



Financial Stability Report

April 2024

BOARD OF GOVERNORS OF THE FEDERAL RESERVE SYSTEM



The Federal Reserve System is the central bank of the United States. It performs five key functions to promote the effective operation of the U.S. economy and, more generally, the public interest.

The Federal Reserve

- **conducts the nation's monetary policy** to promote maximum employment and stable prices in the U.S. economy;
- **promotes the stability of the financial system** and seeks to minimize and contain systemic risks through active monitoring and engagement in the U.S. and abroad;
- **promotes the safety and soundness of individual financial institutions** and monitors their impact on the financial system as a whole;
- **fosters payment and settlement system safety and efficiency** through services to the banking industry and the U.S. government that facilitate U.S.-dollar transactions and payments; and
- **promotes consumer protection and community development** through consumer-focused supervision and examination, research and analysis of emerging consumer issues and trends, community economic development activities, and administration of consumer laws and regulations.

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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.

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.

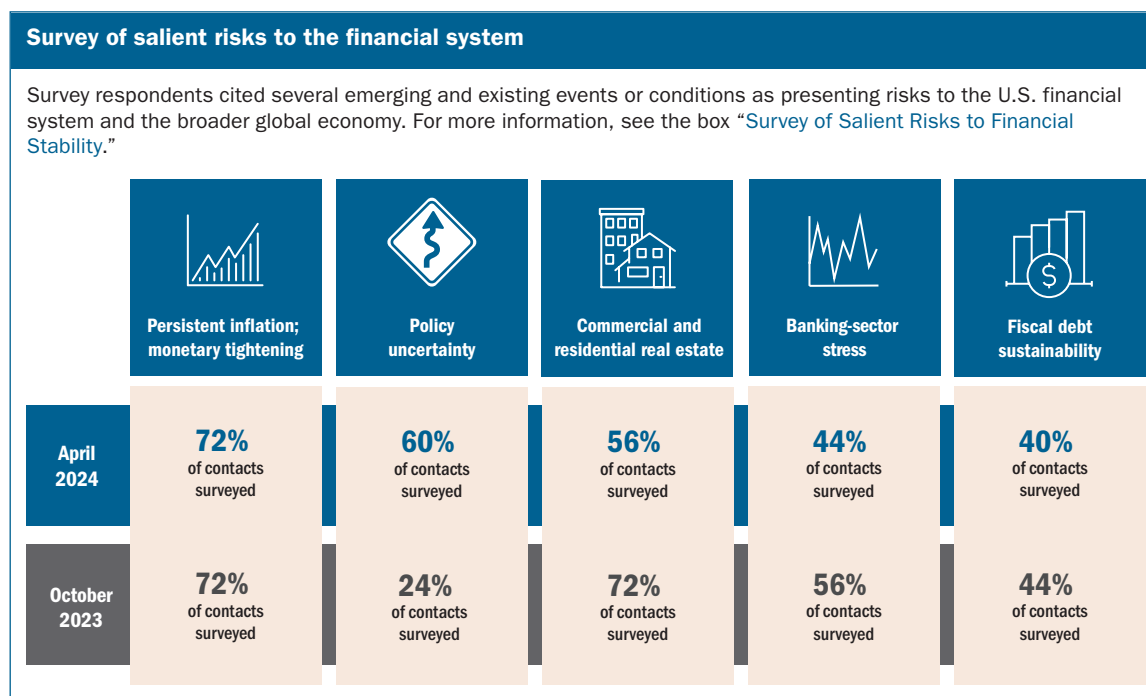
A summary of the developments in the four broad categories of vulnerabilities since the October 2023 *Financial Stability Report* is as follows:

Overview of financial system vulnerabilities			
 Asset valuations	 Borrowing by businesses and households	 Leverage in the financial sector	 Funding risks
• Equity price-to-earnings ratios moved to the upper end of their historical distributions. • Corporate bond spreads fell to levels that are low relative to their historical averages. • Prices of residential real estate remained high relative to fundamentals. • Prices of commercial real estate declined amid deteriorating fundamentals.	• The ratio of total private debt to gross domestic product (GDP) declined further, approaching its historical average. • The business debt-to-GDP ratio remained high, but business debt continued to decline in real terms amid subdued risky debt issuance. Firms' ability to service their debt remained robust. • Household debt was at modest levels relative to GDP and concentrated among prime-rated borrowers.	• The banking system remained sound and resilient, with risk-based capital ratios well above regulatory requirements. • Nonetheless, some banks continued to face sizable fair value losses on some fixed-rate assets held on their balance sheets. • Leverage increased from already elevated levels at the largest hedge funds. • Broker-dealer leverage remained near historically low levels.	• Most domestic banks maintained high levels of liquid assets and stable funding. • However, concerns over uninsured deposits and other factors continued to generate funding pressures for a subset of banks. • Structural vulnerabilities persisted at money market funds, some other mutual funds, and stablecoins. • Life insurers continued to hold a high share of illiquid and risky assets.

1. **Asset valuations.** Valuations rose further to levels that were high relative to fundamentals across major asset classes. Equity prices grew faster than expected earnings, pushing the forward price-to-earnings ratio to the upper end of its historical distribution. Corporate bond spreads narrowed and currently stand at levels that are low relative to their long-run averages. Residential property prices remained high relative to fundamentals and prices continued to rise in recent months. Prices of commercial real estate (CRE) declined amid weak demand for office properties (see Section 1, [Asset Valuations](#)).
2. **Borrowing by businesses and households.** The balance sheets of nonfinancial businesses and households remained solid, as the ratio of total private debt to gross domestic product (GDP) declined further, approaching its historical average. Although business debt remained high when measured relative to GDP (or to business assets for publicly traded corporations), business debt declined in real terms throughout last year. Firms' ability to service their debt remained robust owing to strong earnings and low borrowing costs on existing debt. Household debt remained at modest levels relative to GDP, and most of that debt is owed by households with strong credit histories or considerable home equity (see Section 2, [Borrowing by Businesses and Households](#)).
3. **Leverage in the financial sector.** The banking sector remained sound and resilient overall, and most banks continued to report capital levels well above regulatory requirements. Nevertheless, fair value losses on fixed-rate assets remained sizable for some banks, and some banks with concentrated exposure to loans backed by commercial real estate properties experienced stress. Outside the banking sector, available data suggest that hedge fund leverage grew to historic highs, driven primarily by borrowing by the largest hedge funds. Leverage at life insurance companies remained around its median, while they continued to take on credit and liquidity risk. Broker-dealer leverage remained near historical lows (see Section 3, [Leverage in the Financial Sector](#)).
4. **Funding risks.** Liquidity at most domestic banks remained ample, with limited reliance on short-term wholesale funding. Nevertheless, some banks continued to face funding strains, likely owing to vulnerabilities associated with high levels of uninsured deposits, declines in the fair value of assets, and elevated exposure to CRE. Structural vulnerabilities remained in other short-term funding markets. Prime and tax-exempt money market funds (MMFs), as well as other cash-investment vehicles and stablecoins, remained vulnerable to runs. 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 January through the end of March (discussed in the box “[Survey of Salient Risks to Financial Stability](#)”). The risk of persistent inflationary pressures leading to a more restrictive than expected monetary policy stance remained the most frequently cited risk, mentioned by nearly three-fourths of survey participants. The share of survey participants mentioning policy uncertainty as a risk to the financial system stood at just under two-thirds, significantly higher than in the October report. Over half of all survey participants mentioned the potential effect of large realized losses on CRE and residential real estate, down from three-fourths of all participants in the previous survey. Rounding out the top five, risks associated with the reemergence of banking-sector stress and with fiscal debt sustainability in advanced economies continued to feature prominently.

In addition, the report also contains the box “[The Bank Term Funding Program](#),” which describes the role the program played in providing funding to the banking system beginning with its inception in response to the March 2023 banking-sector stresses up until it ceased extending new loans on March 11, 2024.



1 | Asset Valuations

Asset valuations increased to elevated levels relative to fundamentals

Since the October report, equity valuations increased further. Valuations in corporate bond markets also appeared stretched as corporate credit spreads, the difference in yields on corporate bond and yields on similar-maturity Treasury securities, narrowed since the previous report, falling to levels in the lower range of their historical distributions. Liquidity in short-term Treasury markets remained low by historical standards, although market liquidity was consistent with elevated measures of interest rate volatility. Nonetheless, Treasury market liquidity conditions could amplify the impact of shocks on asset valuations.

Residential real estate valuations remained near the peak levels seen in the mid-2000s. CRE market conditions continued to deteriorate, especially for the office sector, and prices continued to decline against a backdrop of high vacancy rates and weakening rents. 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 largest asset markets are those for equities, residential real estate, Treasury securities, and CRE.

Treasury yields decreased slightly and remain high relative to the past 15 years

Yields on Treasury securities decreased slightly since the October report but remained close to their highest levels over the past decade and a half (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—remained low relative to its long-run history despite edging up through March (figure 1.2). While interest rate volatility implied by options declined a touch, it remained elevated by historical norms (figure 1.3). This volatility reflected, in part, uncertainty about the economic outlook and the associated path of monetary policy, which likely heightened the sensitivity of Treasury yields 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, 2022:Q4–2023:Q4 (percent)	Average annual growth, 1997–2023:Q4 (percent)
Equities	57,175	22.2	9.2
Residential real estate	56,415	3.6	6.2
Treasury securities	26,227	10.0	8.2
Commercial real estate	22,518	–6.3	6.4
Investment-grade corporate bonds	7,533	5.4	8.1
Farmland	3,420	7.7	5.8
High-yield and unrated corporate bonds	1,631	–2.6	6.2
Leveraged loans ¹	1,397	–1.1	13.2
Price growth (real)			
Commercial real estate ²		–1.3	3.1
Residential real estate ³		2.1	2.7

Note: The data extend through 2023:Q4. Growth rates are measured from Q4 of the year immediately preceding the period through Q4 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 2000 to 2023:Q4, as this market was fairly small before then.

² One-year growth of commercial real estate prices is from December 2022 to December 2023, and average annual growth is from December 1999 to December 2023. Both growth rates are calculated from equal-weighted nominal prices deflated using the consumer price index (CPI).

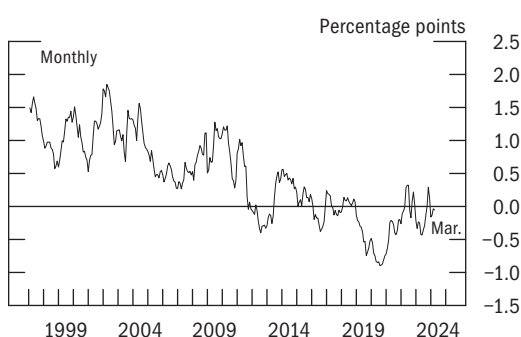
³ One-year growth of residential real estate prices is from December 2022 to December 2023, and average annual growth is from December 1998 to December 2023. Nominal prices are deflated using the CPI.

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 remained close to the highest levels in the past 15 years

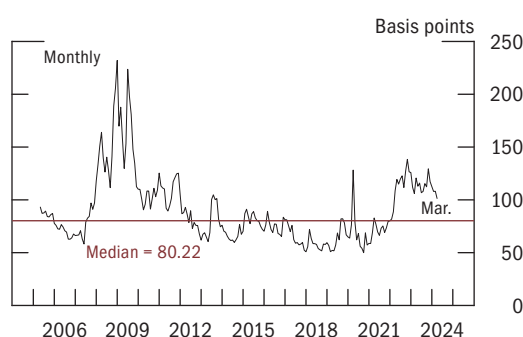
Source: Federal Reserve Board, Statistical Release H.15, "Selected Interest Rates."

Figure 1.2. An estimate of the nominal Treasury term premium remained relatively low



Source: Department of the Treasury; Wolters Kluwer, Blue Chip Financial Forecasts; Federal Reserve Bank of New York; Federal Reserve Board staff estimates.

Figure 1.3. Interest rate volatility fell slightly but continued to be elevated by historical norms

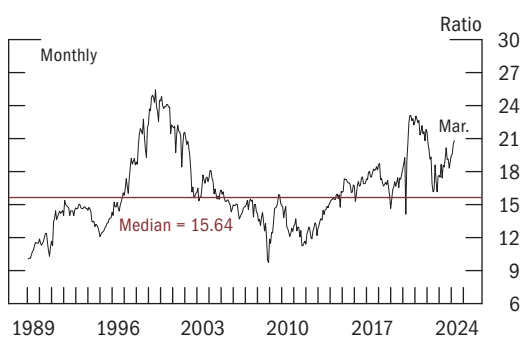


Source: For data through July 13, 2022, Barclays and S&P Global; for data from July 14, 2022, onward, ICAP, Swaptions and Interest Rate Caps and Floors Data.

Measures of equity market valuations rose further from already high levels

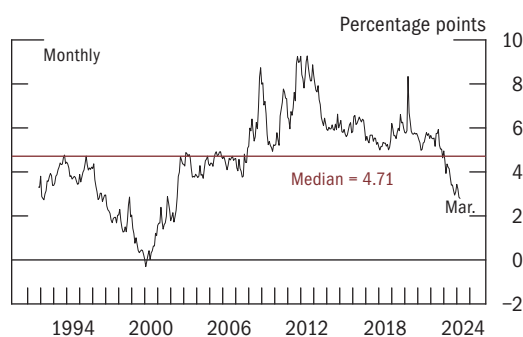
The ratio of prices to expected 12-month earnings, or the P/E ratio, increased since the October report and currently sits in the upper end of its historical distribution since 1989 (figure 1.4). The difference between the forward P/E ratio and the real 10-year Treasury yield—a measure of the additional return that investors require for holding stocks relative to risk-free bonds (the equity premium)—declined, on net, since the October report and currently stands well below its historical median (figure 1.5).² Equity market volatility was subdued, and option-implied volatility

Figure 1.4. The price-to-earnings ratio of S&P 500 firms increased to levels further above its historical median



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

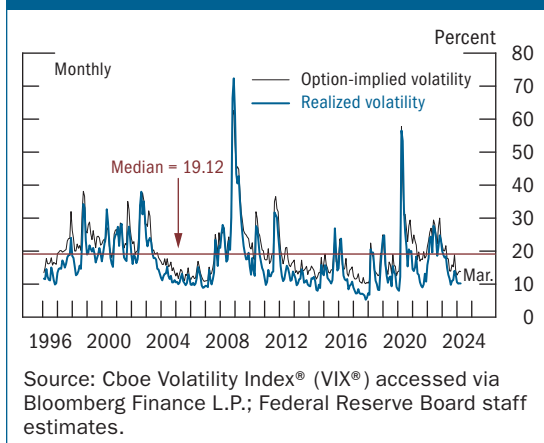
Figure 1.5. An estimate of the equity premium fell further below its historical median



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

² This estimate is constructed based on expected corporate earnings for 12 months ahead. Alternative measures of the equity premium that incorporate longer-term earnings forecasts suggest more elevated equity valuation pressures.

Figure 1.6. Volatility in equity markets decreased to levels slightly below the historical median



remained in the lower quarter of its historical distribution (figure 1.6).

Spreads in corporate debt markets narrowed to low levels

Yields for both investment- and speculative-grade bonds fell a bit since the October report and currently stand near the median of their respective historical distributions (figure 1.7). While the decline in corporate bond yields was modest, it nevertheless outpaced that of comparable-maturity Treasury securities, and, as a result, corporate bond spreads narrowed to levels that are low relative to their historical distributions (figure 1.8). The excess bond premium—a risk premium measure that captures the gap between corporate bond spreads and expected credit losses—remained near its historical mean (figure 1.9). Market-based forecasts of credit quality (one-year-ahead default probabilities) of nonfinancial firms have mildly improved since the October report but remain somewhat elevated by historical standards for speculative-grade issuers.

Figure 1.7. Corporate bond yields fell slightly to levels near their historical medians

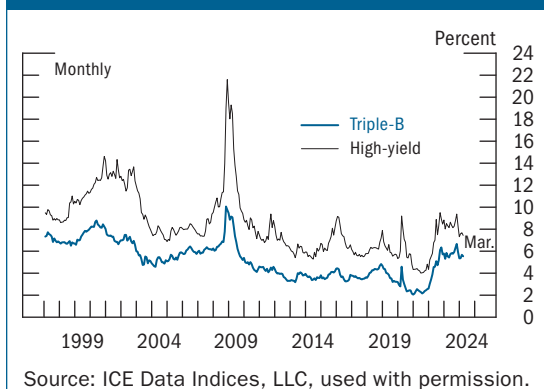


Figure 1.8. Corporate bond spreads narrowed to low levels relative to their historical distributions

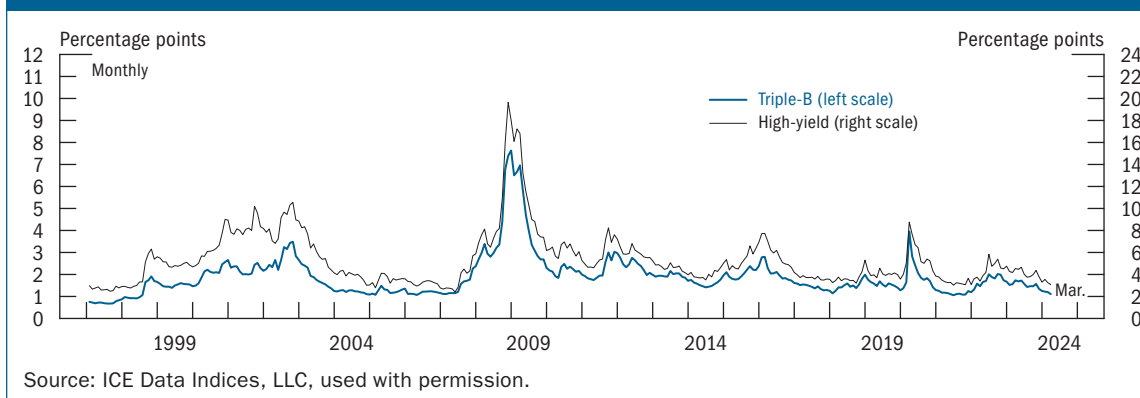
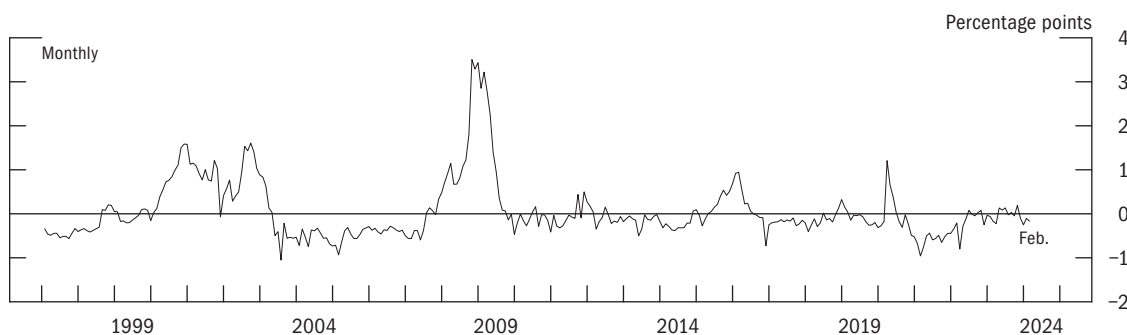
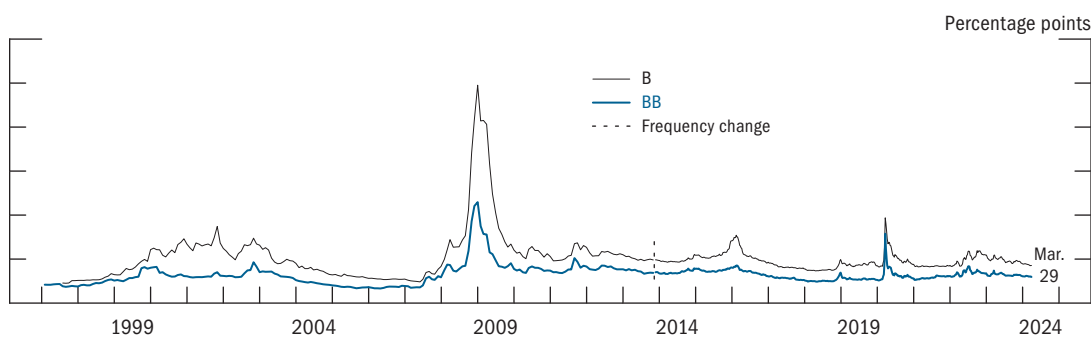


Figure 1.9. The excess bond premium fell slightly but remained near the middle of the historical range

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.

The average spread on leveraged loans in the secondary market fell a touch since the October report but remained roughly in line with its average over the past decade (figure 1.10). The trailing 12-month loan default rate moved up, on net, since the last report, and the year-ahead expected default rate remained somewhat elevated relative to its historical trend.

Figure 1.10. Spreads on leveraged loans declined modestly

Source: PitchBook Data, Leveraged Commentary & Data.

Market liquidity stayed near the lower end of its historical range

Market liquidity refers to the ease and cost 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 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, suggest that liquidity in the Treasury cash market remained low (figures 1.11 and 1.12), although at levels that reflect elevated measures of interest rate volatility. The effect of low levels of market depth on price impact has been limited because market participants split trades into smaller quantities, and liquidity providers have been able to replenish the limited volume of quotes rapidly enough to meet incoming order flow without large moves in prices. Nevertheless, conditions in the Treasury cash market appear challenged and could amplify shocks.

Figure 1.11. Treasury market depth increased but remained below historical norms

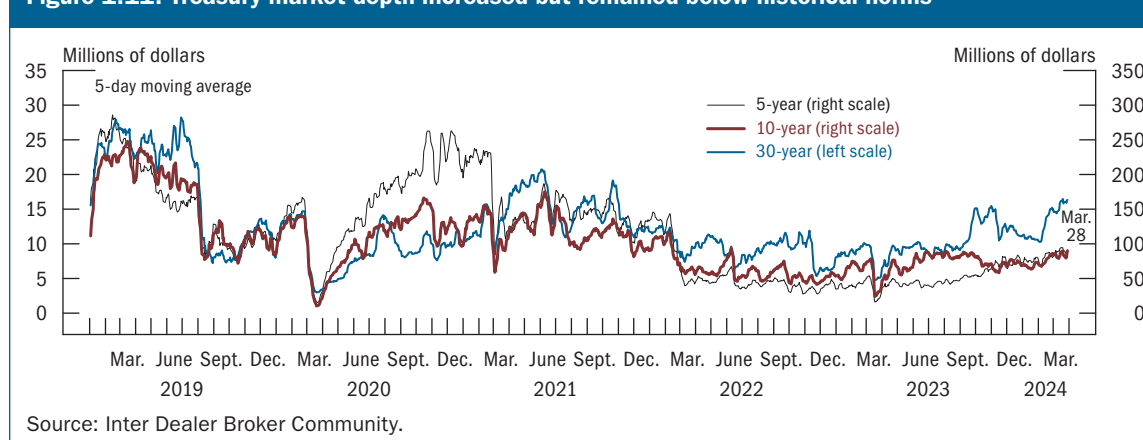
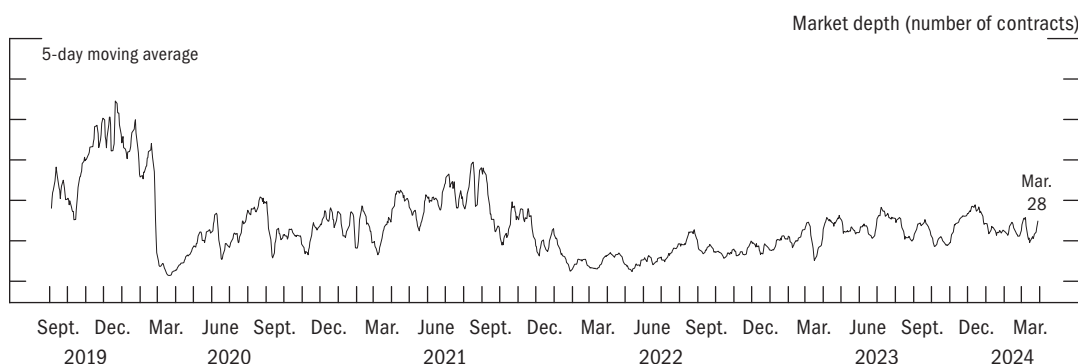


Figure 1.12. On-the-run market depth improved in recent months but remained below historical norms



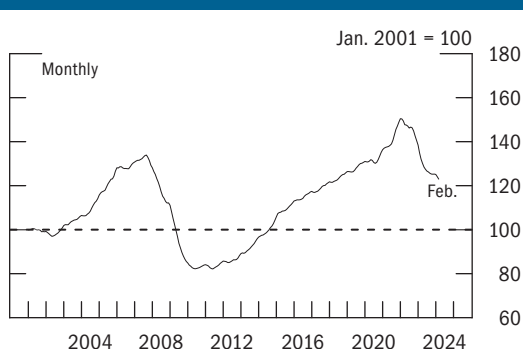
In other markets, liquidity conditions present a mixed picture. Liquidity in corporate bond markets remained in line with the average level observed in recent years, and bid-ask spreads were close to their lowest levels since the 2007–09 financial crisis. In contrast, liquidity conditions in equity markets remained low by longer-term historical standards and deteriorated somewhat despite lower equity volatility (figure 1.13).

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

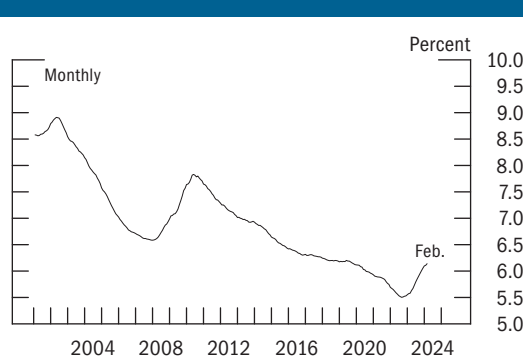
Source: Refinitiv, DataScope Tick History; Federal Reserve Board staff calculations.

Commercial real estate prices declined but remained high relative to rents

Aggregate CRE prices measured in inflation-adjusted terms continued to decline over the second half of last year (figure 1.14), with declines in these price measures broad based across all CRE sectors. These transaction-based price measures likely do not yet 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. Capitalization rates at the time of property purchase, which measure the annual income of commercial properties relative to their prices, moved modestly higher but remained at historically low levels, suggesting that prices remain high relative to fundamentals (figure 1.15). The CRE office sector has faced strains resulting from an

Figure 1.14. Commercial real estate prices, adjusted for inflation, continued to decline

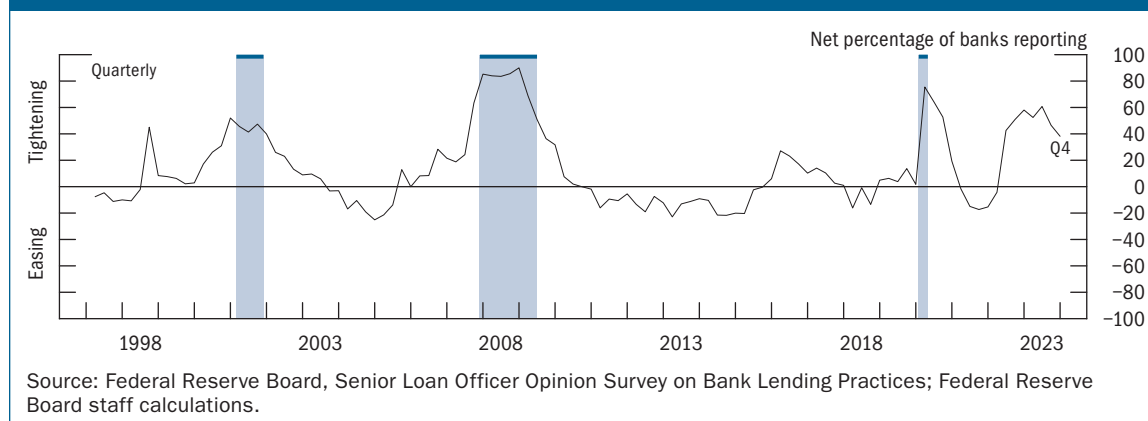
Source: Real Capital Analytics; consumer price index, Bureau of Labor Statistics via Haver Analytics.

Figure 1.15. Income of commercial properties relative to prices continued to grow but remained well below historical norms

Source: Real Capital Analytics; Andrew C. Florance, Norm G. Miller, Ruijue Peng, and Jay Spivey (2010), "Slicing, Dicing, and Scoping the Size of the U.S. Commercial Real Estate Market," *Journal of Real Estate Portfolio Management*, vol. 16 (May–August), pp. 101–18.

ongoing post-pandemic adjustment, and these strains could contribute to additional weakness in prices and rents going forward. Vacancy rates for offices located in central business districts and coastal cities increased further, and rents continued to decline since the October report. In the October 2023 and January 2024 Senior Loan Officer Opinion Survey on Bank Lending Practices (SLOOS), banks reported weaker demand and tighter standards for all CRE loan categories during the second half of 2023 (figure 1.16).

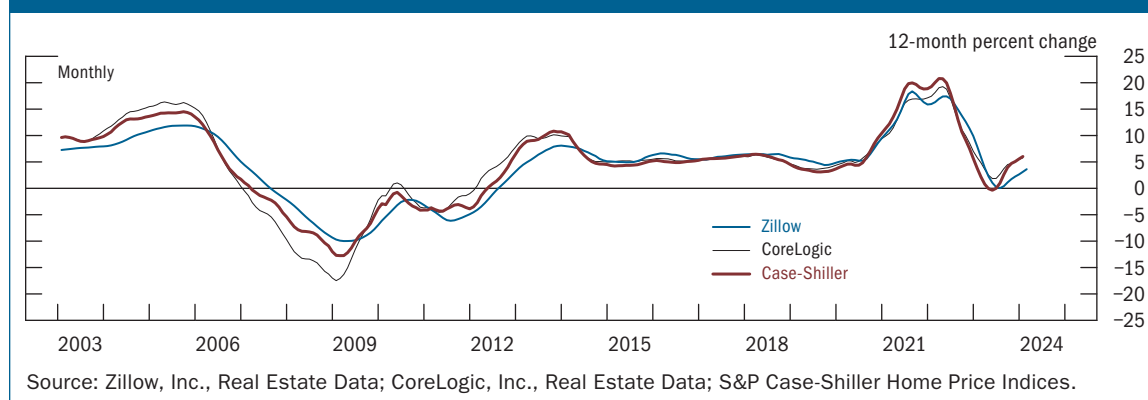
Figure 1.16. Banks reported tightening lending standards for commercial real estate loans



Residential real estate valuations remained high relative to rents as house prices continued to increase

Valuations in the residential real estate sector remained at elevated levels relative to historical standards and moved higher since the October report. House prices continued to rise through the first two months of the year (figure 1.17). A model of house price valuation based on prices

Figure 1.17. House prices continued to increase in recent months



relative to market rents and the real 10-year Treasury yield suggests that valuations in housing markets were increasingly stretched. Moreover, an alternative measure of valuation pressures (which uses owners' equivalent rent instead of market rents and, therefore, has a longer history) also suggested elevated valuations (figure 1.18). Moreover, the median price-to-rent ratio measured across a wide distribution of geographic areas remained close to its previous peak in the mid-2000s (figure 1.19). That said, credit conditions for borrowers remained tighter relative to the early 2000s, suggesting that weak credit standards are not driving house price growth.

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

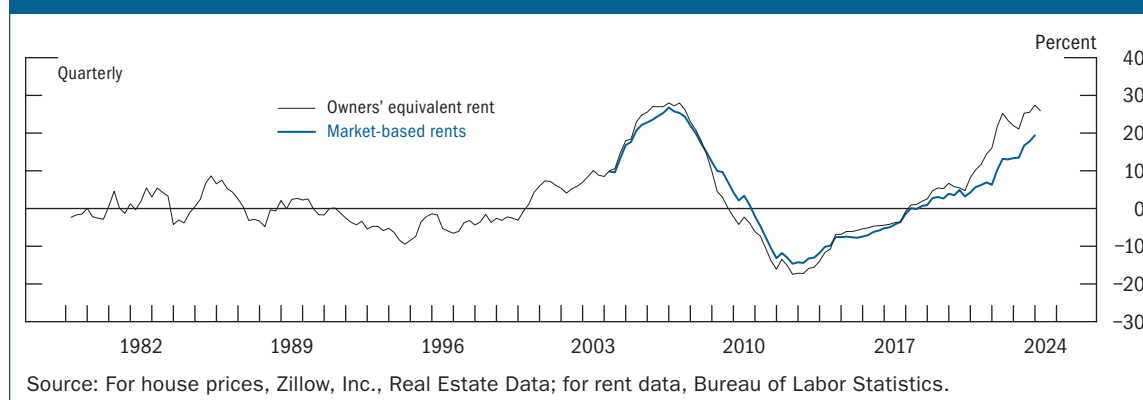
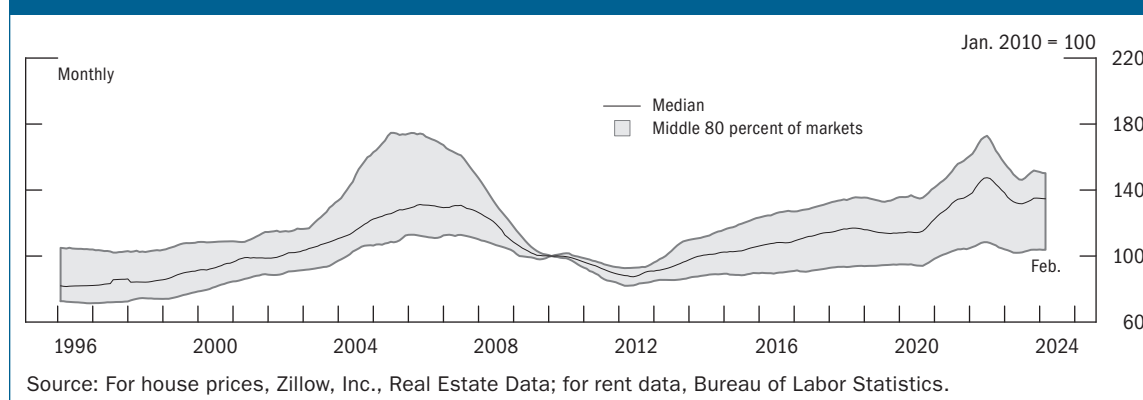
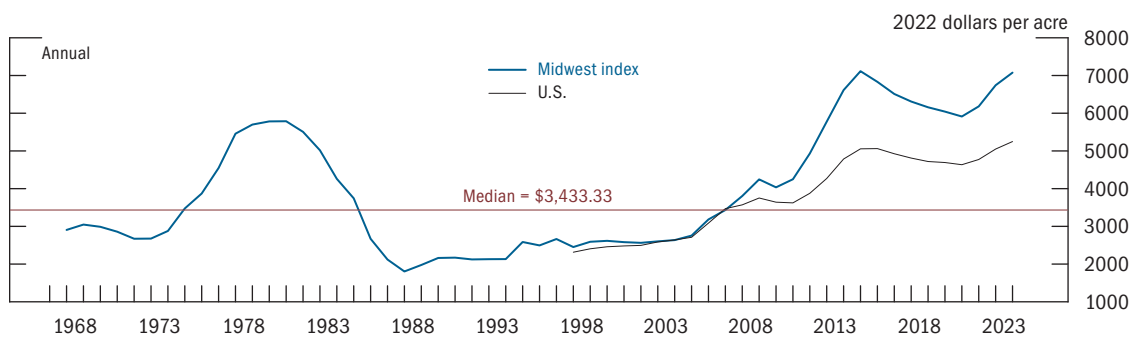


Figure 1.19. House price-to-rent ratios remained elevated across geographic areas

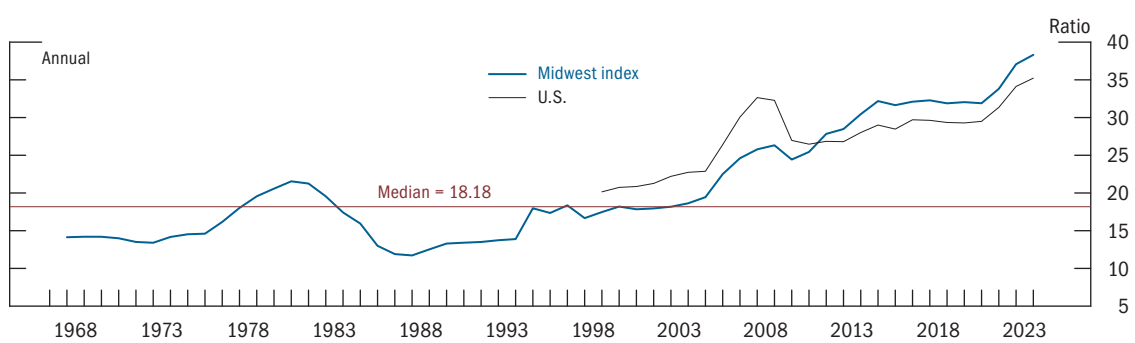


Farmland valuations remained high relative to farm income

Farmland valuations remained elevated, as farmland prices increased to near-historical highs (figure 1.20). Farmland price-to-rent ratios diverged further from their historical norms, reaching a level more than 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. Farmland prices increased to near-historical highs

Source: Department of Agriculture; Federal Reserve Bank of Minneapolis staff calculations.

Figure 1.21. Farmland prices grew faster than rents

Source: Department of Agriculture; Federal Reserve Bank of Minneapolis staff calculations.

2 | Borrowing by Businesses and Households

Vulnerabilities from business and household debt remained moderate

Households and businesses continued to improve their financial condition, on net, reducing outstanding debts relative to GDP. Business debt-to-GDP and gross leverage of public corporations remained at levels near the top of their respective historical ranges but significantly lower than record highs seen at the onset of the pandemic. Interest coverage ratios (ICRs)—defined as the ratio of earnings before interest and tax to interest expense—remained flat at a level that pointed to robust debt-servicing capacity, reflecting resilient earnings. In addition, the prevalence of fixed-rate borrowing among many businesses has attenuated the effect of higher interest rates on debt-servicing costs.

The household debt-to-GDP ratio continued to decline, while the aggregate household debt service ratio remained flat. Homeowners have solid equity cushions, and many households continued to benefit from lower interest rate payments associated with refinancing or home purchases several years ago. That said, some borrowers continued to be financially stretched, and auto loan and credit card delinquencies for nonprime borrowers increased. 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 could reduce the debt-servicing capacity of smaller, riskier businesses with already low ICRs as well as particularly financially stretched households.

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 fourth quarter of 2023. The overall debt-to-GDP ratio declined further and now stands somewhat below the level prevailing over the past decade (figure 2.1). This gradual decline of the debt-to-GDP ratio is due to slower growth in combined total nonfinancial debt relative to the growth rate of nominal GDP over the past three years. Taken separately, both the household and business debt-to-GDP ratios decreased, in line with the decline in the overall debt-to-GDP ratio (figure 2.2).

Business debt vulnerabilities remain moderate relative to historical levels

Nonfinancial business debt adjusted for inflation declined over the past year (figure 2.3), and net issuance of risky debt—defined as the difference between issuance of speculative-grade bonds, unrated bonds, and leveraged loans minus retirements and repayments—was negative in the

Table 2.1. Outstanding amounts of nonfinancial business and household credit

Item	Outstanding (billions of dollars)	Growth, 2022:Q4–2023:Q4 (percent)	Average annual growth, 1997–2023:Q4 (percent)
Total private nonfinancial credit	41,081	2.2	5.5
Total nonfinancial business credit	21,126	1.8	5.9
Corporate business credit	13,637	1.5	5.5
Bonds and commercial paper	8,249	3.0	5.7
Bank lending	2,211	1.9	4.2
Leveraged loans ¹	1,359	–1.3	13.4
Noncorporate business credit	7,489	2.3	6.9
Commercial real estate credit	3,220	2.7	6.2
Total household credit	19,955	2.7	5.1
Mortgages	13,053	2.8	5.1
Consumer credit	5,020	2.6	5.3
Student loans	1,727	–2.1	7.4
Auto loans	1,556	3.8	5.3
Credit cards	1,319	8.8	3.6
Nominal GDP	27,945	5.8	4.6

Note: The data extend through 2023:Q4. Outstanding amounts are in nominal terms. Growth rates are measured from Q4 of the year immediately preceding the period through Q4 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 2000 to 2023:Q4, 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.”

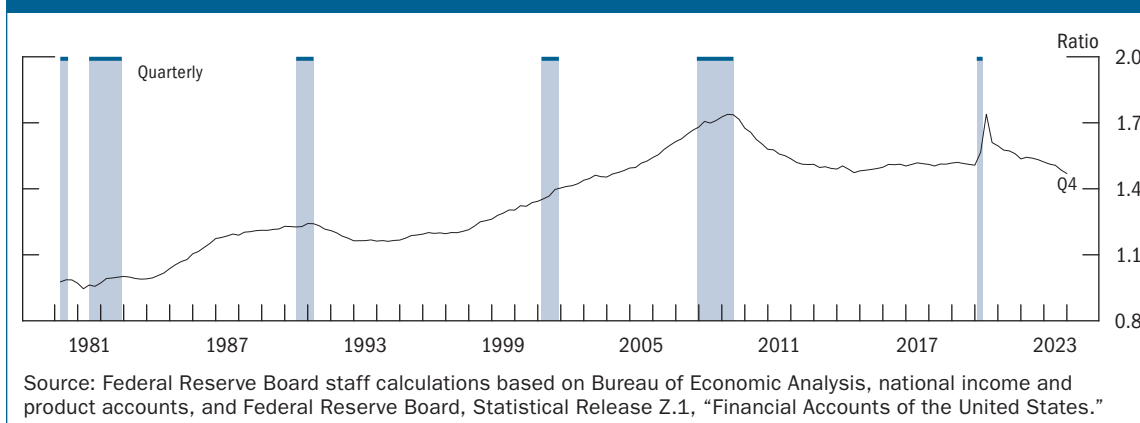
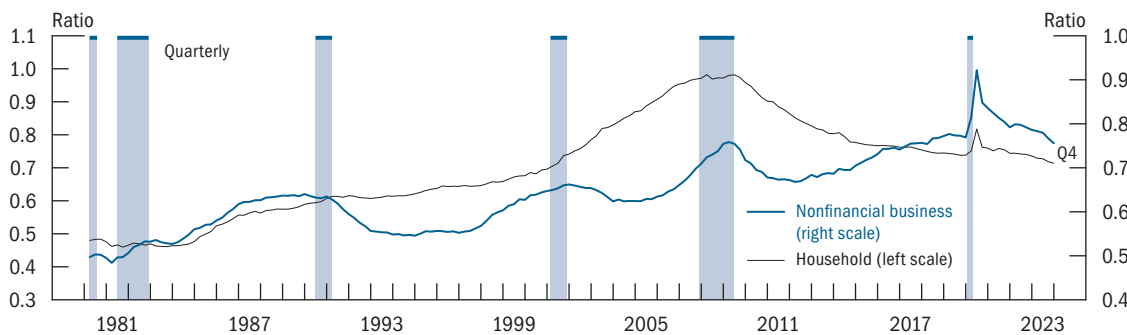
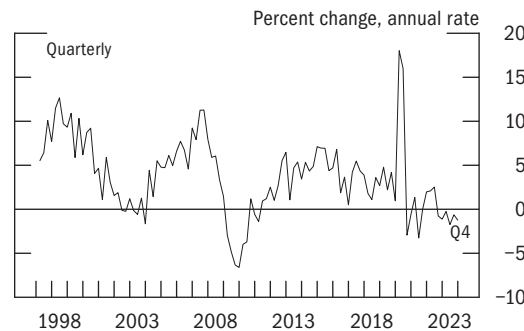
Figure 2.1. The total debt of businesses and households relative to GDP declined further

Figure 2.2. Both business and household debt-to-GDP ratios decreased

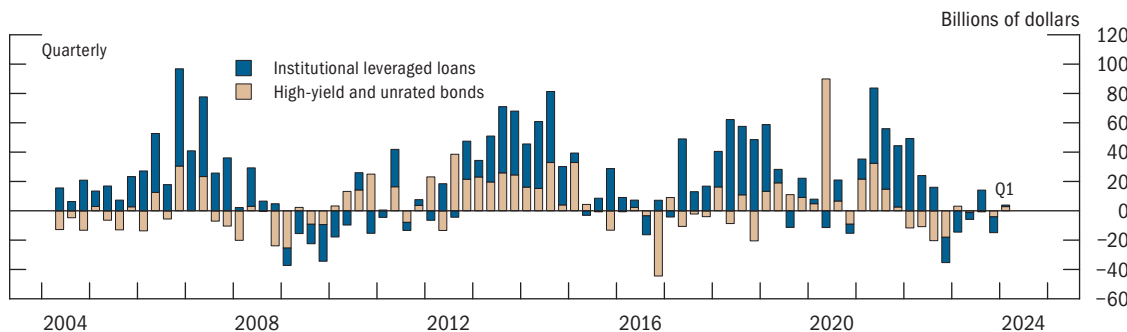
Source: Federal Reserve Board staff calculations based on Bureau of Economic Analysis, national income and product accounts, and Federal Reserve Board, Statistical Release Z.1, "Financial Accounts of the United States."

fourth quarter of 2023 and subdued in the first quarter of 2024 (figure 2.4). Similarly, the net issuance of institutional leveraged loans has been tepid for much of the past year.

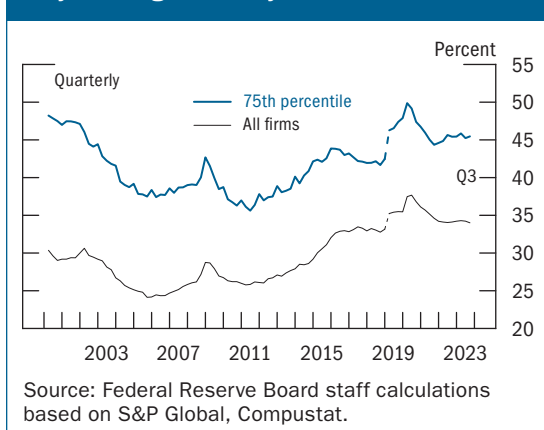
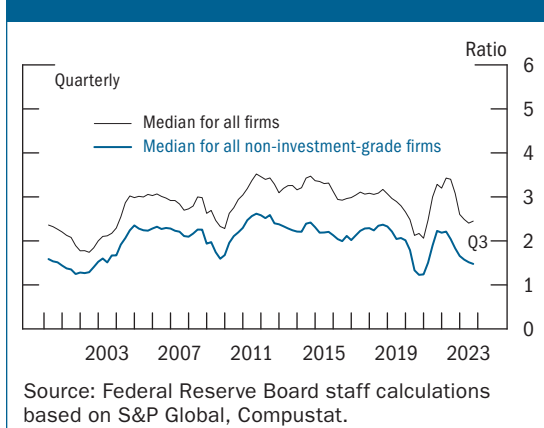
Gross leverage—the ratio of debt to assets—of all publicly traded nonfinancial firms edged down slightly in the third quarter of 2023 but stayed high by historical standards (figure 2.5). Net leverage—the ratio of debt less cash to total assets—also inched down among all large publicly traded businesses, although it remained at an elevated level.

Figure 2.3. Business debt adjusted for inflation continued to decline

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.

Figure 2.5. Gross leverage of large businesses stayed at high levels by historical standards**Figure 2.6. Firms' ability to service their debt, as measured by the interest coverage ratio, remained robust**

Overall, firms remained well placed to service their debt, despite some emerging signs of weakness among riskier firms. After declining from its peak reached post-pandemic, the median ICR stayed largely flat through the first three quarters of 2023 owing to resilient earnings (figure 2.6). In addition, 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.³ Corporate earnings remained strong through the first three quarters of 2023.

However, signs of stress in debt servicing and deterioration in credit quality continued to emerge. For example, the 12-month trailing corporate bond default rate moved up further, on net, since the October report and stood near the median of its historical distribution. Expectations of year-ahead defaults remained somewhat elevated relative to their history.

Small and middle-market firms that are privately held—which have less access to capital markets and primarily borrow from banks, private credit and equity funds, and

sophisticated investors (such as insurance companies and brokers, for example)—account for roughly 60 percent of outstanding U.S. debt. While data for these firms are not as comprehensive as those for larger firms, vulnerabilities for these firms appeared to inch up throughout the second half of 2023 as higher interest rates started to reduce earnings and raise the cost of debt servicing. Although subdued by historical standards, median gross and net leverage of small firms and businesses continued to increase into the fourth quarter of 2023. The ICR for the median firm in this category continued to decline from its peak in 2022, falling notably in the fourth quarter of 2023, but remained above pre-pandemic levels.

³ Only about 6 percent of outstanding bonds rated triple-B and 2 percent of outstanding high-yield bonds are due within a year—that is, up to the first quarter of 2025.

The credit quality of outstanding and newly issued leveraged loans has shown continued signs of deterioration over the past several quarters. ICRs on outstanding leveraged loans declined in the third quarter of 2023 and more recent high-frequency data suggest that rating downgrades continued to outpace upgrades. Meanwhile, the default rate remained around its historical median (figure 2.7). 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, reflecting a waning willingness of investors to tolerate additional leverage, and only modestly rebounded in the first quarter of 2024 (figure 2.8).

Figure 2.7. The default rate on leveraged loans remained around its historical median

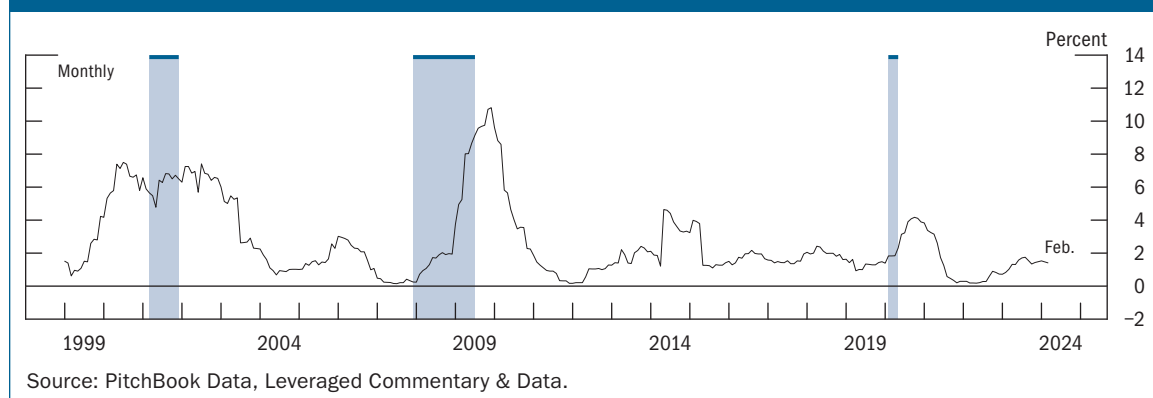
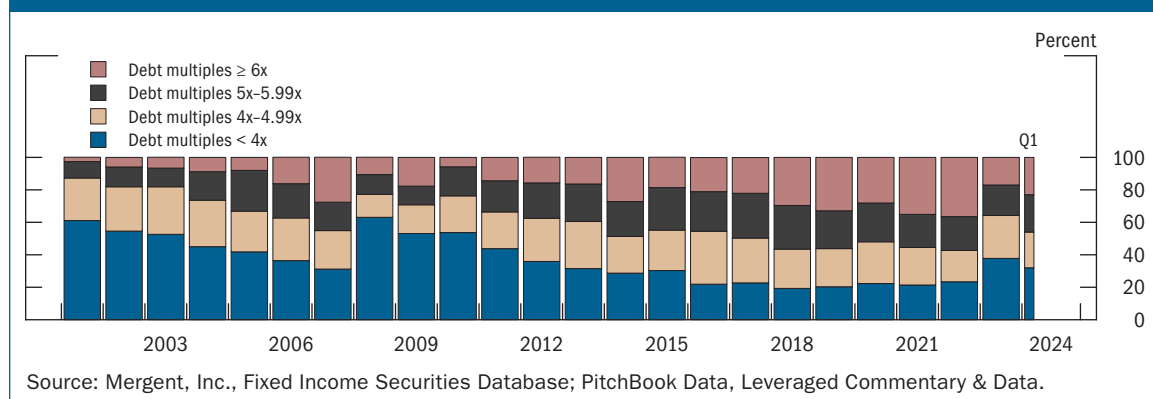


Figure 2.8. New leveraged loans with debt multiples greater than 4 rebounded modestly in early 2024

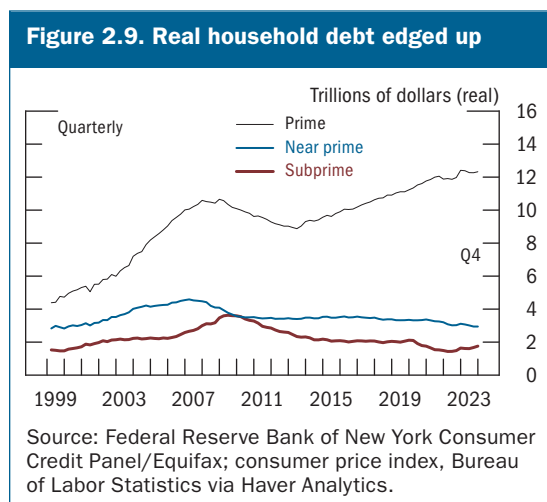


Delinquencies at small businesses edged up

Interest rates on small business loans ticked down in the most recent data but remained at high levels overall—near the top of the range observed since 2008. According to the National Federation of Independent Business Small Business Economic Trends Survey, the share of firms

that borrow regularly dropped somewhat and stayed in the lower range of its historical distribution in February 2024.⁴ 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 small businesses.⁵ However, measures of small business loan originations were stable and the share of firms with unmet financing needs remained unchanged at a low level as of February 2024. Small business credit quality has deteriorated in recent quarters, as longer-term delinquency rates rose from their historic lows to above their pre-pandemic levels.

Vulnerabilities from household debt remained moderate



Outstanding household debt adjusted for inflation increased marginally in the fourth quarter of 2023, due to slight increases in the prime and subprime categories (figure 2.9). Since the October report, the ratio of total required household debt payments to total disposable income (the household debt service ratio) decreased a touch and remained at modest levels. As most household debt carries fixed interest rates, the increase in interest rates starting in early 2022 has only partially passed through to household interest expenses.

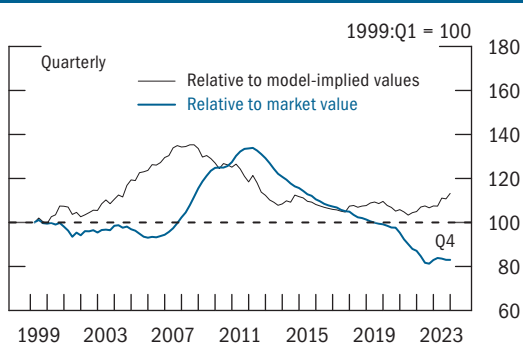
Mortgage credit risk remained generally low

Mortgage debt, which accounts for roughly two-thirds of total household debt, grew more slowly than GDP over the past two quarters. An estimate of housing leverage, which measures home values as a function of rents and other market fundamentals, increased modestly but remained significantly lower than its peak levels before 2008 (figure 2.10, black line). The overall mortgage delinquency rate increased only marginally in the fourth quarter of 2023, continuing to tick up from the historically low levels reached in 2021, while the share of mortgage balances in loss-mitigation programs ticked down from already low levels (figure 2.11). Delinquency rates have been held in check by large home equity cushions and strong underwriting standards (figure 2.12).

⁴ 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>.

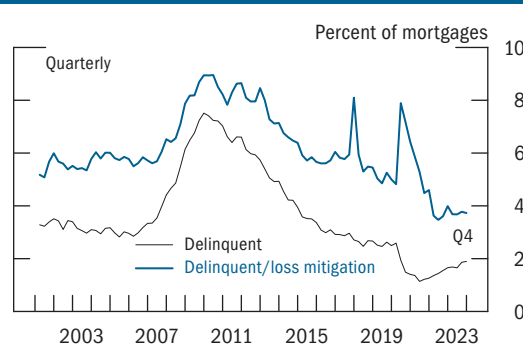
⁵ This survey's data are available on the Federal Reserve Bank of Kansas City's website at <https://www.kansascityfed.org/surveys/small-business-lending-survey>.

Figure 2.10. A model-based estimate of housing leverage increased modestly



Source: Federal Reserve Bank of New York Consumer Credit Panel/Equifax; Zillow, Inc., Real Estate Data; Bureau of Labor Statistics via Haver Analytics.

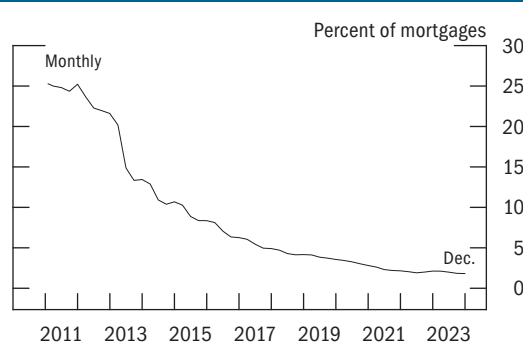
Figure 2.11. Mortgage delinquency rates ticked up from low levels



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

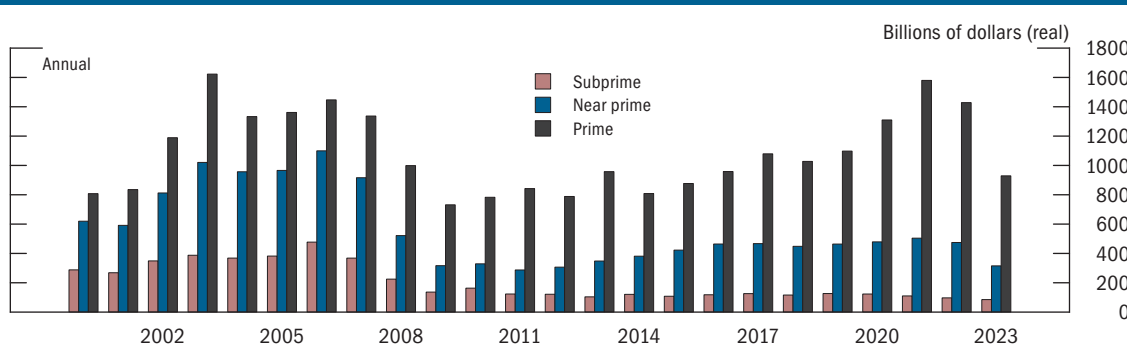
New mortgage extensions, which have been skewed heavily toward prime borrowers over the past decade, continued to decline sharply in 2023 amid elevated mortgage rates and high housing prices (figure 2.13). In the second quarter of 2023, the early payment delinquency rate—the share of balances becoming delinquent within one year of mortgage origination—continued to rise from its 2020 low, possibly reflecting higher interest expenses and the corresponding financial strains on newly originated mortgages.

Figure 2.12. Very few homeowners had negative equity in their homes



Source: CoreLogic, Inc., Real Estate Data.

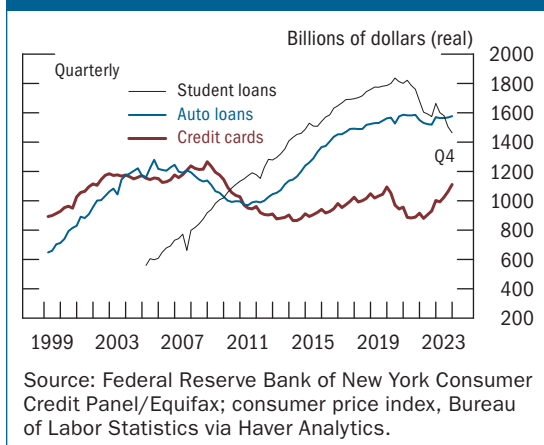
Figure 2.13. New mortgage extensions declined across all borrower categories



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

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

Figure 2.14. Real consumer credit edged down since late last year



Consumer debt—which accounts for the remaining one-third of household debt and consists primarily of student, auto, and credit card loans—edged down in real terms since the last report (figure 2.14) and, in nominal terms, increased at a slower pace than nominal GDP. However, delinquency rates for auto loans and credit cards increased, particularly among borrowers with lower credit scores.

Real auto loan balances ticked up for prime and subprime borrowers but declined modestly for near-prime borrowers (figure 2.15). Overall, total real auto loan balances remained below pandemic highs. The share of

auto loans in mitigation—that is, when the lender offers relief or repayment options to a borrower struggling to keep up their loan payments—ticked down in the fourth quarter of 2023. That said, this share increased modestly over the past several quarters and currently stands roughly in line with its historical median. The share of auto loans in delinquent status increased somewhat—although the upward trend has moderated recently—and stayed at a level above its historical median (figure 2.16). Behind this moderate increase in the overall delinquency rate was a much sharper rise in auto loan delinquencies for subprime borrowers throughout 2023.

Figure 2.15. Real auto loans outstanding ticked up for prime and subprime borrowers

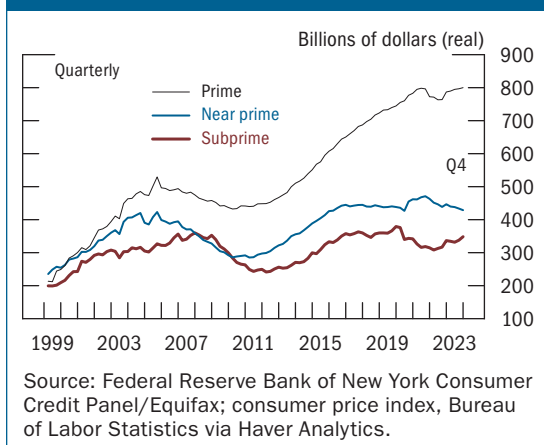
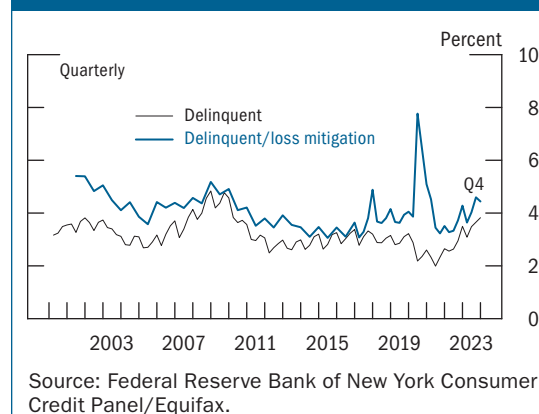


Figure 2.16. Auto loan delinquencies remained at levels above their historical median



Aggregate real credit card balances continued to increase over the second half of the year, with broad-based increases across the credit score distribution (figure 2.17). As interest rates on credit card balances are flexible, they increased in line with short-term rates over the past year. Credit card delinquency rates have continued to rise over the same period (figure 2.18).

After rising rapidly for more than a decade, inflation-adjusted student loan debt began to decline with the onset of the pandemic and has continued to do so through the end of 2023.

Figure 2.17. Real credit card balances continued to rise in the second half of 2023

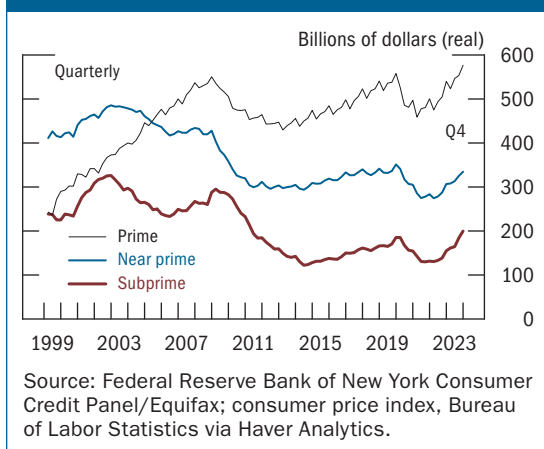
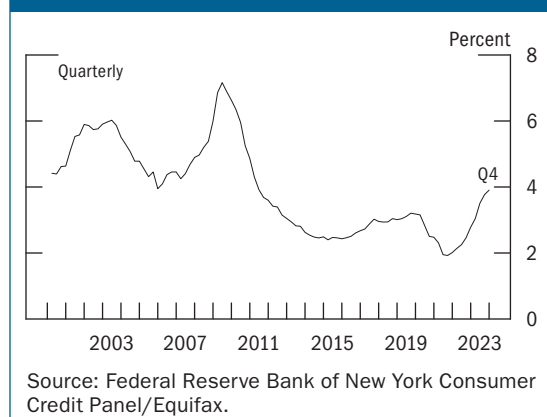


Figure 2.18. Credit card delinquencies increased further in the second half of 2023



3 | Leverage in the Financial Sector

Vulnerabilities associated with financial leverage remained notable, reflecting fair value losses on fixed-rate assets for some banks and elevated leverage at some nonbanks

The banking system, overall, remained sound and resilient. Measures of regulatory capital for banks increased over the second half of 2023 and point to the resilience of the banking sector as a whole. Nevertheless, fair value losses on fixed-rate assets remained sizable for some banks, and some banks have concentrated exposures to loans backed by CRE.

Outside the banking sector, leverage at broker-dealers stayed near historically low levels, but limited capacity or willingness of broker-dealers to intermediate in Treasury markets during market stress remained a structural vulnerability. Life insurers continued to take on liquidity and credit risk, while their leverage increased and stood around its median. Measures of hedge fund leverage increased in the third quarter of 2023 to the highest level observed since the beginning of data availability, with the increase driven primarily by the largest hedge funds.

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

Bank profitability remained robust

Amid the considerable increase in interest rates over the past two years, the profitability of the banking sector stayed solid. Banks' average rates on interest-earning assets remained well above the average interest expense rates on liabilities (figure 3.1). That said, interest expenses increased somewhat faster than interest income, reflecting a higher share of interest-bearing deposits on banks' balance sheets and somewhat higher deposit rates. As a result, net interest margins, which measure banks' yield on their interest-earning assets after netting out interest expenses, declined a notch in the aggregate in 2023.

Measures of banks' capital increased, while fair value losses in fixed-rate assets remained sizable for some banks

The common equity Tier 1 (CET1) ratio—a regulatory risk-based measure of bank capital adequacy—increased during the fourth quarter of 2023 across all bank categories (figure 3.2). CET1 ratios for global systemically important banks (G-SIBs) reached the highest levels recorded in the past decade, while CET1 ratios for large non-G-SIBs and other bank holding companies were close to pre-pandemic levels.

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

Item	Total assets (billions of dollars)	Growth, 2022:Q4–2023:Q4 (percent)	Average annual growth, 1997–2023:Q4 (percent)
Banks and credit unions	26,159	2.1	5.9
Mutual funds	19,600	13.1	9.0
Insurance companies	13,126	9.1	5.6
Life	9,820	8.5	5.7
Property and casualty	3,306	11.0	5.6
Hedge funds ¹	10,127	11.5	7.5
Broker-dealers ²	5,569	13.0	5.1
Outstanding (billions of dollars)			
Securitization	13,446	2.4	5.5
Agency	11,940	2.4	5.9
Non-agency ³	1,506	2.5	3.6

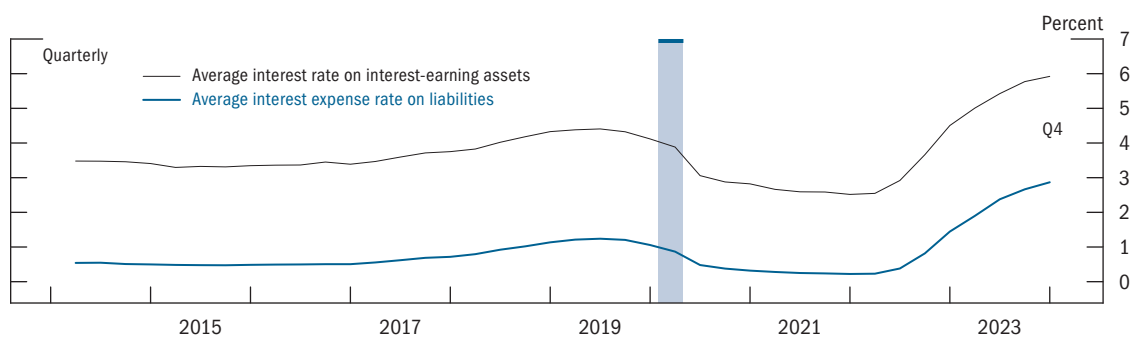
Note: The data extend through 2023:Q4 unless otherwise noted. Outstanding amounts are in nominal terms. Growth rates are measured from Q4 of the year immediately preceding the period through Q4 of the final year of the period. Life insurance companies' assets include both general and separate account assets.

¹ Hedge fund data start in 2012:Q4 and are updated through 2023:Q3. Growth rates for the hedge fund data are measured from Q3 of the year immediately preceding the period through Q3 of the final year of the period.

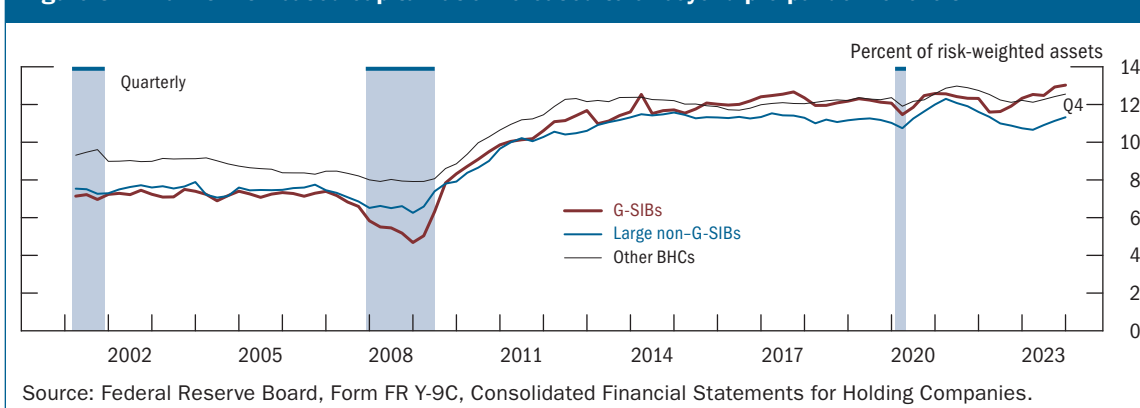
² Broker-dealer assets are calculated as unnetted values.

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

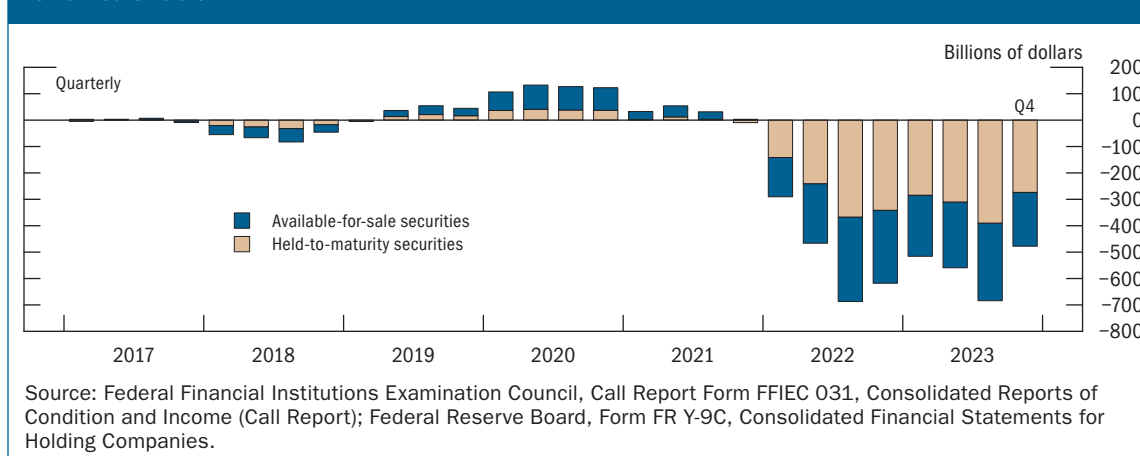
Source: Federal Reserve Board, Statistical Release Z.1, "Financial Accounts of the United States"; Federal Reserve Board, "Enhanced Financial Accounts of the United States."

Figure 3.1. Banks' average interest rate on interest-earning assets remained significantly above the average expense rate on liabilities

Source: Federal Reserve Board, Form FR Y-9C, Consolidated Financial Statements for Holding Companies.

Figure 3.2. Banks' risk-based capital ratio increased to or beyond pre-pandemic levels

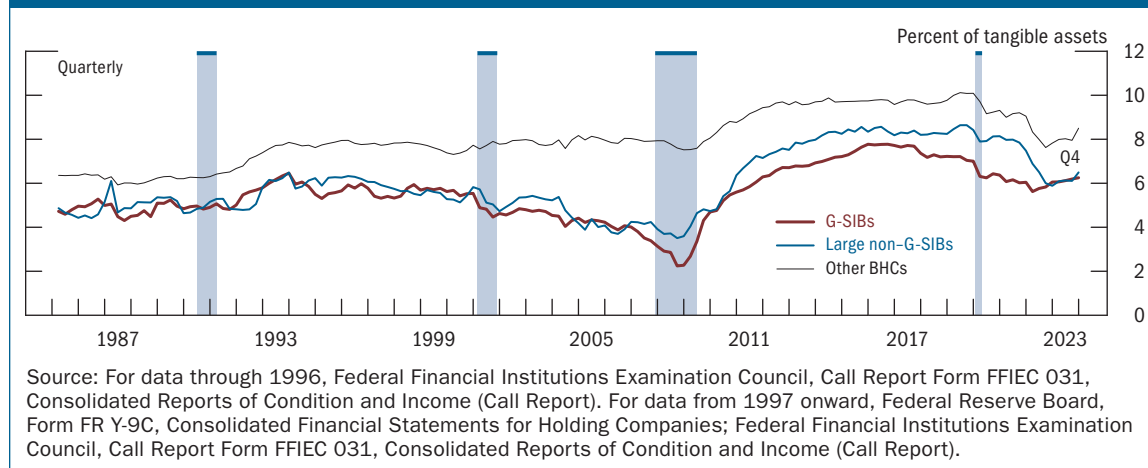
Higher interest rates continued to affect the fair value of banks' holdings of fixed-rate assets. As interest rates rose from pandemic lows over the past two years, the fair value of these securities declined, but these declines started to moderate somewhat toward the end of 2023. At the end of the fourth quarter of 2023, banks had declines in fair value of \$204 billion in available-for-sale (AFS) portfolios and \$274 billion in held-to-maturity portfolios (figure 3.3).

Figure 3.3. The fair value losses of banks' securities portfolios declined through the end of 2023 but remained sizable

An alternative measure of bank capital is the ratio of tangible common equity to total tangible assets. The tangible common equity ratio has similarities to the CET1 ratio in that both exclude intangible items such as goodwill from the measurement of capital, but there are also important differences between the two. In contrast with CET1, the tangible common equity ratio does not account for the riskiness of assets but does include fair value declines on AFS securities for all

banks. The tangible common equity ratio moved up across all bank categories in the second half of the year (figure 3.4). Nonetheless, this ratio remained at a level below its average over the past decade.

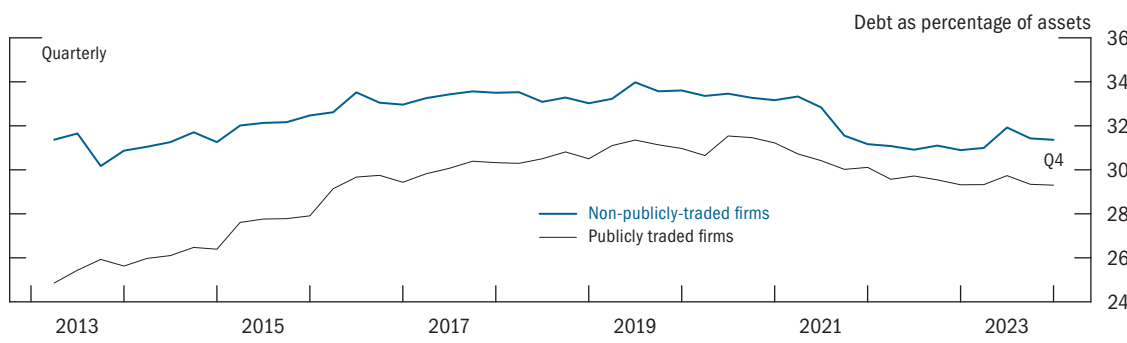
Figure 3.4. The ratio of tangible common equity to tangible assets increased for banks of all categories



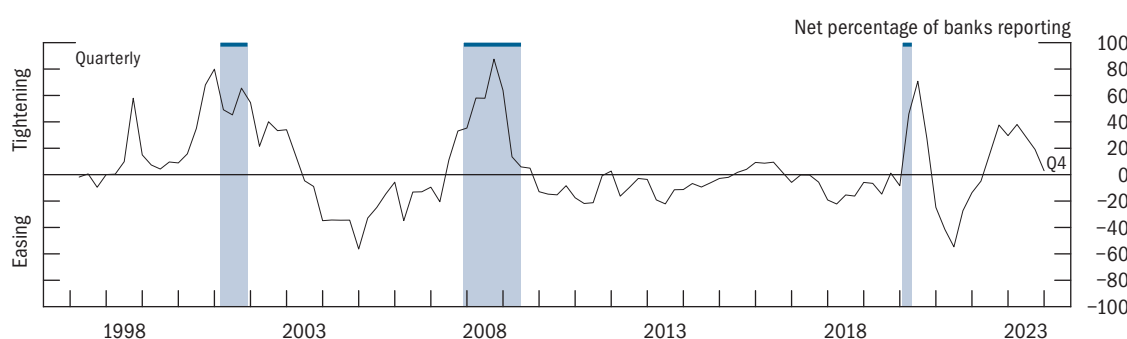
Credit quality at banks remained sound overall, despite rising delinquencies in some consumer and commercial real estate loan segments

As of the fourth quarter of 2023, aggregate credit quality in the nonfinancial sector remained sound overall. That said, the quality of outstanding loans worsened in some sectors, as the delinquency rates for credit card, auto, and CRE loans—especially those backed by office properties—increased in the second half of 2023. Exposures in auto and credit card loans remained concentrated in a few large banks. As interest rates increased over the past two years, banks continued to build their allowances for loan losses on credit card and CRE portfolios in anticipation of rising delinquencies. Nevertheless, risks on loans backed by CRE properties remained elevated, and banks with concentrated exposure to this sector are particularly vulnerable.

Borrower leverage for bank commercial and industrial (C&I) loans decreased somewhat since the October report (figure 3.5). Recent SLOOS survey responses indicated that lending standards continued to tighten across most loan categories during the second half of 2023, suggesting that banks were limiting their exposure to this risk. That said, the pace at which standards were tightened has reportedly slowed, especially for C&I loans, as the percentage of banks reporting tightening standards declined relative to the first half of 2023 (figure 3.6).

Figure 3.5. Borrower leverage for bank commercial and industrial loans inched down

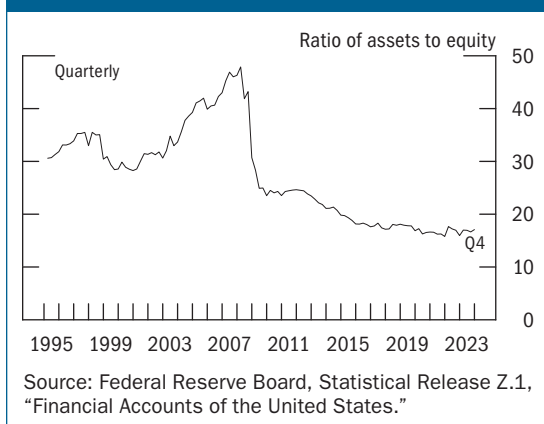
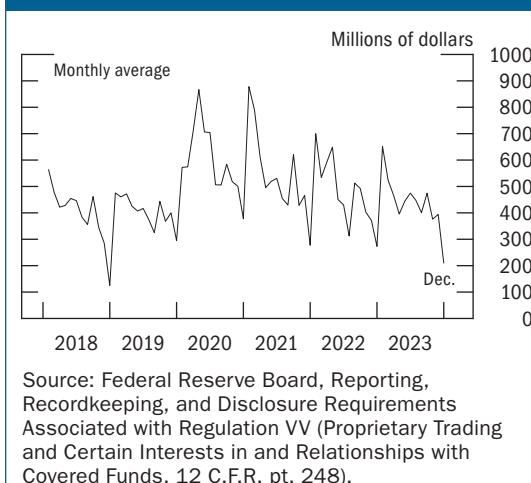
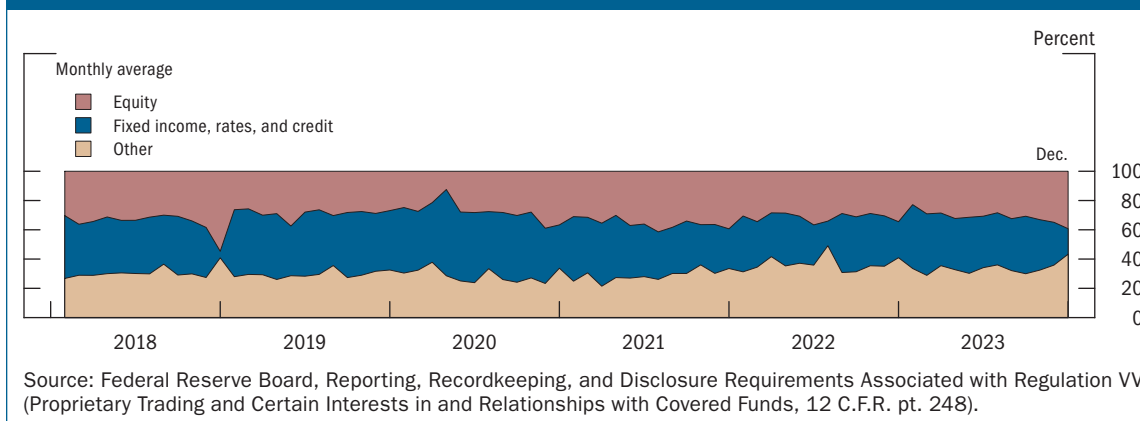
Source: Federal Reserve Board, Form FR Y-14Q (Schedule H.1), Capital Assessments and Stress Testing.

Figure 3.6. The percentage of banks reporting tightening standards for commercial and industrial loans declined in the second half of 2023

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

Leverage at broker-dealers remained low

Risks posed to the financial system by broker-dealer leverage remained low. Despite a small uptick in the fourth quarter of 2023, the leverage ratio stood near historically low levels (figure 3.7), as dealer equity kept up with the continued expansion in assets. Reflecting seasonal trends, end-of-year profits declined, dropping below typical pre-pandemic levels (figure 3.8). The share of fixed income, rates, and credit in trading profits decreased in the most recent data, while the share of equity increased (figure 3.9). Since the October report, net secured borrowing of primary dealers declined somewhat but remained elevated overall and in line with net positions. Dealers' intermediation activity remained broadly stable at elevated levels. That said, insufficient intermediation capacity during periods of stress remained a structural vulnerability in the sector.

Figure 3.7. Leverage at broker-dealers remained near historical lows**Figure 3.8. Trading profits in December declined below their average****Figure 3.9. Equities increased further as a share of trading profits in the most recent data**

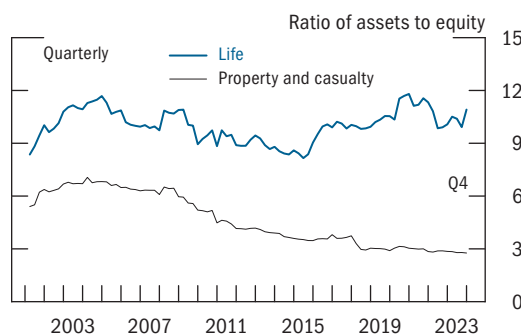
In the March 2024 Senior Credit Officer Opinion Survey on Dealer Financing Terms (SCOOS), dealers reported that terms on securities financing transactions and over-the-counter derivatives remained about unchanged.⁶ Use of financial leverage was also reported to have changed little on net. Additionally, the special questions in the March SCOOS asked about changes in financing terms and market conditions for selected segments of the market for commercial mortgage-backed securities (CMBS) collateralized by office properties. Overall, answers to the special questions point to a tightening of financing terms and weakening of liquidity in the office CMBS market, as collateral quality has weakened and demand for funding has increased.

⁶ The SCOOS is available on the Federal Reserve Board's website at <https://www.federalreserve.gov/data/scoos.htm>.

Life insurers continued to take on liquidity and credit risk, while their leverage remained in the middle of its historical range

In the fourth quarter of 2023, leverage at property and casualty insurers remained near the bottom of its historical distribution, while leverage at life insurers rose and stood around the median of its historical distribution (figure 3.10). Life insurers continued to take on liquidity and credit risk in their portfolios by allocating an increasing percentage of assets to risky and less liquid instruments, such as leveraged loans, high-yield corporate bonds, privately placed corporate bonds, and alternative investments. Further, because insurance companies are large holders of CMBS and have material direct exposures to commercial mortgages, a significant correction in commercial property values could put pressure on their capital positions.

Figure 3.10. Leverage at life insurance companies rose and remained around its median

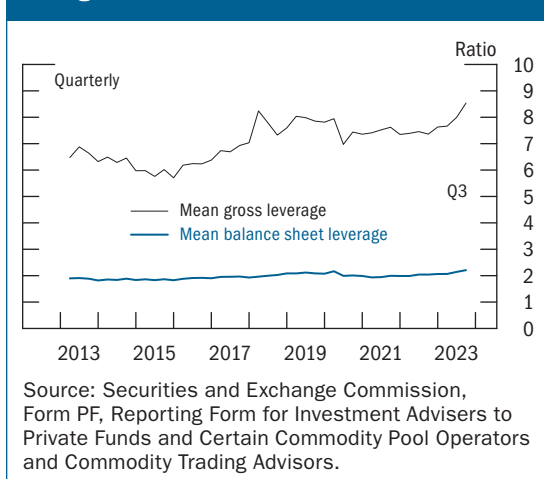
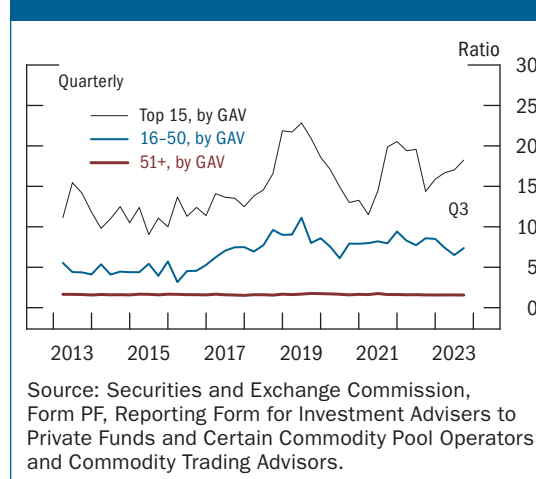
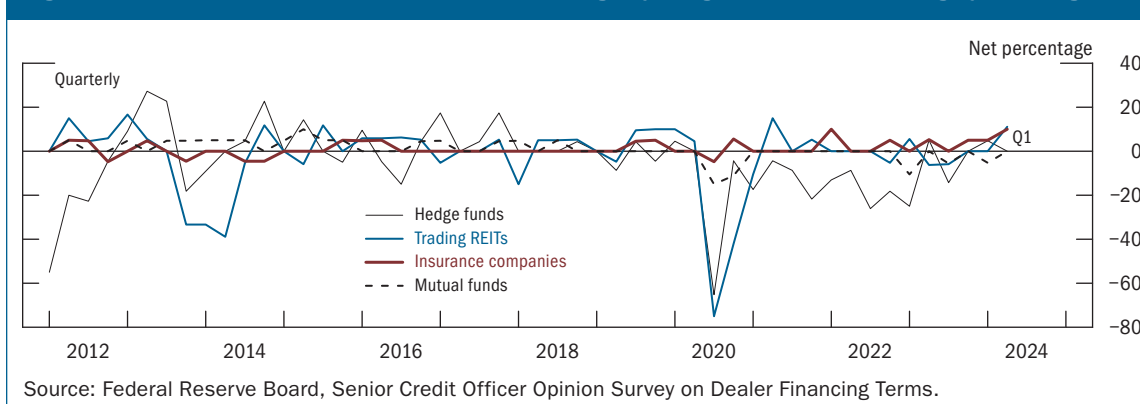


Source: Generally accepted accounting principles data from 10-Q and 10-K filings accessed via S&P Global, Capital IQ Pro.

Leverage at hedge funds reached its highest level in available data

Comprehensive data collected through the U.S. Securities and Exchange Commission's (SEC) Form PF indicated that measures of leverage averaged across all hedge funds increased further in the third quarter of 2023, reaching the highest level observed since the beginning of data availability. 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. Leverage at the largest funds was significantly higher, with the average on-balance-sheet leverage of the top 15 hedge funds by gross asset value rising in the third quarter of 2023 to about 18-to-1 (figure 3.12). These high levels of leverage were facilitated, in part, by low haircuts on Treasury collateral in some markets where many funds obtain short-term financing.⁷ More recent data from the March SCOOS suggested that hedge fund leverage flattened out as the use of financial leverage by hedge funds remained largely unchanged between mid-November 2023 and mid-February 2024 (figure 3.13).

⁷ 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>.

Figure 3.11. Leverage at hedge funds reached its highest level since data became available**Figure 3.12. Leverage at the largest hedge funds increased****Figure 3.13. Dealers indicated that the use of leverage by hedge funds remained largely unchanged**

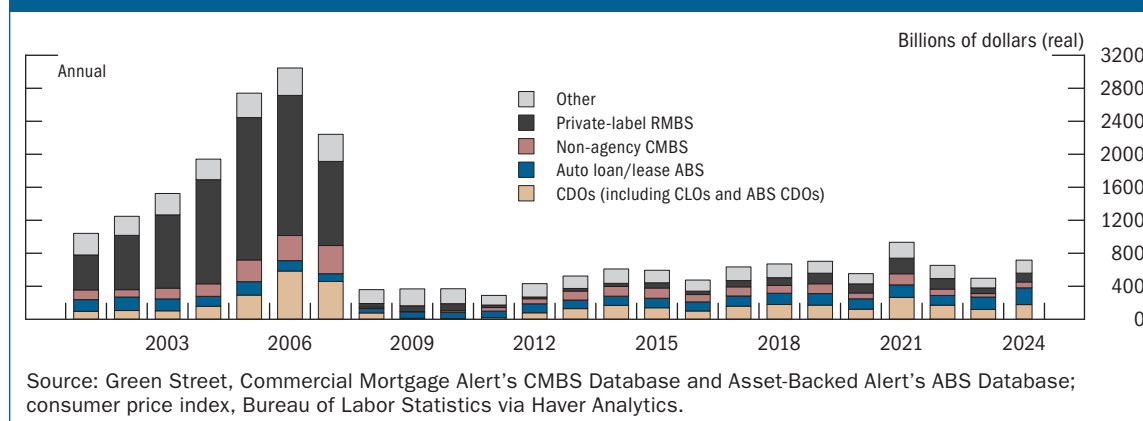
As of the third quarter of 2023, data from Form PF showed that net repurchase agreement borrowing, one measure of the Treasury cash-futures basis trade, grew to near historic highs, while data from the Commodity Futures Trading Commission (CFTC) Traders in Financial Futures report also showed leveraged funds' short Treasury futures positions were near historical highs.⁸ Meanwhile, indicators based on data from the first quarter of 2024, including leveraged funds' short Treasury futures positions and a basis trade proxy from Treasury TRACE, suggested the basis trade might have declined from its levels at the end of 2023 but remained elevated. This highly leveraged trade, which 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, was popular among hedge funds between mid-2018 and February 2020, and its subsequent unwinding contributed to the Treasury market turmoil in March 2020.

⁸ CFTC data and reports are available on the CFTC's website at <https://www.cftc.gov/MarketReports/CommitmentsofTraders/index.htm>.

Issuance of non-agency securities by securitization vehicles started recovering in 2024 despite ongoing concerns about commercial real estate

Non-agency securitization issuance—which increases the amount of leverage in the financial system—started to recover in the first three months of 2024 from subdued levels experienced throughout 2023 (figure 3.14).⁹ Credit spreads on most major securitized products generally narrowed since the October report. In the CMBS segment, lower-rated tranche spreads did not decline as much as senior-tranche spreads, likely reflecting ongoing investor concerns on credit risks in CRE loans underlying CMBS deals. Credit performance across securitized products backed by riskier loan collateral continued to show signs of deterioration, indicated by increasing loan delinquency rates or default rates compared with their respective historical averages. This deterioration in credit performance was especially pronounced in CRE-related securitization deals involving office loans as well as certain segments of multifamily loans. Delinquency rates in certain CRE collateralized loan obligations also increased notably.

Figure 3.14. Issuance of non-agency securitized products increased in early 2024 from the subdued levels of 2023



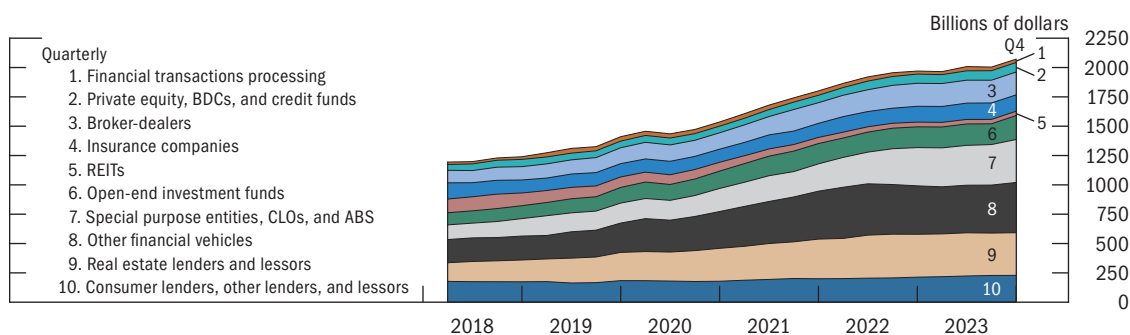
Bank lending to nonbank financial institutions increased

Bank lending to nonbank financial institutions (NBFIs) can be informative about the amount of leverage used by NBFIs and shed light on their interconnectedness with the rest of the financial system. After remaining flat in the third quarter of 2023, bank credit commitments to NBFIs

⁹ 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 collateralized loan obligations (predominantly backed by leveraged loans), asset-backed securities (often backed by credit card and auto debt), CMBS, and residential mortgage-backed securities.

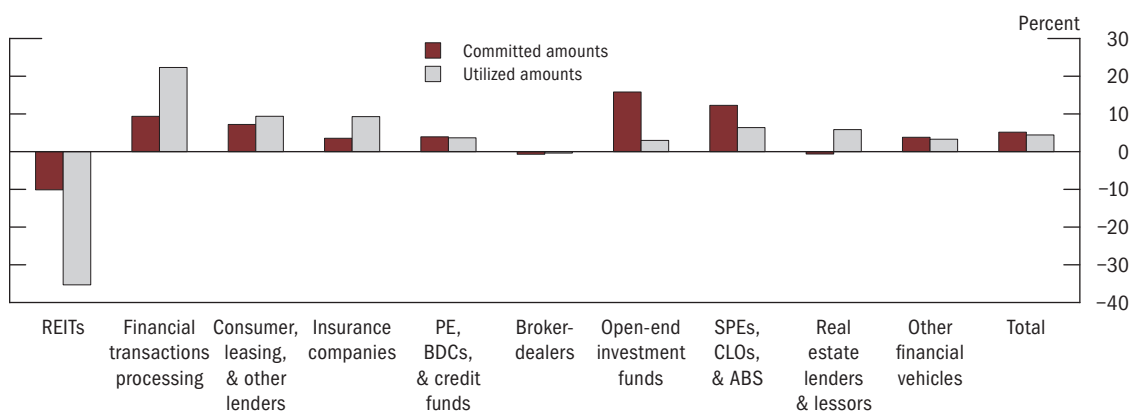
resumed growing in the fourth quarter (figure 3.15). The year-over-year growth rate in committed amounts was largely due to loans to open-end investment funds and special purpose entities and securitization vehicles, both of which grew about 15 percent over the course of 2023 (figure 3.16). This growth was partially offset by declines in bank credit commitments to real estate investment trusts. Utilization rates on credit lines to NBFIs, which averaged close to 50 percent of total committed amounts, decreased. Delinquency rates on banks' lending to NBFIs continued to decline for nearly all counterparties in the fourth quarter of 2023.

Figure 3.15. Bank credit commitments to nonbank financial institutions grew



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

Figure 3.16. Aggregate credit commitments to nonbank financial institutions increased in 2023 for most sectors except real estate investment trusts, broker-dealers, and real estate lenders and lessors



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

4 | Funding Risks

Vulnerabilities from funding risks remained notable, reflecting challenges at some banks and structural vulnerabilities in other sectors engaged in liquidity transformation

The banking industry maintained a high level of liquidity since the October report. Funding risks for most banks remained low, and large banks that are subject to the liquidity coverage ratio (LCR) continued to maintain ample levels of high-quality liquid assets (HQLA). Deposit outflows stabilized over the second half of last year following the March 2023 banking-sector stresses and turned into inflows by the fourth quarter of 2023. Nevertheless, some banks continued to face funding challenges, including higher costs for funding and relatively high reliance on uninsured deposits. The Bank Term Funding Program (BTFP) ceased extending new loans on March 11, 2024.

Prime MMFs and similar cash-management vehicles remained a prominent source of vulnerability given their susceptibility to runs and the significant role they play in short-term funding markets. In addition, some cash-management vehicles, including retail prime MMFs, government MMFs, and short-term investment funds, maintained stable net asset values (NAVs) but may face difficulties doing so because they hold assets in their portfolios whose valuations are vulnerable to sharp movements in interest rates. Stablecoins are also prone to run risks like those of MMFs and other cash-management vehicles. However, the combined market capitalization of all stablecoins (roughly \$150 billion currently) remained small relative to the broader funding markets, and stablecoins are not widely used as cash-management vehicles.

Some open-end bond mutual funds remained susceptible to large redemptions because they must allow shareholders to redeem every day even though the funds hold assets that can face losses and become illiquid amid stress. Life insurers continued to face funding risk owing to their reliance on a higher-than-average share of nontraditional liabilities in combination with an increasing share of illiquid and risky assets on their balance sheets.

Overall, estimated runnable money-like financial liabilities grew 8.8 percent to \$21.3 trillion (75 percent of nominal GDP) over the past year, as a decline in uninsured deposits was more than offset by an increase in assets under management at MMFs. As a share of GDP, runnable liabilities remained above their historical median (table 4.1 and figure 4.1).

Table 4.1. Size of selected instruments and institutions

Item	Outstanding/total assets (billions of dollars)	Growth, 2022:Q4–2023:Q4 (percent)	Average annual growth, 1997–2023:Q4 (percent)
Total runnable money-like liabilities ¹	21,348	9.0	4.8
Uninsured deposits	6,692	–10.7	11.0
Domestic money market funds ²	5,822	24.3	6.0
Government	4,763	20.3	15.2
Prime	937	52.1	2.5
Tax exempt	123	11.2	–1.3
Repurchase agreements	4,843	33.1	5.8
Commercial paper	1,235	.6	2.6
Securities lending ³	811	.8	6.8
Bond mutual funds	4,525	6.2	8.0

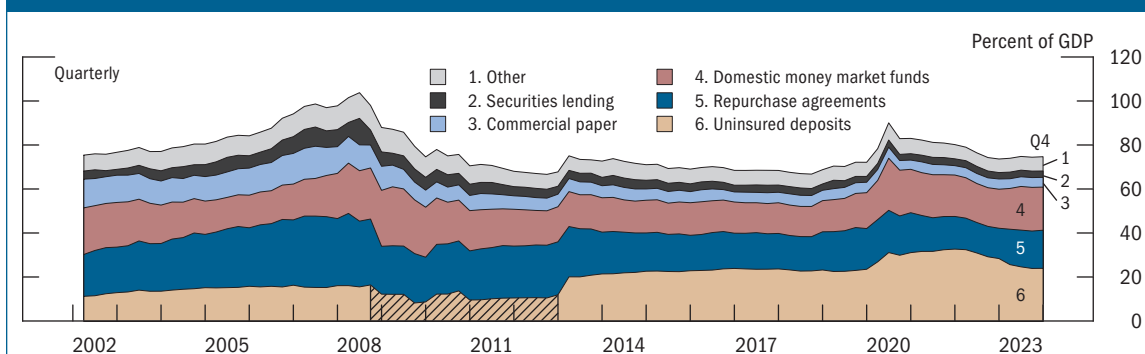
Note: The data extend through 2023:Q4 unless otherwise noted. Outstanding amounts are in nominal terms. Growth rates are measured from Q4 of the year immediately preceding the period through Q4 of the final year of the period. Total runnable money-like liabilities exceed the sum of listed components. 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 2023:Q4.

² Average annual growth is from 2001:Q1 to 2023:Q4.

³ Average annual growth is from 2000:Q1 to 2023:Q2. 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; Risk Management Association, Securities Lending Report; DTCC Solutions LLC, an affiliate of the Depository Trust & Clearing Corporation: commercial paper data; Federal Reserve Board staff calculations based on Investment Company Institute data; 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. Ratios of runnable money-like liabilities to GDP remained above their historical medians

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; Risk Management Association, Securities Lending Report; DTCC Solutions LLC, an affiliate of the Depository Trust & Clearing Corporation: commercial paper data; Federal Reserve Board staff calculations based on Investment Company Institute data; 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.

Most banks maintained high levels of liquid assets and stable funding

Aggregate liquidity in the banking system appeared ample, as HQLA measured relative to total assets stabilized at most banks in the second half of 2023 (figure 4.2). Moreover, U.S. G-SIBs continued to hold 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. While banks’ reliance on short-term wholesale funding increased slightly over the second half of last year, the levels remained low relative to longer-term averages (figure 4.3).

Figure 4.2. The amount of high-quality liquid assets held by most banks stabilized in the second half of 2023

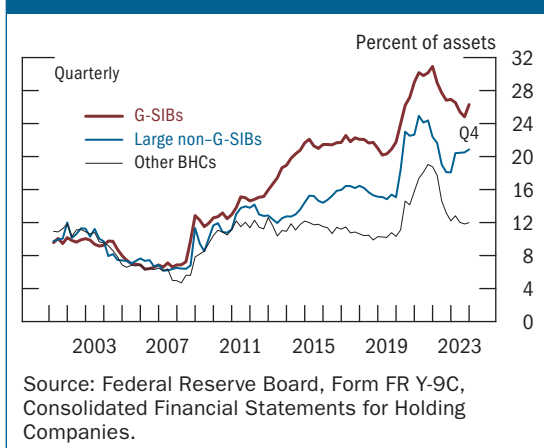
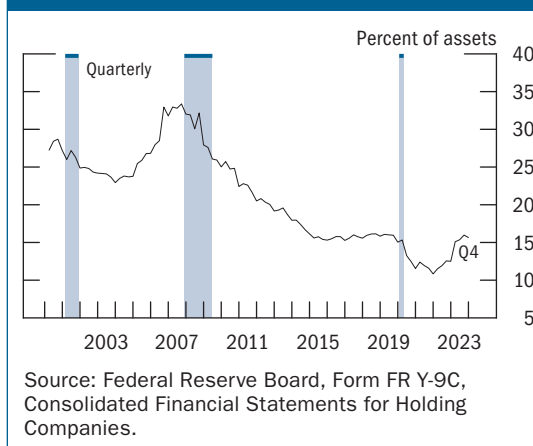


Figure 4.3. Banks’ reliance on short-term wholesale funding remained low



Deposit flows have stabilized across most bank groups over the past six months, as market sentiment has improved following the banking-sector stresses in March 2023. However, key vulnerabilities that interacted to cause the regional banking crisis last spring—large fair value losses relative to regulatory capital and elevated reliance on uninsured deposits—remained elevated for a subset of banks.

The BTFP helped support the stability of the financial system and thereby American businesses and households, providing funding during the acute phase of the banking-sector stresses, and many depository institutions continued to rely on it over the past year. The box “[The Bank Term Funding Program](#)” summarizes how the BTFP was effective in helping banks to safeguard deposits while continuing to meet the credit needs of the economy over the past year.

Box 4.1. The Bank Term Funding Program

The banking system came under severe stress in March 2023. After experiencing deposit withdrawals of unprecedented speed, Silicon Valley Bank and Signature Bank collapsed on March 10 and March 12, respectively, when it became clear that they did not have sufficient liquidity to meet persistent and increasingly significant deposit outflows. The two failures generated broader concerns about destabilizing runs at other commercial banks with similar profiles—those with heavy reliance on uninsured deposits and large unrealized losses in their securities portfolios. Concerns over broader contagion led some of those banks to face rapid deposit outflows.

In response to the market turmoil, the Federal Reserve Board, the Federal Deposit Insurance Corporation (FDIC), and the U.S. Department of the Treasury took actions to protect bank depositors, support financial stability, and minimize the effect of stress in the banking system on businesses, households, taxpayers, and the broader economy.¹ The Federal Reserve Board, with approval by the Secretary of the Treasury, established the BTFP pursuant to section 13(3) of the Federal Reserve Act.²

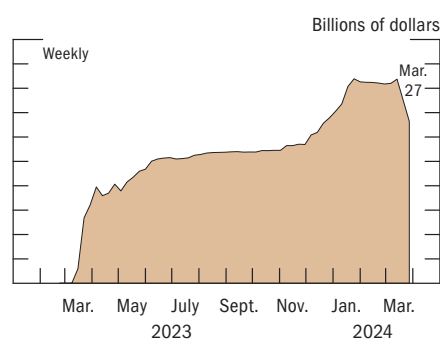
The BTFP provided depository institutions an additional source of liquidity against high-quality securities for them to meet the needs of all their depositors. The ability of depository institutions to access funding without selling securities at a loss during stress limited destabilizing runs and the associated potential for further contagion throughout the banking system. While the banking system saw deposit outflows of \$472 billion in the first quarter of 2023, those outflows moderated to \$99 billion in the second quarter and slowed further to \$90 billion in the third quarter. Deposits in the banking system experienced inflows of \$260 billion in the fourth quarter. Banks with total assets below \$250 billion experienced the greatest deposit outflows in the first quarter; outflows fell off rapidly in the second quarter and turned to inflows in the third and fourth quarters.

Eligible BTFP borrowers included federally insured banks, savings associations, and credit unions, as well as U.S. branches and agencies of foreign banks that were eligible for primary credit under the Federal Reserve's discount window. The BTFP extended advances of up to one year against the par

value of eligible collateral, consisting of securities that are eligible for purchase by the Federal Reserve in open market operations, such as U.S. Treasury securities, U.S. agency securities, and U.S. agency mortgage-backed securities, and were owned by the borrower as of March 12, 2023. Under the BTFP, no haircuts were applied to eligible collateral. The rate for advances was fixed for the duration of the advance at the one-year overnight index swap rate plus 10 basis points on the day the advance was made. The interest rate applicable to new BTFP advances was adjusted on January 24, 2024, to be no lower than the interest rate on reserve balances on the same day the advance was made.

As figure A shows, credit extended through the BTFP increased at a rapid pace initially, reaching a level above \$60 billion by the end of March 2023. Credit extended continued to increase in subsequent months, although at a

Figure A. Outstanding balances of the Bank Term Funding Program declined in early 2024



Source: Federal Reserve Board, Statistical Release H.4.1, "Factors Affecting Reserve Balances," accessed via Federal Reserve Economic Data.

(continued)

¹ On March 12, 2023, the Secretary of the Treasury, after receiving a written recommendation from the FDIC's board of directors and the Federal Reserve Board, and consulting with the President, approved a systemic risk exception, enabling the FDIC to complete the resolution of Silicon Valley Bank and Signature Bank in a manner that fully protected all depositors.

² With approval of the Secretary of the Treasury, the Treasury committed to make available up to \$25 billion from the Exchange Stabilization Fund as a backstop for the BTFP.

Box 4.1—*continued*

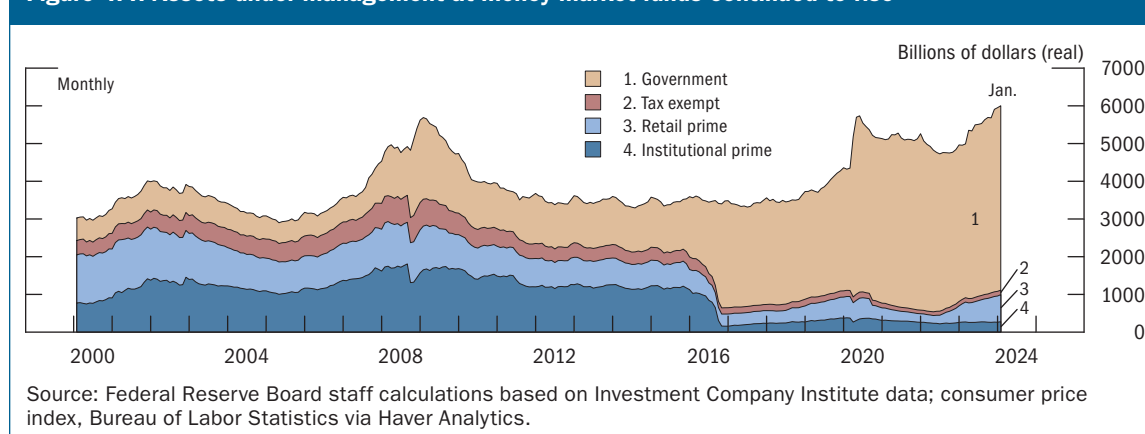
slower pace, surpassing \$100 billion by the end of August 2023. Outstanding balances increased further in late 2023, surpassing \$165 billion before gradually declining in early 2024. The BTFP ceased extending new loans, as scheduled, on March 11, 2024. Since its establishment, the BTFP extended advances to 1,804 depository institutions, of which 1,706, or 95 percent, were small institutions with total assets below \$10 billion.³ Advances taken out on or before March 11, 2024, will mature, depending on the term requested by the borrower, up to one year from the date the advance was made and need not be repaid before the maturity date. As a result, the BTFP continues to provide liquidity to eligible depository institutions.

³ More than 9,000 institutions were eligible to borrow from the BTFP.

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

Assets managed by MMFs increased steadily since the October report, as MMFs continued to provide more attractive yields relative to most bank deposits (figure 4.4).

Figure 4.4. Assets under management at money market funds continued to rise



On July 12, 2023, the SEC voted to adopt reforms for MMFs.¹⁰ Some key elements of the reforms—increased minimum requirements for funds’ daily and weekly liquid assets and elimination of temporary gates and fees linked to liquid asset levels—are already in effect. Mandatory dynamic liquidity fees for institutional prime and institutional tax-exempt funds will go into effect later this year. On net, the reforms represent significant progress in making prime and tax-exempt MMFs more resilient, although these funds remain vulnerable to runs in periods of significant stress.

Other cash-management vehicles, such as dollar-denominated offshore MMFs and short-term investment funds, also invest in money market instruments, engage in liquidity transformation, and are vulnerable to runs. Since the October report, estimated aggregate assets under management (AUM) of these cash-management vehicles remained roughly at \$1.8 trillion. Currently, between \$0.6 trillion and \$1.6 trillion of these vehicles’ AUM are in portfolios like those of U.S. prime MMFs, and large redemptions from these vehicles also have the potential to destabilize short-term funding markets.¹¹

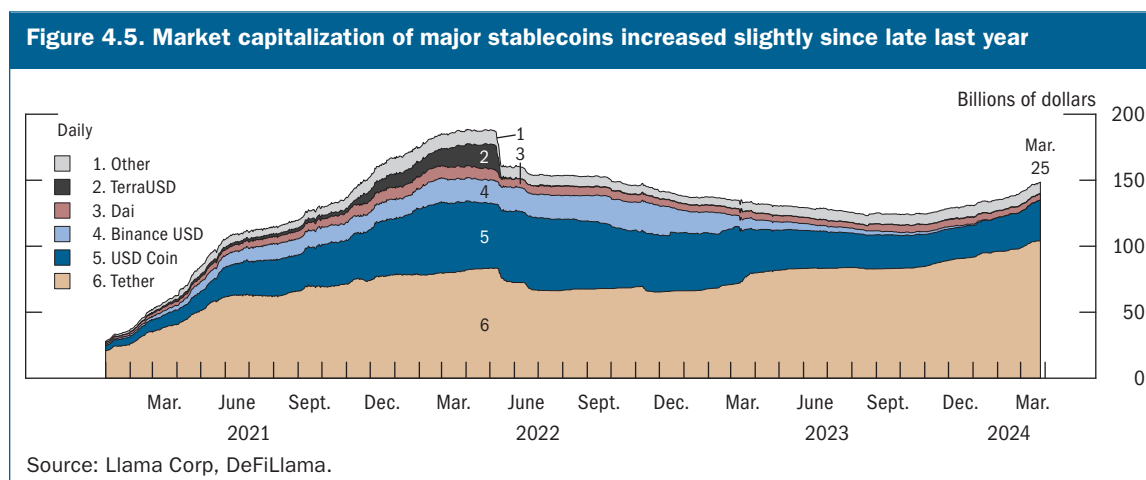
¹⁰ See U.S. Securities and Exchange Commission (2023), “SEC Adopts Money Market Fund Reforms and Amendments to Form PF Reporting Requirements for Large Liquidity Fund Advisers,” press release, July 12, <https://www.sec.gov/news/press-release/2023-129>.

¹¹ 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.

Many cash-management vehicles—including retail and government MMFs, offshore MMFs, and short-term investment funds—seek to maintain stable NAVs 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, which can put the funds under strain, particularly if they also have large, concurrent redemptions.

Stablecoins remained vulnerable to runs

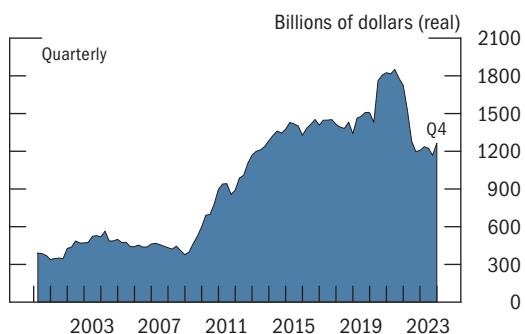
Stablecoin assets—digital assets designed to maintain a stable value relative to a national currency or another reference asset—grew steadily since the October report. The total market capitalization of stablecoins grew to around \$150 billion (figure 4.5). While not widely used as a cash-management vehicle or for transactions for real economic activity, stablecoins are important for digital asset investors. Stablecoins remain structurally vulnerable to runs and lack a comprehensive prudential regulatory framework. Moreover, stablecoins could scale quickly, particularly if the stablecoin is supported by access to an existing customer base.



Bond mutual funds' asset holdings stabilized, but the funds remained exposed to liquidity risks

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 redemptions daily. Despite some outflows amid rising interest rates since 2022, the outstanding amount of corporate bonds held by mutual funds remained high at approximately \$1.3 trillion as of the fourth quarter of 2023, the latest

Figure 4.6. Corporate bonds held by bond mutual funds remained stable in the second half of 2023

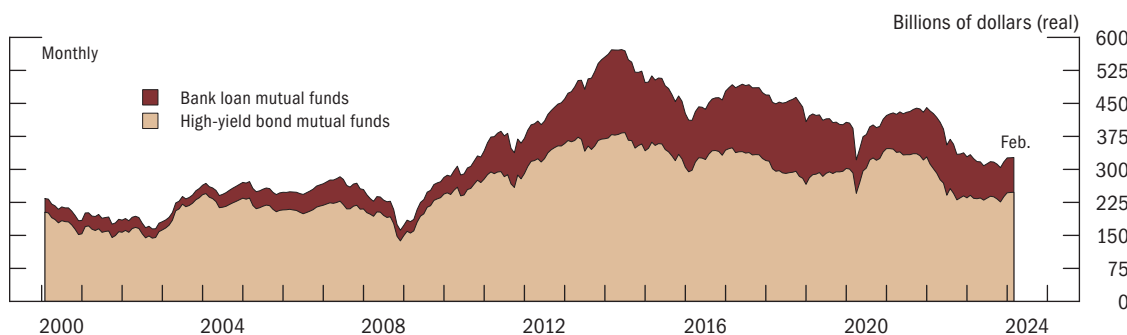


Source: Federal Reserve Board staff estimates based on Federal Reserve Board, Statistical Release Z.1, "Financial Accounts of the United States"; consumer price index, Bureau of Labor Statistics via Haver Analytics.

data available, representing about 13 percent of corporate bonds outstanding (figure 4.6).

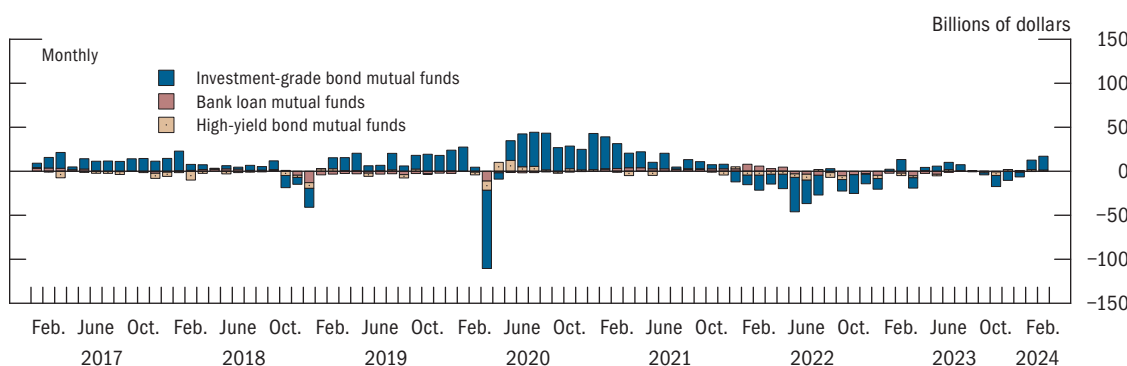
Total AUM of the subcategories of mutual funds holding high-yield bonds and bank loans, which primarily hold riskier and less liquid assets, stabilized in recent months (figure 4.7). Bond and loan mutual funds also experienced negative returns and notable outflows during most of 2022, but outflows stabilized throughout last year and into early 2024 (figure 4.8).

Figure 4.7. Assets held by bank loan and high-yield mutual funds stayed relatively flat through early 2024



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

Figure 4.8. Flows have stabilized for bond and bank loan mutual funds



Source: Investment Company Institute.

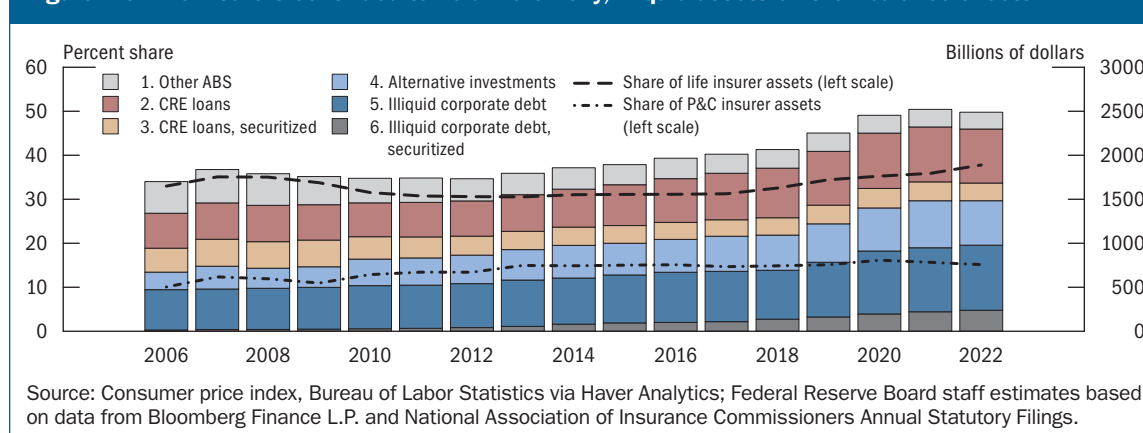
Central counterparties' initial margin levels and prefunded resources remained high, even as interest rate volatility has moderated

Central counterparties' (CCP) initial margin levels remained high even as market volatility slightly decreased during the second half of 2023. CCPs also maintained high levels of prefunded resources. Elevated initial margins and ample overall prefunded resources work together to imply a relatively low vulnerability at CCPs to a potential default by a clearing member or market participant.¹² These two factors also reduce the possibility of large liquidity demands from a CCP to its credit providers (banks). However, additional liquidity risk remains around the concentration of clients at the largest clearing members, which could make transferring client positions to other clearing members challenging if it were ever necessary.

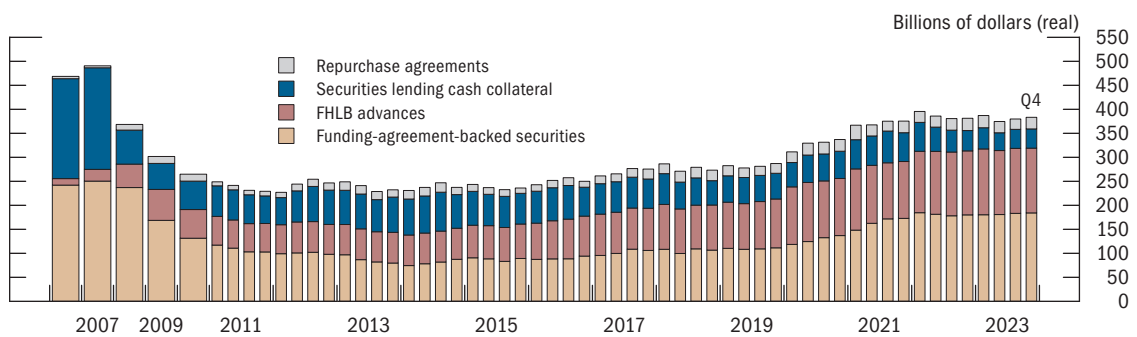
Life insurers' nontraditional liabilities remained high

Over the past decade, the share of less liquid assets held on life insurers' balance sheets—including CRE loans, less liquid corporate debt, and alternative instruments—has gradually increased (figure 4.9). Over this same period, life insurers have continued to increase their nontraditional liabilities—including funding-agreement-backed securities and cash received through repurchase agreements and securities lending transactions (figure 4.10). These liabilities can create liquidity 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 in conjunction with growing nontraditional liabilities makes it potentially more difficult for life insurers to meet a sudden rise in withdrawals and other claims.

Figure 4.9. Life insurers continued to hold more risky, illiquid assets on their balance sheets



¹² 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.

Figure 4.10. Life insurers continued to use nontraditional liabilities for funding

Source: Consumer price index, Bureau of Labor Statistics via Haver Analytics; Moody's Analytics, Inc., CreditView, Asset-Backed Commercial Paper Program Index; Securities and Exchange Commission, Forms 10-Q and 10-K; National Association of Insurance Commissioners, quarterly and annual statutory filings accessed via S&P Global, Capital IQ Pro; Bloomberg Finance L.P.

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, contacts were particularly focused on the risk of persistent inflationary pressures leading to a more restrictive than expected monetary policy stance, risks to the financial sector from increased policy uncertainty, and the potential effect of large losses on CRE and residential real estate. Risks associated with the reemergence of banking-sector stress and with fiscal debt sustainability in advanced economies also featured prominently.

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

Higher-for-longer interest rates in the U.S. and other advanced economies could create strains in the global financial system

Interest rates may stay higher for longer than markets currently expect for a range of reasons. The neutral level of interest rates is uncertain. Inflation could persist for longer than expected, which could result in more restrictive monetary policy, heightened volatility in financial markets, and corrections in asset prices. In the U.S., higher-for-longer interest rates could strain the balance sheets and debt-servicing capacity of households and businesses, weakening the economic outlook. Financial intermediaries, including lenders with high exposures to CRE and consumer loans, could encounter greater losses as a result of higher interest rates, leading to a further tightening in financing conditions. In foreign economies, persistently high interest rates could challenge the debt-servicing capacity of households, businesses, and governments, including in emerging market economies (EMEs) that borrow externally. This stress could transmit to the U.S. through strains in dollar funding markets, rapid rebalancing of portfolios, and reduced credit from foreign lenders to U.S. borrowers.

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 or policy uncertainty could reduce economic activity, boost inflation, and heighten volatility in financial markets. The global

financial system could be affected by a pullback from risk-taking, declines in asset prices, and losses for exposed U.S. and foreign businesses and investors.

Weakness in economic activity could compound existing strains in real estate markets, both domestically and abroad, and could amplify risks to the global financial system

In the U.S., unexpectedly weak economic growth could lead to a reduction in investor risk appetite and additional strains in CRE, especially in the office building sector, where vulnerabilities have mounted in the post-pandemic period. A more pronounced correction in commercial property prices could result in significant losses for banks and nonbank investors with concentrated exposures to the sector. Such losses may reduce the willingness of financial intermediaries to supply credit to the economy, which would further weigh on economic activity.

Slower global growth and higher interest rates could also put pressure on real estate markets abroad. In China, residential real estate prices continue to fall, potentially putting further pressure on the highly indebted property sector. Stresses in China could spill over to other EMEs that rely on trade with China or credit from Chinese entities. Given the importance of EMEs, particularly China, to world trade and activity, such stresses could exacerbate adverse spillovers to global asset markets and economic activity, weighing on economic and financial conditions in the U.S.

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 January to late March 2024, the staff surveyed 25 contacts, including professionals at broker-dealers, investment funds, research and advisory firms, and academics.

The risk of persistent inflationary pressures leading to a more restrictive than expected monetary policy stance remained the most frequently cited risk (figure A). While the share of survey participants mentioning policy uncertainty as a risk to the financial system increased notably, the share mentioning the potential for large CRE losses, the reemergence of banking-sector stress, concerns over fiscal debt sustainability, and market volatility remained high, albeit down relative to results reported in the previous survey (figure B). Other risks highlighted in the current survey include potential market liquidity strains in the U.S. Treasury market, with particular attention on the (cash-futures) basis trade, a correction in risky asset prices, and a potential cyberattack. This discussion summarizes the most cited risks from this round of outreach.

Persistent inflation and monetary tightening

Elevated inflation and the implications of tighter monetary policy remained the top-cited risk. Many of these respondents continued to note that a reacceleration of inflation could keep rates higher for longer than previously expected. However, several contacts cited the potential lagged effects of prior policy tightening as a key watchpoint and suggested that the FOMC may fall behind the curve in lowering rates or may not act quickly enough in the event of a sudden economic downturn.

Policy uncertainty

Respondents flagged policy uncertainty as a potentially significant source of shocks that could impact the financial sector. Contacts noted several areas of uncertainty including trade policy and other foreign policy issues possibly related to escalating geopolitical tensions. They also noted policy uncertainty associated with the U.S. elections in November.

Commercial real estate

Real estate market stress, particularly in CRE, was again frequently cited. Survey respondents continued to flag higher interest rates as a major headwind for the sector, with some noting that maturity walls over the next couple of years could pose refinancing risks, putting further downward pressure on prices and valuations. Respondents flagged that CRE exposures could negatively affect the banking system, with vulnerabilities particularly high for smaller and regional U.S. banks.

Banking-sector stress

Respondents continued to note the potential for banking-sector stress to reemerge. In addition to risks from CRE exposure, respondents cited the prospect that interest rates may stay higher for longer than previously expected as a catalyst for potential renewed deposit outflows. Despite being a frequently cited risk, some respondents continued to note that the U.S. banking system is well capitalized.

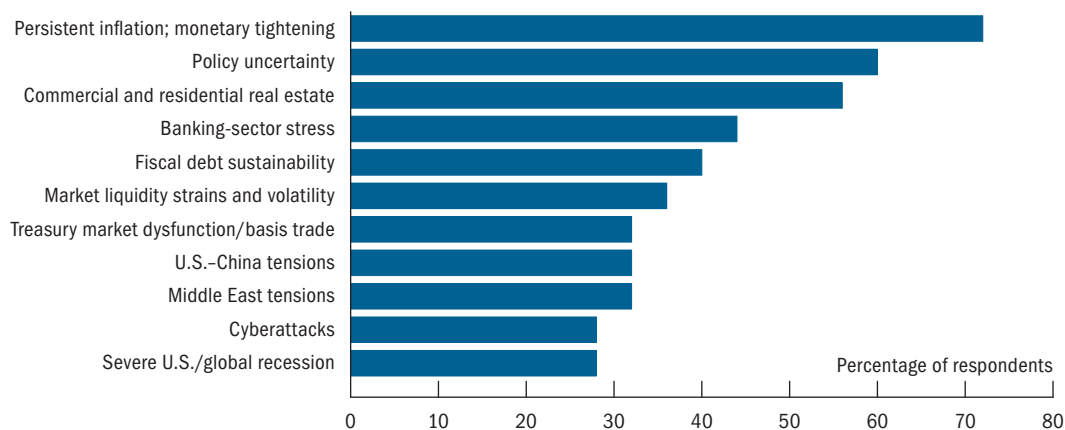
Fiscal debt sustainability

Concerns over fiscal debt sustainability among advanced economies were again cited as a top risk, with respondents noting particular concern regarding the U.S. Many respondents believed that deficits would remain wide and fiscal consolidation would remain unlikely.

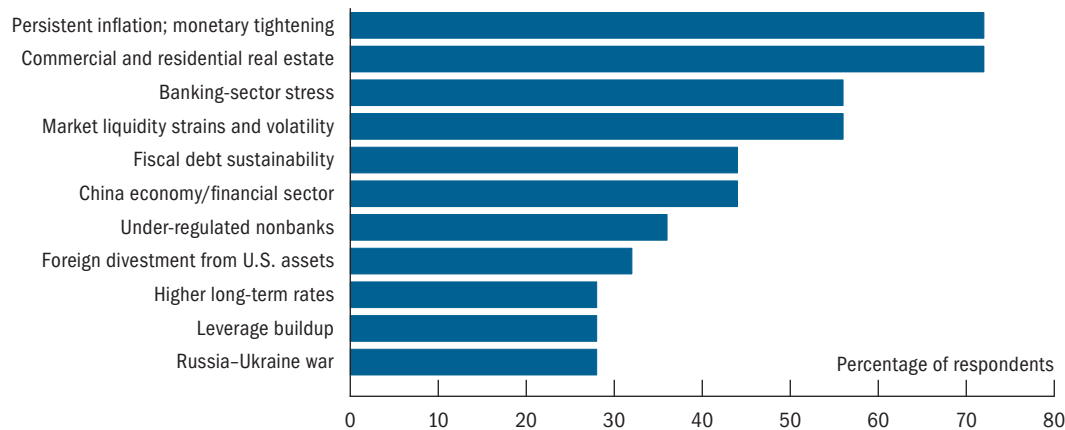
(continued)

Box 5.1—continued**Market liquidity strains and volatility**

Respondents continued to highlight risks surrounding the potential for strained liquidity and elevated volatility across a range of financial markets. Disruptions in the Treasury market were top of mind, as well as a flight to safe-haven assets and general concerns over cyber threats.

Figure A. Spring 2024: Most cited potential risks over the next 12 to 18 months

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

Figure B. Fall 2023: Most cited potential risks over the next 12 to 18 months

Source: Federal Reserve Bank of New York survey of 25 market contacts from August to October.

Appendix | Figure Notes

Figure 1.1. Nominal Treasury yields remained close to the highest levels in the past 15 years

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

Figure 1.2. An estimate of the nominal Treasury term premium remained relatively low

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 fell slightly but continued to be elevated by historical norms

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 increased to levels further above its historical median

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 fell further below its historical median

The data begin in October 1991. The figure shows the difference between the aggregate forward earnings-to-price ratio of Standard & 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 decreased to levels slightly below the 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 slightly to levels near their historical medians

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 (HOA0).

Figure 1.8. Corporate bond spreads narrowed to low levels relative to their historical distributions

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 (HOA0).

Figure 1.9. The excess bond premium fell slightly but remained near the middle of the historical range

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 declined modestly

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 increased but 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 improved in recent months but remained 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 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, continued to decline

The data are deflated using the consumer price index.

Figure 1.15. Income of commercial properties relative to prices continued to grow but remained well below historical norms

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 tightening 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. House prices continued to increase in recent months

The data extend through February 2024 for Zillow and January 2024 for CoreLogic and Case-Shiller.

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

The owners' equivalent rent value for 2024:Q1 is based on monthly data through January 2024. The data for the market-based rents model begin in 2004:Q1 and extend through 2023:Q4.

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. Farmland prices increased to near-historical highs

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 grew faster than rents

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 further

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 decreased

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 continued to decline

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:Q1, the value corresponds to preliminary data.

Figure 2.5. Gross leverage of large businesses stayed at high levels 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. Firms' ability to service their debt, as measured by the interest coverage ratio, remained robust

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. The default rate on leveraged loans remained around its historical median

The data begin in December 1998. The default rate is calculated as the amount in default over the past 12 months divided by the total outstanding volume 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 2.8. New leveraged loans with debt multiples greater than 4 rebounded modestly in early 2024

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 2.9. Real household debt edged up

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 2023 dollars using the consumer price index.

Figure 2.10. A model-based estimate of housing leverage increased modestly

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 ticked up from low levels

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 2023 dollars using the consumer price index. The key identifies bars in order from left to right.

Figure 2.14. Real consumer credit edged down since late last year

The data are converted to constant 2023 dollars using the consumer price index. Student loan data begin in 2005:Q1.

Figure 2.15. Real auto loans outstanding ticked up for prime and subprime borrowers

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 2023 dollars using the consumer price index.

Figure 2.16. Auto loan delinquencies remained at levels above their historical median

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. 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 for delinquent/loss mitigation begin in 2001:Q1.

Figure 2.17. Real credit card balances continued to rise in the second half of 2023

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 2023 dollars using the consumer price index.

Figure 2.18. Credit card delinquencies increased further in the second half of 2023

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' average interest rate on interest-earning assets remained significantly above the average expense rate on liabilities

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' risk-based capital ratio increased to or beyond 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 declined through the end of 2023 but 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. Borrower leverage for bank commercial and industrial loans inched down

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. The percentage of banks reporting tightening standards for commercial and industrial loans declined in the second half of 2023

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 December declined below their average

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

Figure 3.9. Equities increased further as a share of trading profits in the most recent data

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 insurance companies rose and remained around its median

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

Figure 3.11. Leverage at hedge funds reached 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. Leverage at the largest hedge funds increased

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.

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

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. Issuance of non-agency securitized products increased in early 2024 from the subdued levels of 2023

The data from the first 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; resecuritized 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. Bank credit commitments to nonbank financial institutions grew

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 nonbank financial institutions increased in 2023 for most sectors except real estate investment trusts, broker-dealers, and real estate lenders and lessors

The figure shows 2023:Q4-over-2022:Q4 growth rates as of the end of the fourth quarter of 2023. 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. Ratios of runnable money-like liabilities to GDP remained above their historical medians

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 amount of high-quality liquid assets held by most banks stabilized in the second half of 2023

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 remained low

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 continued to rise

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

Figure 4.5. Market capitalization of major stablecoins increased slightly since late last year

The key identifies series in order from top to bottom.

Figure 4.6. Corporate bonds held by bond mutual funds remained stable in the second half of 2023

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 2023 dollars using the consumer price index.

Figure 4.7. Assets held by bank loan and high-yield mutual funds stayed relatively flat through early 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. Flows have stabilized for bond and bank loan mutual funds

Mutual fund assets under management as of February 2024 included \$2,263 billion in investment-grade bond mutual funds, \$327 billion in high-yield bond mutual funds, and \$79 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 continued to hold more risky, illiquid assets on their balance sheets

The data are converted to constant 2022 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.

Figure 4.10. Life insurers continued to use nontraditional liabilities for funding

The data are converted to constant 2023 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.

Box 5.1. Survey of Salient Risks to Financial Stability

Figure A. Spring 2024: Most cited potential risks 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 effect on the functioning of the U.S. financial system?”

Figure B. Fall 2023: Most cited potential risks 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 effect on the functioning of the U.S. financial system?”

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