the end of August, as MMFs continued to provide more attractive yields relative to most bank deposits, but at a slower pace than in 2023 (figure 4.4). More than 80 percent of those assets are in funds that only hold securities that are guaranteed by the U.S. government.

Figure 4.4. Assets under management at money market funds increased to an all-time high in August



Reforms for MMFs adopted last year by the SEC went fully into effect in October 2024. These reforms represent significant progress in making institutional prime and tax-exempt MMFs more resilient, although these funds remain vulnerable to runs in periods of significant stress. AUM in prime MMFs rose 7 percent year-to-date through August, as retail prime funds grew while AUM at their institutional counterparts declined significantly.

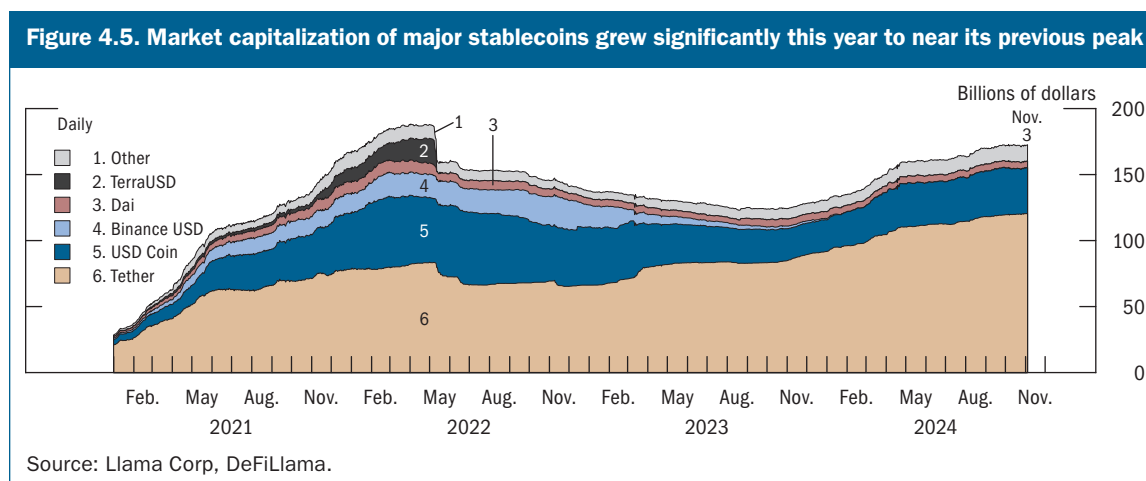
Other cash-management vehicles, such as dollar-denominated offshore MMFs and short-term investment funds, also invest in money market instruments and engage in liquidity transformation.¹⁶ Since the April report, estimated aggregate AUM of these cash-management vehicles increased further to \$2.1 trillion, with between \$0.75 trillion and \$1.8 trillion of these vehicles' AUM being currently invested in assets that are similar to those in portfolios of U.S. prime MMFs.

Many of these cash-management vehicles—including retail and government MMFs, offshore MMFs, and short-term investment funds—seek to maintain stable net asset values that are typically rounded to \$1.00. If short-term interest rates rise sharply or portfolio assets lose value for other reasons, the market values of these funds may fall below their rounded share prices and trigger large, concurrent redemptions, which can put the funds under strain and destabilize short-term funding markets.

¹⁶ Cash-management vehicles included in this total are dollar-denominated offshore MMFs, short-term investment funds, private liquidity funds, ultrashort bond mutual funds, and local government investment pools.

Stablecoins grew substantially and remained vulnerable to runs

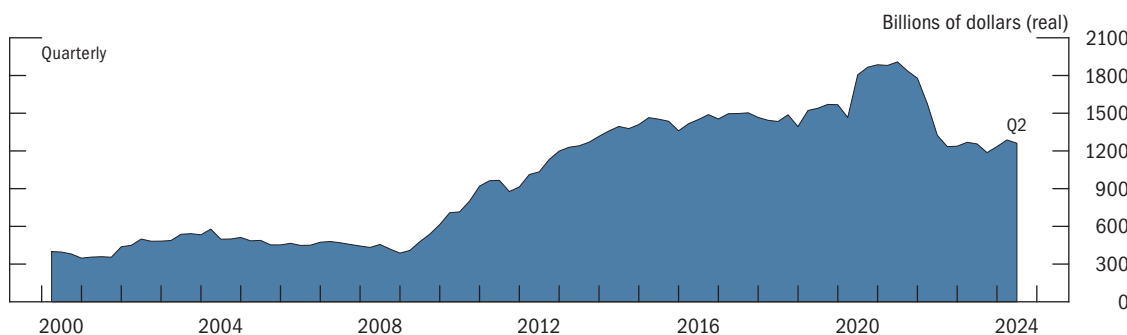
Stablecoin assets—digital assets designed to maintain a stable value relative to a national currency or another reference asset—grew substantially since the April report.¹⁷ The total market capitalization of stablecoins was more than \$170 billion by the beginning of November, just a notch below the record high observed in April 2022 before Terra’s collapse (figure 4.5). These digital assets are structurally vulnerable to runs and lack a comprehensive federal prudential regulatory framework. Stablecoins still have a relatively small footprint in the U.S. economy, but have experienced strong growth in recent years and have the potential to scale rapidly.



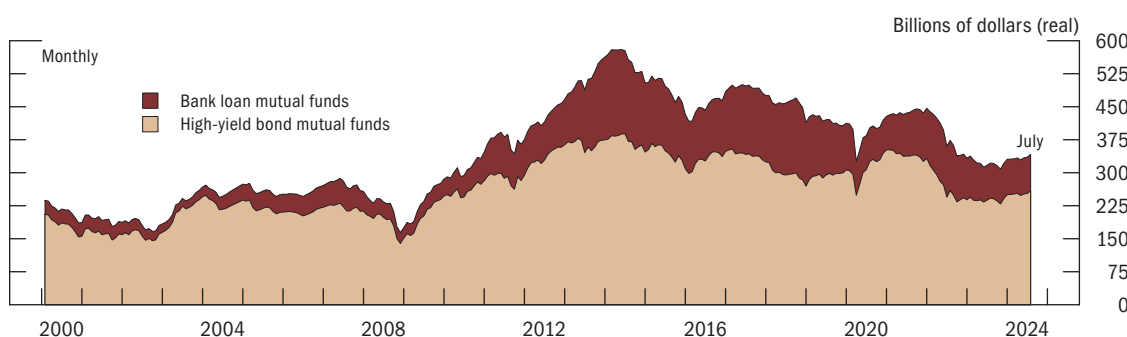
Bond mutual funds’ asset holdings increased in 2024

Mutual funds that invest substantially in corporate bonds, municipal bonds, and bank loans may be particularly exposed to liquidity transformation risks, given the relative illiquidity of their assets and the requirement that these funds offer daily redemptions. Mutual funds held approximately \$1.3 trillion of corporate bonds as of the second quarter of 2024, which represents a sizable share—about 13 percent—of corporate bonds outstanding (figure 4.6). Total AUM of the subcategories of mutual funds holding high-yield bonds and bank loans, which primarily hold riskier and less liquid assets, edged up in recent months (figure 4.7). As significant investors in the bond and loan markets, substantial outflows from these funds or other disruptions in their ability to support the functioning of underlying markets can in turn lead to strains among the firms that borrow in these markets. In recent quarters, net inflows—which represent the net new funds available to borrowers—have been subdued (figure 4.8).

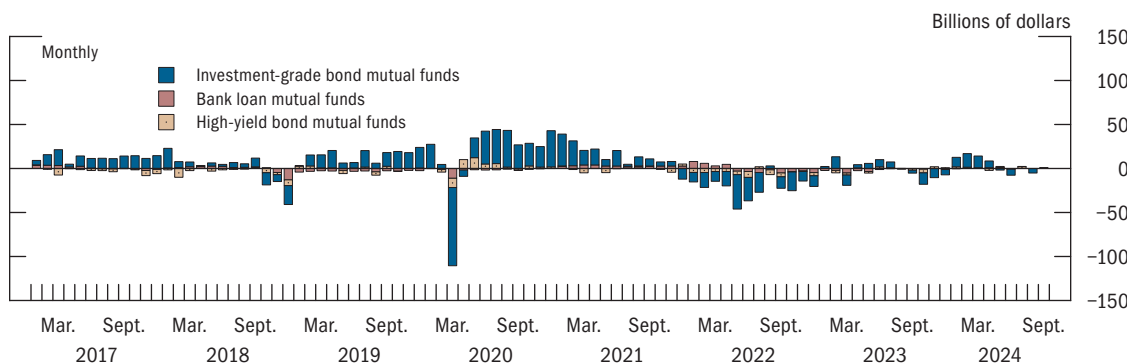
¹⁷ To back the coins, stablecoins hold a pool of assets that, among other assets, contain a large amount of U.S. Treasury bills.

Figure 4.6. Corporate bonds held by bond mutual funds remained stable in the first half of 2024

Source: Federal Reserve Board staff estimates based on Federal Reserve Board, Statistical Release Z.1, "Financial Accounts of the United States"; consumer price index, Bureau of Labor Statistics via Haver Analytics.

Figure 4.7. Assets held by bank loan and high-yield mutual funds moved up in the first half of 2024

Source: Investment Company Institute; consumer price index, Bureau of Labor Statistics via Haver Analytics.

Figure 4.8. Mutual fund flows were solid in early 2024 but have dissipated

Source: Investment Company Institute.

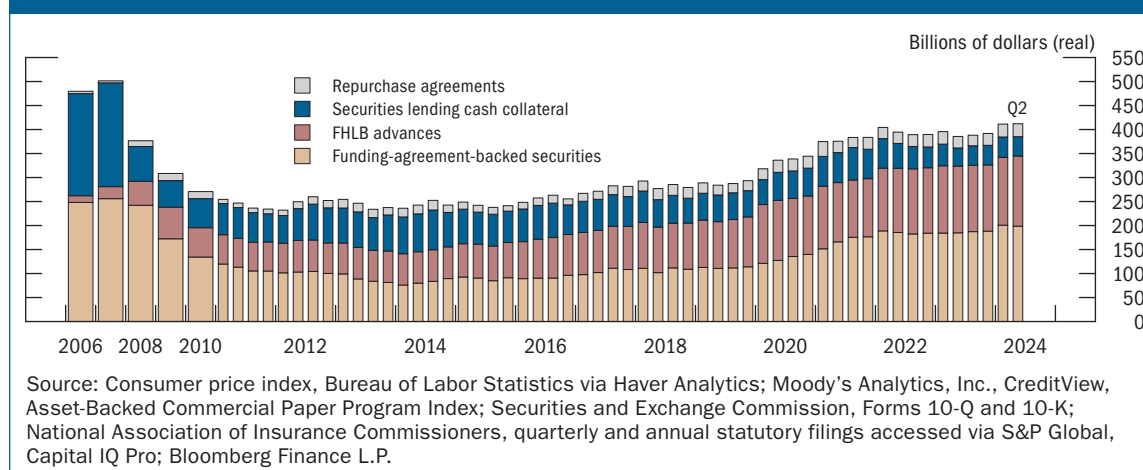
Central counterparties' initial margin levels and prefunded mutualized resources remained high and stable

Central counterparties' (CCPs) initial margin levels remained high and stable during the first half of 2024. CCPs also maintained high levels of prefunded mutualized resources. Elevated initial margins and ample overall prefunded resources work together to create a relatively low vulnerability at CCPs to a potential default by a clearing member or market participant.¹⁸ These two factors also reduce the possibility of large liquidity demands from a CCP to its credit providers (usually banks). Consistent with the high levels of initial margin and prefunded resources that they maintain, CCPs operated normally during the volatility spike in early August. Nevertheless, the concentration of clients at the largest clearing members is a vulnerability, because this concentration could make transferring client positions to other clearing members challenging if such a transfer were ever necessary.

Life insurers' reliance on funding from nontraditional liabilities remained higher than average

Over the past decade, life insurers have increased their reliance on funding from nontraditional liabilities, including funding-agreement-backed securities and cash received through repurchase agreements and securities lending transactions (figure 4.9). These liabilities can create liquidity

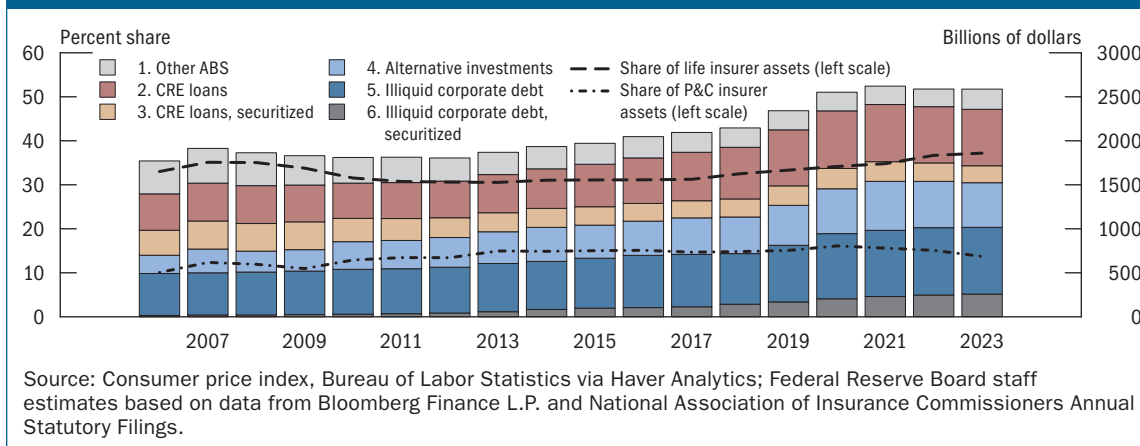
Figure 4.9. Life insurers' reliance on nontraditional liabilities for funding increased further in the first half of 2024



¹⁸ Prefunded resources represent financial assets, including cash and securities, transferred by the clearing members to the CCP to cover that CCP's potential credit exposure in case of default by one or more clearing members. These prefunded resources are held as initial margin and prefunded mutualized resources, which builds the resilience of CCPs to the possible default of a clearing member or market participant.

risk through withdrawals or the inability to roll over funding if invested proceeds are not appropriately matched. The steady decline in the liquidity of life insurers' assets (figure 4.10), in conjunction with a greater use of nontraditional liabilities, makes it potentially more difficult for life insurers to be able to meet a sudden rise in withdrawals and other claims.

Figure 4.10. Life insurers continued to hold a significant share of risky and illiquid assets on their balance sheets



5 | Near-Term Risks to the Financial System

The Federal Reserve routinely engages in discussions with domestic and international policy-makers, academics, community groups, and others to gauge the set of risks of greatest concern to these groups. As noted in the box “[Survey of Salient Risks to Financial Stability](#),” in recent outreach, significantly fewer respondents noted risks associated with a resurgence in inflation and further monetary tightening than had done so in the spring survey. Instead, contacts focused on risks associated with U.S. fiscal debt sustainability, Middle East tensions, and generalized policy uncertainty.

The following discussion considers possible interactions of existing domestic vulnerabilities with several potential near-term risks, including international risks.

A worsening of global geopolitical tensions could lead to broad adverse spillovers

Conflict in the Middle East and Russia’s ongoing war against Ukraine pose risks to global economic activity, including the possibility of sustained disruptions to energy and commodity markets and global value chains. Further escalation of geopolitical tensions could reduce economic activity, boost inflation, and heighten volatility in global financial markets. The current combination of relatively high asset valuation pressures and heightened geopolitical and policy uncertainty increases the risk of a sudden pullback from risk-taking. These developments could lead to declines in asset prices and losses for exposed businesses and investors, including those in the U.S.

A marked slowdown in economic growth, domestically or abroad, could pose risks for U.S. markets and financial institutions

In the U.S., unexpectedly weak economic activity could trigger sharp corrections in asset prices, especially in equities and real estate, where valuations are elevated. Financial stress could be amplified by high leverage within certain NBFIs, as the rapid unwinding of positions could create liquidity imbalances and increase market volatility. If CRE fundamentals deteriorated further, it could lead to significant losses for exposed financial intermediaries, reducing their ability to supply credit to the economy and further weigh on economic activity.

In addition, a sharp economic downturn in advanced foreign economies or China could prompt a pullback of investors from riskier assets, leading to heightened volatility and broader stress

across global financial markets. Elevated public debt levels in many advanced economies, including the U.S., may limit governments' ability to respond to weaker growth. Concerns about fiscal deterioration could, in turn, put upward pressure on long-term interest rates that could further damp growth and strain sovereign and private-sector borrowers. In China, residential real estate prices continue to fall, potentially putting further pressure on the highly indebted property sector. Fiscal stimulus measures have been announced there, but uncertainty remains about their effectiveness in meaningfully strengthening domestic demand.

Shocks caused by cyber events could impair the U.S. financial system

The risk of cyberattacks has grown amid increased geopolitical tensions and rapid advancements in artificial intelligence. In addition to malicious attacks, nonmalicious cyber events, such as software malfunctions at key third-party service providers, have demonstrated the potential to cause significant disruptions. Shocks caused by cyber events, especially cyberattacks, may propagate through the financial system through complex interdependencies among financial institutions, market infrastructure, and service providers. When these channels are sufficiently systemic, cyber shocks can disrupt payments or other operational components of the financial system. The propagation of more severe cyber shocks could also be amplified by existing vulnerabilities in the financial system—for example, by triggering funding runs or asset fire sales. Various U.S. government agencies, including financial regulators, are taking steps to further protect the financial system and financial infrastructures from cyber risks and their effects.

Box 5.1. Survey of Salient Risks to Financial Stability

As part of its market intelligence gathering, staff from the Federal Reserve Bank of New York solicited views from a wide range of contacts on risks to U.S. financial stability. From late August to late October, the staff surveyed 24 contacts, including professionals at broker-dealers, investment funds, research and advisory firms, and academics (figure A). This section is a summary of the views provided by survey respondents and should not be interpreted as representing the views of the Federal Reserve Bank of New York or the Federal Reserve Board.

Concerns surrounding U.S. fiscal debt sustainability were atop the list this survey, followed by escalating tensions in the Middle East and policy uncertainty, which was also frequently cited in the last survey (figure B). Contacts also flagged the risk of a U.S. recession near the top of the list. The risk of persistent inflationary pressures and the implications of a restrictive monetary policy stance, which had been the top-cited risk in five out of the previous six surveys, including the last cycle, was less frequently cited this round. Respondents noted risks surrounding global trade more frequently this cycle than in the previous survey. A correction in risky asset prices as well as renewed stress in the banking sector, which were noted in the spring survey, continued to be cited but not as prominently. While not as frequently cited as other risks, further weakness in the Chinese economy and the potential for a cyberattack on a financial institution were seen as carrying some of the most severe consequences should either of them materialize.

U.S. fiscal debt sustainability

Concerns over U.S. fiscal debt sustainability was the top-cited risk. It was noted that increased Treasury issuance could begin to crowd out private investment or constrain policy responses in an economic downturn.

Middle East tensions

Respondents noted the most immediate risk in Middle East tensions would be a widening of the conflict within the region, with some highlighting a tail risk that it could become a global conflict. Disruptions to energy supplies, and potentially broader commodity markets, are seen as the main channels impacting financial stability.

Policy uncertainty

Respondents continued to see policy uncertainty as a risk, though it was cited less often relative to the last survey. Contacts noted elevated policy uncertainty can depress sentiment. The need to raise the federal debt limit next year was specifically cited by respondents as a potential watchpoint.

U.S. recession

Contacts cited the potential for a U.S. economic downturn more often than in the previous survey. It was noted by some respondents that there may be more underlying weakness in the labor market than currently believed.

Persistent inflation and monetary tightening

Elevated inflation and the implications of tighter monetary policy, which had been the top-cited risk recently, was less cited this round. The respondents who continued to flag it as a risk noted that while the inflation data had improved, there continued to be some chance that it would take longer than expected to return to a dual-mandate-consistent level.

(continued)

Box 5.1—continued

Risks to global trade

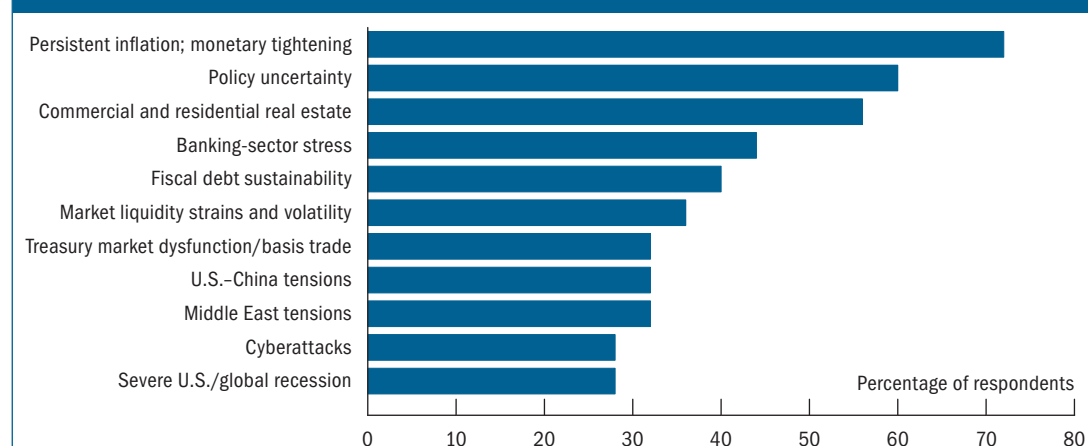
Risks to global trade were specifically cited in this survey, with some respondents noting the potential for tariff barriers to prompt retaliatory protectionist policies that would negatively affect global trade flows and put renewed upward pressure on inflation. Others noted that a deterioration in global trade could depress economic activity and raise the risk of a downturn. Respondents noted this risk was global in nature, highlighting that Chinese policy decisions could spur more protectionist measures elsewhere and that developments like the French elections earlier this year could increase isolationism.

Figure A. Fall 2024: Most cited potential shocks over the next 12 to 18 months



Source: Federal Reserve Bank of New York survey of 24 market contacts from August to October.

Figure B. Spring 2024: Most cited potential shocks over the next 12 to 18 months



Source: Federal Reserve Bank of New York survey of 25 market contacts from January to March.

Appendix | Figure Notes

Figure 1.1. Nominal Treasury yields fell but remained high

Treasury rates are the 2-year and 10-year constant maturity yields based on the most actively traded securities.

Figure 1.2. An estimate of the nominal Treasury term premium was near the top of its range since 2010

Term premiums are estimated from a 3-factor term structure model using Treasury yields and Blue Chip interest rate forecasts.

Figure 1.3. Interest rate volatility remained well above its median since 2005

The data begin in April 2005. Implied volatility on the 10-year swap rate, 1 month ahead, is derived from swaptions.

Figure 1.4. The price-to-earnings ratio of S&P 500 firms climbed to the upper end of its historical range

The figure shows the aggregate forward price-to-earnings ratio of Standard & Poor's (S&P) 500 firms, based on expected earnings for 12 months ahead.

Figure 1.5. An estimate of the equity premium remained well below its long-run median

The data begin in October 1991. The figure shows the difference between the aggregate forward earnings-to-price ratio of Standard and Poor's 500 firms and the expected real Treasury yields, based on expected earnings for 12 months ahead. Expected real Treasury yields are calculated from the 10-year consumer price index inflation forecast, and the smoothed nominal yield curve is estimated from off-the-run securities.

Figure 1.6. Volatility in equity markets remained near its historical median

Realized volatility is computed from an exponentially weighted moving average of 5-minute daily realized variances with 75 percent of the weight distributed over the past 20 business days. Median refers to the median option-implied volatility.

Figure 1.7. Corporate bond yields fell somewhat and were near their median for the past 30 years

The triple-B series reflects the effective yield of the ICE Bank of America Merrill Lynch (BofAML) triple-B U.S. Corporate Index (COA4), and the high-yield series reflects the effective yield of the ICE BofAML U.S. High Yield Index (H0A0).

Figure 1.8. Corporate bond spreads went down a little and were at low levels

The triple-B series reflects the option-adjusted spread of the ICE Bank of America Merrill Lynch (BofAML) triple-B U.S. Corporate Index (COA4), and the high-yield series reflects the option-adjusted spread of the ICE BofAML U.S. High Yield Index (H0A0).

Figure 1.9. The excess bond premium remained just below its long-run average

The excess bond premium (EBP) is a measure of bond market investors' risk sentiment. It is derived as the residual of a regression that models corporate bond spreads after controlling for expected default losses. By construction, its historical mean is zero. Positive (negative) EBP values indicate that investors' risk appetite is below (above) its historical mean.

Figure 1.10. Spreads on leveraged loans stayed moderately below their averages over the past decade

The data show secondary-market discounted spreads to maturity. Spreads are the constant spread used to equate discounted loan cash flows to the current market price. B-rated spreads begin in July 1997. The black dashed line represents the data transitioning from monthly to weekly in November 2013.

Figure 1.11. Treasury market depth remained below historical norms

Market depth is defined as the average top 3 bid and ask quote sizes for on-the-run Treasury securities.

Figure 1.12. On-the-run market depth continued to be below historical norms

The data show the time-weighted average market depth at the best quoted prices to buy and sell, for 2-year and 10-year Treasury notes. OTR is on-the-run.

Figure 1.13. A measure of liquidity in equity markets remained below its average

The data show the depth at the best quoted prices to buy and sell, defined as the ask size plus the bid size divided by 2, for E-mini Standard & Poor's 500 futures.

Figure 1.14. Commercial real estate prices adjusted for inflation were little changed

The data are deflated using the consumer price index. The dashed line at 100 indicates the index to January 2001 values.

Figure 1.15. Income of commercial properties relative to prices increased but remained below its historical average

The data are a 12-month moving average of weighted capitalization rates in the industrial, retail, office, and multifamily sectors, based on national square footage in 2009.

Figure 1.16. Banks reported having tightened lending standards for commercial real estate loans

Banks' responses are weighted by their commercial real estate loan market shares. Survey respondents to the Senior Loan Officer Opinion Survey on Bank Lending Practices are asked about the changes over the quarter. The shaded bars with top caps indicate periods of business recession as defined by the National Bureau of Economic Research: March 2001–November 2001, December 2007–June 2009, and February 2020–April 2020.

Figure 1.17. Nominal house prices continued to increase in recent months

The data extend through September 2024 for Zillow, August 2024 for CoreLogic, and July 2024 for Case-Shiller.

Figure 1.18. Model-based measures of house price valuations climbed to historically high levels

The owners' equivalent rent value for 2024:Q3 is based on monthly data through August 2024. The data for the market-based rents model begin in 2004:Q1 and extend through 2024:Q3. Valuation is measured as the deviation from the long-run relationship between the price-to-rent ratio and the real 10-year Treasury yield.

Figure 1.19. House price-to-rent ratios remained elevated across geographic areas

The data are seasonally adjusted. Percentiles are based on 19 large metropolitan statistical areas.

Figure 1.20. Inflation-adjusted farmland prices rose further from already-elevated levels

The data for the U.S. begin in 1997. Midwest index is a weighted average of Corn Belt and Great Plains states derived from staff calculations. Values are given in real terms.

Figure 1.21. Farmland prices relative to rents increased to historical highs

The data for the U.S. begin in 1998. Midwest index is a weighted average of Corn Belt and Great Plains states derived from staff calculations.

Figure 2.1. The total debt of businesses and households relative to GDP declined to its lowest level in 20 years

The shaded bars with top caps indicate periods of business recession as defined by the National Bureau of Economic Research: January 1980–July 1980, July 1981–November 1982, July 1990–March 1991, March 2001–November 2001, December 2007–June 2009, and February 2020–April 2020. GDP is gross domestic product.

Figure 2.2. Both business and household debt-to-GDP ratios continued to edge down

The shaded bars with top caps indicate periods of business recession as defined by the National Bureau of Economic Research: January 1980–July 1980, July 1981–November 1982, July 1990–March 1991, March 2001–November 2001, December 2007–June 2009, and February 2020–April 2020. GDP is gross domestic product.

Figure 2.3. Business debt adjusted for inflation grew modestly

Nominal debt growth is seasonally adjusted and is translated into real terms after subtracting the growth rate of the price deflator for the core personal consumption expenditures price index.

Figure 2.4. Net issuance of risky debt remained subdued

The data begin in 2004:Q2. Institutional leveraged loans generally exclude loan commitments held by banks. The key identifies bars in order from top to bottom (except for some bars with at least one negative value). For 2024:Q3, the value corresponds to preliminary data.

Figure 2.5. Gross leverage of large businesses stayed high by historical standards

Gross leverage is an asset-weighted average of the ratio of firms' book value of total debt to book value of total assets. The 75th percentile is calculated from a sample of the 2,500 largest firms by assets. The dashed sections of the lines in 2019:Q1 reflect the structural break in the series

due to the 2019 compliance deadline for Financial Accounting Standards Board rule Accounting Standards Update 2016-02. The accounting standard requires operating leases, previously considered off-balance-sheet activities, to be included in measures of debt and assets.

Figure 2.6. Interest coverage ratios, which indicate firms' ability to service their debt, have changed little

The interest coverage ratio is earnings before interest and taxes divided by interest payments. Firms with leverage less than 5 percent and interest payments less than \$500,000 are excluded.

Figure 2.7. New leveraged loans with debt multiples greater than 4 have been near their lowest levels in a decade

Volumes are for large corporations with earnings before interest, taxes, depreciation, and amortization greater than \$50 million and exclude existing tranches of add-ons and amendments as well as restatements with no new money. The key identifies bars in order from top to bottom.

Figure 2.8. The default rate on leveraged loans remained well below its previous peaks

The data begin in December 1998. The data including distressed exchanges begin in December 2016. The default rate is calculated as the amount in default over the past 12 months divided by the total outstanding volume of loans that are not in default at the beginning of the 12-month period. The default rate including distressed exchanges is calculated as the number of issuers in default or distressed exchange over the past 12 months divided by the total number of issuers that are not in default at the beginning of the 12-month period. The shaded bars with top caps indicate periods of business recession as defined by the National Bureau of Economic Research: March 2001–November 2001, December 2007–June 2009, and February 2020–April 2020.

Figure 2.9. Inflation-adjusted household debt has been little changed

Subprime are those with an Equifax Risk Score less than 620; near prime are from 620 to 719; prime are greater than 719. Scores are measured contemporaneously. Student loan balances before 2004 are estimated using average growth from 2004 to 2007, by risk score. The data are converted to constant 2024 dollars using the consumer price index.

Figure 2.10. A model-based estimate of housing leverage stayed significantly below its peak levels

Housing leverage is estimated as the ratio of the average outstanding mortgage loan balance for owner-occupied homes with a mortgage to (1) current home values using the Zillow national house price index and (2) model-implied house prices estimated by a staff model based on rents, interest rates, and a time trend.

Figure 2.11. Mortgage delinquency rates remained close to the low end of their historical distribution

Loss mitigation includes tradelines that have a narrative code of forbearance, natural disaster, payment deferral (including partial), loan modification (including federal government plans), or

loans with no scheduled payment and a nonzero balance. Delinquent includes loans reported to the credit bureau as at least 30 days past due.

Figure 2.13. New mortgage extensions declined across all borrower categories

Year-over-year change in balances for the second quarter of each year among those households whose balance increased over this window. Subprime are those with an Equifax Risk Score less than 620; near prime are from 620 to 719; prime are greater than 719. Scores were measured 1 year ago. The data are converted to constant 2024 dollars using the consumer price index. The key identifies bars in order from left to right.

Figure 2.14. Inflation-adjusted consumer credit has been about flat since late last year

The data are converted to constant 2024 dollars using the consumer price index. Student loan data begin in 2005:Q1.

Figure 2.15. Average maturity of auto loans at origination for used cars remained elevated

The data are seasonally adjusted. Loans for used auto vehicles only. Subprime are those with a VantageScore less than 601; near prime are from 601 to 660; prime are greater than 660.

Figure 2.16. Auto loan delinquencies have been somewhat above normal levels

Delinquent includes loans reported to the credit bureau as at least 30 days past due. The data for auto loans are reported semiannually by the Risk Assessment, Data Analysis, and Research Data Warehouse until 2017, after which they are reported quarterly. The data are seasonally adjusted.

Figure 2.17. Inflation-adjusted credit card balances for subprime borrowers trended higher but remained well below previous peaks

Subprime are those with an Equifax Risk Score less than 620; near prime are from 620 to 719; prime are greater than 719. Scores are measured contemporaneously. The data are converted to constant 2024 dollars using the consumer price index.

Figure 2.18. Credit card delinquencies rose further to somewhat above their pre-pandemic levels

Delinquency measures the fraction of balances that are at least 30 days past due, excluding severe derogatory loans, which are delinquent and have been charged off, foreclosed, or repossessed by the lender. The data are seasonally adjusted.

Figure 3.1. Banks maintained sound net interest margins

Average interest rate on interest-earning assets is total interest income divided by total interest-earning assets. Average interest expense rate on liabilities is total interest expense divided by total liabilities. The shaded bar with a top cap indicates a period of business recession as defined by the National Bureau of Economic Research: February 2020–April 2020.

Figure 3.2. Banks' average risk-based capital ratios were above pre-pandemic levels

The data are seasonally adjusted by Federal Reserve Board staff. The sample consists of domestic bank holding companies (BHCs) and intermediate holding companies (IHCs) with a substantial U.S. commercial banking presence. G-SIBs are global systemically important banks. Large

non-G-SIBs are BHCs and IHCs with greater than \$100 billion in total assets that are not G-SIBs. Before 2014:Q1 (advanced-approaches BHCs) or before 2015:Q1 (non-advanced-approaches BHCs), the numerator of the common equity Tier 1 ratio is Tier 1 common capital. Afterward, the numerator is common equity Tier 1 capital. The denominator is risk-weighted assets. The shaded bars with top caps indicate periods of business recession as defined by the National Bureau of Economic Research: March 2001–November 2001, December 2007–June 2009, and February 2020–April 2020.

Figure 3.3. The fair value losses of banks' securities portfolios remained sizable

The figure plots the difference between the fair and amortized cost values of the securities. The sample consists of all bank holding companies and commercial banks.

Figure 3.4. The ratio of tangible common equity to tangible assets increased for banks of all categories

The data are seasonally adjusted by Federal Reserve Board staff. The sample consists of domestic bank holding companies (BHCs), intermediate holding companies (IHCs) with a substantial U.S. commercial banking presence, and commercial banks. G-SIBs are global systemically important banks. Large non-G-SIBs are BHCs and IHCs with greater than \$100 billion in total assets that are not G-SIBs. Bank equity is total equity capital net of preferred equity and intangible assets. Bank assets are total assets net of intangible assets. The shaded bars with top caps indicate periods of business recession as defined by the National Bureau of Economic Research: July 1990–March 1991, March 2001–November 2001, December 2007–June 2009, and February 2020–April 2020.

Figure 3.5. The financial condition of firms with commercial and industrial bank loans remained sound

The figure shows the weighted median leverage of nonfinancial firms that borrow using commercial and industrial loans from the 24 banks that have filed in every quarter since 2013:Q1. Leverage is measured as the ratio of the book value of total debt to the book value of total assets of the borrower, as reported by the lender, and the median is weighted by committed amounts.

Figure 3.6. Credit standards for commercial and industrial loans were little changed in the first half of 2024

Banks' responses are weighted by their commercial and industrial loan market shares. Survey respondents to the Senior Loan Officer Opinion Survey on Bank Lending Practices are asked about the changes over the quarter. Results are shown for loans to large and medium-sized firms. The shaded bars with top caps indicate periods of business recession as defined by the National Bureau of Economic Research: March 2001–November 2001, December 2007–June 2009, and February 2020–April 2020.

Figure 3.7. Leverage at broker-dealers remained near historical lows

Leverage is calculated by dividing total assets by equity.

Figure 3.8. Trading profits in the first half of 2024 were within the range of the past 5 years

The sample includes all trading desks of bank holding companies subject to the Volcker rule reporting requirement.

Figure 3.9. The current distribution of the sources of broker-dealer trading profits was in line with recent averages

The sample includes all trading desks of bank holding companies subject to the Volcker rule reporting requirement. The “other” category comprises desks trading in municipal securities, foreign exchange, and commodities, as well as any unclassified desks. The key identifies series in order from top to bottom.

Figure 3.10. Leverage at life insurers remained above the average observed in the previous 15 years

Ratio is calculated as (total assets – separate account assets)/(total capital – accumulated other comprehensive income) using generally accepted accounting principles. The largest 10 publicly traded life and property and casualty insurers are represented.

Figure 3.11. Hedge funds’ leverage was at or near its highest level since data became available

Means are weighted by net asset value (NAV). On-balance-sheet leverage is the ratio of gross asset value to NAV. Gross leverage is the ratio of gross notional exposure to NAV. Gross notional exposure includes both on-balance-sheet exposures and off-balance-sheet derivative notional exposures. Options are delta adjusted, and interest rate derivatives are reported at 10-year bond equivalent values. The data are reported on a 2-quarter lag beginning in 2013:Q1.

Figure 3.12. Balance sheet leverage at the 15 largest hedge funds declined

Leverage is measured by gross asset value (GAV) divided by net asset value (NAV). Funds are sorted into cohorts based on GAV. Average leverage is computed as the NAV-weighted mean. The data are reported on a 2-quarter lag beginning in 2013:Q1.

Figure 3.13. Dealers indicated that the use of leverage by hedge funds remained largely unchanged for most clients

Net percentage equals the percentage of institutions that reported increased use of financial leverage over the past 3 months minus the percentage of institutions that reported decreased use of financial leverage over the past 3 months. REIT is real estate investment trust.

Figure 3.14. The pace of issuance of securitized products in 2024 has been strong

The data from the third quarter of 2024 are annualized to create the 2024 bar. RMBS is residential mortgage-backed securities; CMBS is commercial mortgage-backed securities; CDO is collateralized debt obligation; CLO is collateralized loan obligation. The “other” category consists of other asset-backed securities (ABS) backed by credit card debt, student loans, equipment, floor plans, and miscellaneous receivables; resecutitized real estate mortgage investment conduit (Re-REMIC) RMBS; and Re-REMIC CMBS. The data are converted to constant 2024 dollars using the consumer price index. The key identifies bars in order from top to bottom.

Figure 3.15. Growth of bank credit commitments to nonbank financial institutions slowed in recent quarters

Committed amounts on credit lines and term loans extended to nonbank financial institutions by a balanced panel of 24 bank holding companies that have filed Form FR Y-14Q in every quarter since 2018:Q1. Nonbank financial institutions are identified based on reported North American Industry Classification System (NAICS) codes. In addition to NAICS codes, a name-matching algorithm is applied to identify specific entities such as real estate investment trusts (REITs), special purpose entities, collateralized loan obligations (CLOs), and asset-backed securities (ABS). BDC is business development company. REITs incorporate both mortgage (trading) REITs and equity REITs. Broker-dealers also include commodity contracts dealers and brokerages and other securities and commodity exchanges. Other financial vehicles include closed-end investment and mutual funds.

Figure 3.16. Aggregate credit commitments to special purpose entities, collateralized loan obligations, and asset-backed securities grew rapidly as commitments to real estate investment trusts shrank between 2023:Q2 and 2024:Q2

The figure shows 2024:Q2-over-2023:Q2 growth rates as of the end of the second quarter of 2024. REIT is real estate investment trust; PE is private equity; BDC is business development company; SPE is special purpose entity; CLO is collateralized loan obligation; ABS is asset-backed securities. The key identifies bars in order from left to right.

Figure 4.1. Ratio of runnable money-like liabilities to GDP remained around its historical median

The black striped area denotes the period from 2008:Q4 to 2012:Q4, when insured deposits increased because of the Transaction Account Guarantee program. The “other” category consists of variable-rate demand obligations (VRDOs), federal funds, funding-agreement-backed securities, private liquidity funds, offshore money market funds, short-term investment funds, local government investment pools, and stablecoins. Securities lending includes only lending collateralized by cash. GDP is gross domestic product. Values for VRDOs come from Bloomberg beginning in 2019:Q1. See Jack Bao, Josh David, and Song Han (2015), “The Runnables,” FEDS Notes (Washington: Board of Governors of the Federal Reserve System, September 3), <https://www.federalreserve.gov/econresdata/notes/feds-notes/2015/the-runnables-20150903.html>.

Figure 4.2. The share of high-quality liquid assets to total assets remained above pre-pandemic levels

The sample consists of domestic bank holding companies (BHCs), intermediate holding companies (IHCs) with a substantial U.S. commercial banking presence, and commercial banks. G-SIBs are global systemically important banks. Large non-G-SIBs are BHCs and IHCs with greater than \$100 billion in total assets that are not G-SIBs. Liquid assets are cash plus estimates of securities that qualify as high-quality liquid assets as defined by the Liquidity Coverage Ratio requirement. Accordingly, Level 1 assets as well as discounts and restrictions on Level 2 assets are incorporated into the estimate.

Figure 4.3. Banks' reliance on short-term wholesale funding stayed low but increased further since 2023:Q4

Short-term wholesale funding is defined as the sum of large time deposits with maturity less than 1 year, federal funds purchased and securities sold under agreements to repurchase, deposits in foreign offices with maturity less than 1 year, trading liabilities (excluding revaluation losses on derivatives), and other borrowed money with maturity less than 1 year. The shaded bars with top caps indicate periods of business recession as defined by the National Bureau of Economic Research: March 2001–November 2001, December 2007–June 2009, and February 2020–April 2020.

Figure 4.4. Assets under management at money market funds increased to an all-time high in August

The data are converted to constant 2024 dollars using the consumer price index.

Figure 4.5. Market capitalization of major stablecoins grew significantly this year to near its previous peak

The key identifies series in order from top to bottom.

Figure 4.6. Corporate bonds held by bond mutual funds remained stable in the first half of 2024

The data show holdings of all U.S. corporate bonds by all U.S.-domiciled mutual funds (holdings of foreign bonds are excluded). The data are converted to constant 2024 dollars using the consumer price index.

Figure 4.7. Assets held by bank loan and high-yield mutual funds moved up in the first half of 2024

The data are converted to constant 2024 dollars using the consumer price index. The key identifies series in order from top to bottom.

Figure 4.8. Mutual fund flows were solid in early 2024 but have dissipated

Mutual fund assets under management as of September 2024 included \$2,403 billion in investment-grade bond mutual funds, \$268 billion in high-yield bond mutual funds, and \$80 billion in bank loan mutual funds. Bank loan mutual funds, also known as floating-rate bond funds, are excluded from high-yield bond mutual funds.

Figure 4.9. Life insurers' reliance on nontraditional liabilities for funding increased further in the first half of 2024

The data are converted to constant 2024 dollars using the consumer price index. FHLB is Federal Home Loan Bank. The data are annual from 2006 to 2010 and quarterly thereafter. The key identifies bars in order from top to bottom.

Figure 4.10. Life insurers continued to hold a significant share of risky and illiquid assets on their balance sheets

The data are converted to constant 2023 dollars using the consumer price index. Securitized products include collateralized loan obligations for corporate debt, private-label commercial

mortgage-backed securities for commercial real estate (CRE), and private-label residential mortgage-backed securities and asset-backed securities (ABS) backed by autos, credit cards, consumer loans, and student loans for other ABS. Illiquid corporate debt includes private placements, bank and syndicated loans, and high-yield bonds. Alternative investments include assets filed under Schedule BA. P&C is property and casualty. The key identifies bars in order from top to bottom.

Box 5.1. Survey of Salient Risks to Financial Stability

Figure A. Fall 2024: Most cited potential shocks over the next 12 to 18 months

Responses are to the following question: “Over the next 12–18 months, which shocks, if realized, do you think would have the greatest negative impact on the functioning of the U.S. financial system?”

Figure B. Spring 2024: Most cited potential shocks over the next 12 to 18 months

Responses are to the following question: “Over the next 12–18 months, which shocks, if realized, do you think would have the greatest negative impact on the functioning of the U.S. financial system?”

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