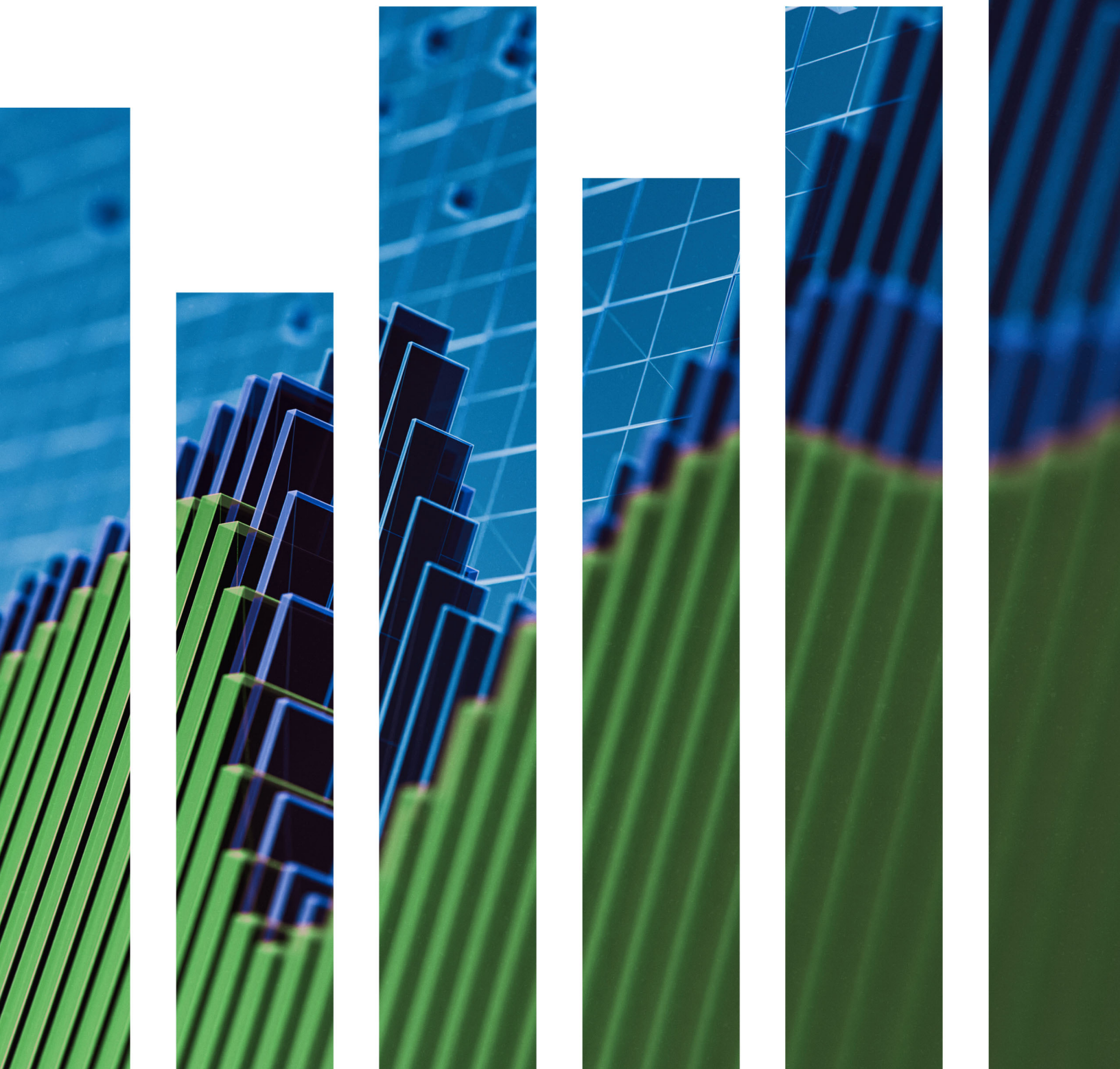
OFR OFFICE OF FINANCIAL RESEARCH

2025 ANNUAL REPORT TO CONGRESS



INTRODUCTORY LETTER

It is my pleasure to deliver the Office of Financial Research's 2025 Annual Report to Congress in accordance with Section 154(d) of the Dodd-Frank Wall Street Reform and Consumer Protection Act. The information covered describes our work during the fiscal year from October 1, 2024, to September 30, 2025.

Fiscal year 2025 was a year of significant change for the Office of Financial Research. We sharpened our focus on core mission activities and reduced our workforce to align with the Administration's goals. We also successfully leveraged recent artificial intelligence advances to improve organizational efficiency. As in past years, we continued to collect and provide data to further financial stability research and analysis, enabling collaboration and research among the Financial Stability Oversight Council and its member agencies. In this report and throughout the year, our staff provided critical insights into several areas of financial stability, such as technology and cyber risks, businesses and households, financial institutions, asset markets, and money markets.

In an ever-changing environment, we ensure our organizational readiness to serve the needs of the Financial Stability Oversight Council with financial data, risk monitoring tools, standards expertise, and applied research and analysis.

James D. Martin, Principal Deputy Director
Office of Financial Research

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EXECUTIVE SUMMARY

This report has two parts. Part 1 provides an analysis of risks to the financial stability of the United States. Part 2 details the organizational efforts of the Office of Financial Research (OFR) in meeting its mission. This report covers the fiscal year (FY) ending September 30, 2025.

Part 1: Risks to U.S. Financial Stability

The financial system offers significant benefits to the U.S. economy. However, the operation of one or more parts of the financial system can sometimes become disrupted, creating potential financial instability. An example is a credit crunch, which is a period when healthy businesses and households cannot obtain debt financing, such as loans. Although financial instability is uncommon, its consequences can be severe.

Predicting the nature and timing of future episodes of financial instability is difficult because obvious risks are generally self-limiting. Nonetheless, history has shown that certain conditions pose vulnerabilities that can contribute to financial instability. These vulnerabilities are the focus of the OFR's assessment; they are typically latent and may be triggered by a wide range of unforeseen shocks.

Risk is inherent to the financial system and vulnerable characteristics of the financial system are not necessarily bad. When financial system participants recognize and manage risk effectively, the likelihood of instability diminishes. Moreover, any episodes that do occur are more likely to be short-lived and less damaging.

The principal goals of this report are: (1) to describe financial stability vulnerabilities in the U.S. financial system and (2) to provide analysis to support effective market discipline and risk management by informing both the public and private sectors of the state of the financial system. Nothing in this report necessarily implies a need for regulation. Regulations can be costly and cause changes in the financial system that create unanticipated threats to financial stability. However, understanding the potential for financial instability, especially by financial system participants, may lead to behavior that limits financial instability. Financial markets and institutions often discipline themselves.

This year's financial stability risk assessment is organized into five chapters. The first focuses on technology and cyber vulnerabilities. The financial system makes heavy use of technology that improves productivity and the range and quality of financial services provided. However, financial instability may result if technology does not work as intended, especially in the event of major failures or cyberattacks at important financial system entities or service providers. As has been true for many years, the number and sophistication of cyberattacks on financial system entities is growing but so are the sophistication and intensity of private and public sector efforts to guard against such attacks.

The second chapter focuses on businesses and households. They are the most important end users of the financial system, and their debt financing is an important part of aggregate leverage. The credit risk associated with such debt financing is not high, and those borrowers that are highly indebted are served by lenders able to bear the risk. A recent material development is a surge in student loan defaults associated with the end of credit reporting restrictions for such defaults. While credit losses on student loans will largely be borne by the federal government, knock-on effects on delinquent borrowers' other debt are likely to be material. Associated losses are not likely to be large enough to cause financial instability.

The third chapter focuses on financial institutions. The banking system is in a strong position. Concerns about unrealized losses on securities portfolios and credit risk of commercial real estate loans have faded over the past year. Hedge fund leverage is near all-time highs, but markets' ability to avoid material disruption from periods of sharp deleveraging is improving as evidenced by continued market functioning during a period of high volatility in April. Private lenders continue to have low leverage.

The fourth chapter focuses on asset markets. Here, the concern is mainly with asset and trading liquidity, as well as continued market functioning. The Treasury market functioned well during an episode of a binding debt ceiling that ended in July, and increased central clearing of Treasury market trades will further improve resilience. Equity and corporate debt market valuations are high, but related leverage is manageable. The growing participation of proprietary trading firms and additional trading venues has improved market liquidity and robustness.

The last chapter discusses money markets. The OFR's new collection of non-centrally cleared bilateral repurchase agreement (repo) (NCCBR) data has revealed the repo market is larger and more diverse in collateral types than previously thought. The new repo data were helpful in analyzing market volatility in April. The structural vulnerability associated with money market funds is likely to recede somewhat with the implementation of new regulations on asset maturities, but a rapid withdrawal of money market fund assets would still force issuers of such assets to scramble for alternative financing.

Part 2: Status of the Office of Financial Research

The OFR engages with and serves the Financial Stability Oversight Council (Council) and its member agencies by providing high-quality financial data and analysis to help understand the financial stability of the United States. This year's report presents the OFR's progress across three main goals: (1) Research and Analysis Support, (2) Data and Technology Support, and (3) Organizational Excellence.

In pursuit of goal 1, the OFR expanded insights into financial stability by using its advanced analytical capabilities and subject matter expertise to respond to Council research requests related to the relationships between financial markets, financial institutions, and the broader economy. The OFR maintained its suite of financial stability monitoring tools and added new data and features to several of these tools, including the Money Market Fund Monitor (MMFM), Short-Term Funding Monitor (STFM), Financial Stress Index (FSI), and the Bank Systemic Risk Monitor (BSRM). The OFR also sustained its application program interface (API) for the STFM and the Hedge Fund Monitor (HFM), enabling the ability to query the data seamlessly without manual downloads. In addition, the OFR engaged in collaborative research partnerships and hosted and participated in conferences, facilitating dialogue about emerging trends in financial stability.

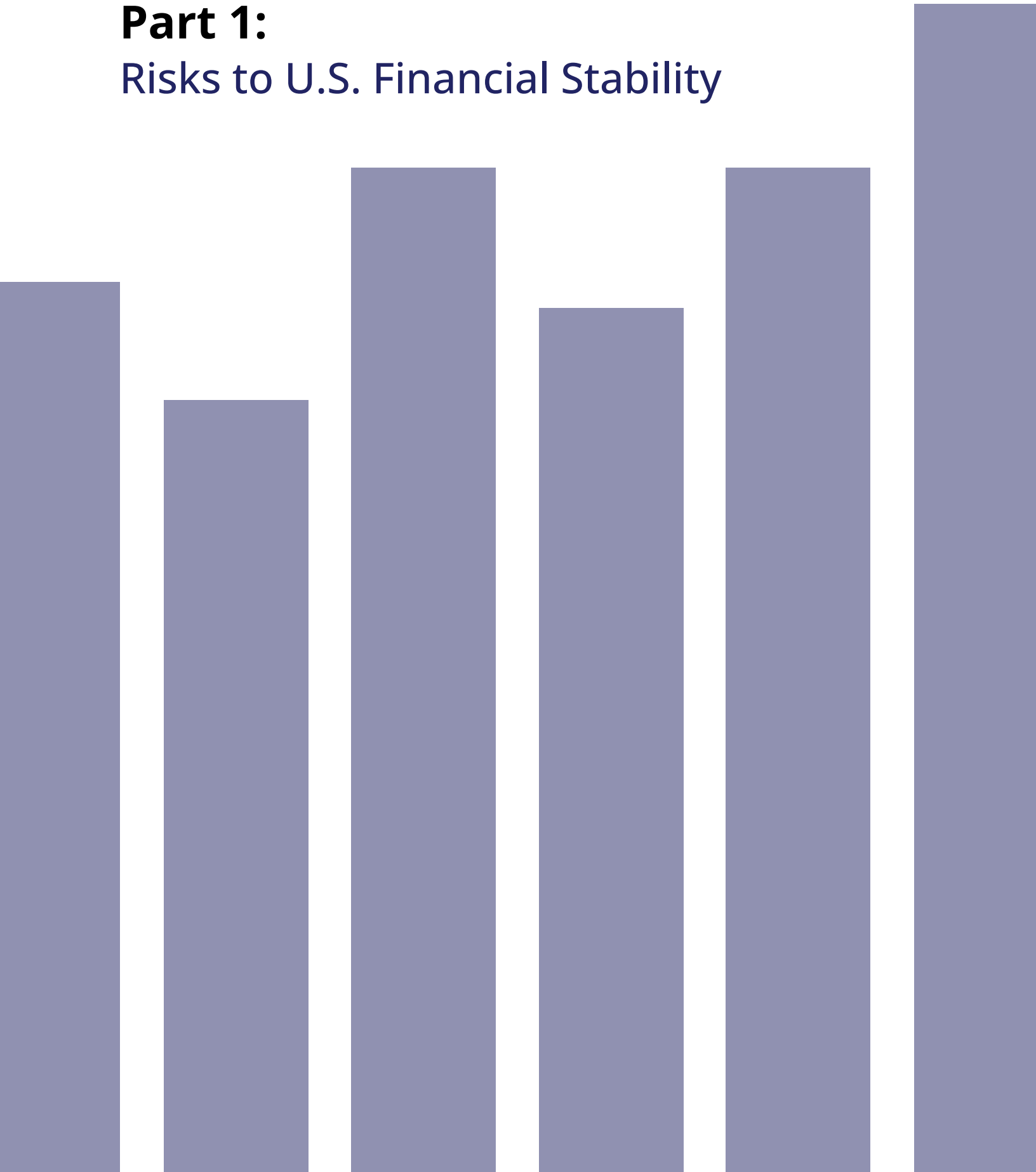
In pursuit of goal 2, the OFR substantially closed a data gap with its new NCCBR data collection, which made data on this market segment available to regulators for the first time. These data confirm that NCCBR transactions represent the largest of the four distinct U.S. repo market segments at roughly $5 trillion in daily outstanding commitments. The OFR also contributed to the development and implementation of global financial data standards through its work in several U.S. and international fora, including the Regulatory Oversight Committee (ROC), the International Organization for Standardization (ISO), and the Accredited Standards Committee X9 (ASC X9). In addition, the OFR facilitated work by the nine covered federal agencies to address the joint rulemaking requirements of the Financial Data Transparency Act of 2022. This year, the OFR released updated computational infrastructure that strengthened its capacity to support complex analytical workloads and meet evolving user requirements. This included updated cloud-based service offerings and a specialized operating system for analytics workflows. While the OFR decommissioned the Joint Analysis Data Environment (JADE), which was

originally designed as a collaborative platform for all Council member agencies to conduct analytical work and research, the OFR sustained the OFR Analytics Environment as its core internal analytics platform.

In pursuit of goal 3, the OFR narrowed its focus to the Administration's three priorities within the OFR's mission and leveraged artificial intelligence (AI) to streamline operations and enhance service delivery while increasing efficiency. AI implementations, like the introduction of a general service chatbot called ChatOFR, enabled the workforce to focus on higher-value analytical and research activities. Alongside a 47% decline in its workforce size, the OFR reduced its FY 2025 budget by 11%. The OFR rebalanced responsibilities across the organization, as well as limited travel, service contractors, technology and training investments, research conference engagements, and data procurements.

The FY 2025 achievements reflect the OFR's commitment to its mission and applied expertise. They demonstrate our ability to deliver meaningful results toward promoting financial stability through high-quality financial data, research, and monitoring. The OFR continues to provide essential support to the Council and its member agencies while focusing on the Administration's priorities within its financial stability mission.

Part 1:
Risks to U.S. Financial Stability



Framework

The Office of Financial Research (OFR) 2025 Annual Report assesses the risks to financial stability in the United States. This chapter describes the approach used to assess financial stability risks and summarizes the structure of the report.

The OFR's Approach to Assessing Financial Stability Risk

The financial system provides many benefits to the U.S. economy. It gathers savings from many sources; directs savings to support economic activity, such as investment in productive resources; and supports price discovery or the assessment and dissemination of the current market value of assets and liabilities. Also, the financial system facilitates payments, provides insurance services, and manages asset portfolios for those preferring professional assistance.

The U.S. financial system normally makes financial services widely available. However, the operation of one or more parts of the financial system sometimes becomes disrupted. In this report, a period of "financial instability" is one in which the financial system does not provide regularly available financial services at prices within the normal range. Two examples of financial instability are credit crunches that occur when healthy businesses and households cannot borrow funds and a shutdown of normal trading, which impairs price discovery and may prevent individuals and firms from rebalancing their portfolios. Financial instability is a rare but consequential occurrence.

Predicting the nature and timing of future episodes of financial instability is difficult because obvious risks are generally self-limiting. However, history has shown that certain conditions pose vulnerabilities that can contribute to financial instability. Vulnerabilities are latent most of the time, but they can be triggered by unpredictable shocks. A few examples include widespread high leverage at businesses or households, widespread use of high leverage as part of trading strategies, and clearing and settlement arrangements that are not robust.

Risk is inherent to the financial system, and vulnerable characteristics of the financial system are not necessarily bad. Provided financial system participants are aware of the associated risks to their own activities and manage them effectively, episodes of financial instability are less likely to occur. Those that do occur are more likely to be short-lived and not very damaging.

A principal goal of this report is to describe financial stability vulnerabilities in the U.S. financial system. This report also provides analysis to support effective market discipline and risk management by informing both the public and private sectors of the state of the financial system. Nothing in this report necessarily implies a need for regulation. Regulations can be costly and cause changes in the financial system that create unanticipated threats to financial stability. However, understanding the potential for financial instability, especially by financial system participants, may lead to behavior that limits financial instability. Financial markets and institutions often discipline themselves.

Structure of Part 1

Part 1 is divided into five chapters. Chapter One discusses technology risks, cyber risks, and their potential effect on financial instability. Government and business have cooperated for many years to address such risks with considerable success.

Chapter Two discusses credit risks associated with debt financing provided to businesses and households. They participate in the financial system and are its principal beneficiaries. The debt financing they receive is essential to the real economy and economic growth. However, credit risk associated with household and business debt is borne by a variety of financial institutions—widespread defaults can disrupt financial institutions' abilities to provide financial services. Currently, such credit risk is concentrated in a few sectors served by financial institutions likely to engage in effective risk management, such as banks, insurance companies, and private credit funds.

Chapter Three discusses financial institutions, such as banks, insurance companies, and various nonbanks. Currently, the vast majority appear

healthy, but some types are vulnerable to sudden withdrawals of liabilities even if fundamentals do not justify such withdrawals.

Chapter Four discusses asset markets and the entities like exchanges that help them operate. The potential for a financial system participant to lose its ability to trade in the wake of a failure of a large market participant is a concern. Actions taken in recent years, such as more extensive central clearing and settlement of trades, have improved resilience.

Chapter Five discusses money markets and short-term debt. Money markets play an important role in payment systems and make it possible for both financial and nonfinancial entities to obtain short-term debt financing. Money markets are structurally vulnerable to a loss of confidence and to large changes in the volume of transactions. Awareness of these features reduces the severity of any consequences.

1. Technology and Cyber Risks

The U.S. financial system delivers a wide array of financial services to businesses and households, supporting economic activity and growth. In recent decades, the U.S. financial system increased its use of technology, improving productivity and, also, the range and quality of financial services provided. Today, the seamless operation of technology is fundamental to financial system functioning. If technology does not work as intended, particularly in the event of major failures at important financial system entities, financial instability may result. The main approaches to addressing this vulnerability include prevention and resilience, or the ability to quickly recover from an operational failure.

No major episode of financial instability due to technology failures has occurred. Financial institutions and markets are aware of the risks and have invested heavily to monitor and manage them. Similarly, regulators are attentive to the risks and benefits of sharing information. The Department of the Treasury's Office of Cybersecurity and Critical Infrastructure Protection plays a key role in supporting the efforts to enhance the financial sector's cybersecurity and resiliency. Similarly, private financial sector entities share information through the Financial Services Information Sharing and Analysis Center (FS-ISAC), a nonprofit organization created by financial sector firms.

This chapter focuses on disruptions caused by cyber risk, other non-cyber operational disruptions, and third-party service provider risk.

Operational Disruptions

Operational risk is the potential for loss arising from failed or inadequate internal processes, faulty systems, human error, or external events like natural disasters or cyberattacks. To cause financial instability, an operational risk event would have to materially degrade the financial services provided by many financial institutions or markets for an extended period or do so for a very large or key entity. Financial system participants are incentivized to limit such events because of the

direct losses incurred, impact on customers and confidence, and potential losses from lawsuits. Nevertheless, there is always the chance that these events could occur.

The experience of financial market utilities (FMUs) provides some examples of operational risk events. Activity in U.S. asset markets relies heavily on a set of large FMUs for essential infrastructure services, such as payment processing, clearing, and settlement. Disruptions to the ability of an FMU to function have the potential to cause liquidity or credit problems that spread among financial institutions and markets.

Fedwire, a settlement system operated by the Federal Reserve Banks that facilitates electronic fund transfers between financial institutions, has experienced several outages. In 2019, a service disruption lasted several hours but was resolved before the day's peak transaction period. That same year, the automated clearinghouse (ACH) network, which processes batches of transactions between institutions, was unavailable for 16 hours. Although disruptive, the timing of the outage limited its systemic impact, as it did not coincide with most ACH activity. In 2021, an operational error temporarily disabled multiple Federal Reserve services for several hours, including Fedwire and the ACH network. All these incidents were resolved without triggering material financial instability.

Cyber Risk

Cyber risk is a subset of operational risk that involves events that adversely affect the security or operation of information systems. Cyber events can be caused by information system failures or cyberattacks that are typically deployed by criminals, hostile nation states, or independent hackers. Elements of the U.S. financial system have been the target of cyberattacks for decades. While defenses have become more sophisticated and extensive, so have the attacks. AI has the potential to strengthen cyber defenses, and it is important for governments and the private sector to work to realize that potential because AI can also aid attackers.

Cyber risk may cause financial instability more than non-cyber operational risk; the impact of cyber events can spread across information and financial networks unlike non-cyber operational risk that only spreads across financial networks. The financial system can be viewed as a vast network with many interconnections from exposures, transactions, business relationships, and other sources of connection. Similarly, information systems are now connected in many ways, and problems at one financial institution or in one financial market can potentially migrate to others through information networks.

The extent of exposure to cyber-related disruptions depends on a combination of factors: the probability of occurrence of a cyber incident, the severity of the incident's impact on information systems, resilience to the failures caused by the incident (including speed of recovery), and the incident's impact on the operations of financial and nonfinancial firms. Business and government efforts to strengthen cyber defenses have been attentive to all of these. Most cyber incidents do not have systemic consequences.

Third-Party Service Providers

Third-party service providers (TSPs) have become integral to modern financial operations, offering specialized services that enable institutions to reduce costs and innovate faster. The use of TSPs increases productivity by spreading costs of developing and operating specialized functions across many financial system entities. However, outsourcing operations to TSPs may introduce two key risks. First, many TSPs serve multiple clients simultaneously, making them single or near-single points of failure that affect a much larger fraction of the financial system than the size of TSPs would suggest. Second, oftentimes, the TSP's information technology is integrated with that of its clients. Even if a financial institution's own cyber defenses are strong, weak defenses at one or more TSPs can increase the risk of successful cyberattacks or failures that impair the institution's operations.

The bundled nature of many services provided by TSPs compounds these risks. While the benefit of integrated technology bundles is seamless interoperability and greater efficiency, bundling increases the impact of a technology failure

at a TSP in part by adding to costs of finding a substitute provider. Competing bundles are rarely compatible with one another. Some financial institutions commit to a single TSP for several services, and backup providers are often not maintained. Migrating operations to a new provider requires time and resources that are typically unavailable during a crisis.

The interconnectedness of the financial system amplifies the potential damage from TSP failures. Every supplier, partner, or client represents a potential entry point for attacks or system failures to propagate throughout financial and information networks. Problems can flow both downstream, such as when a software vendor distributes faulty code in an update, and upstream like when a problem at a client flows to the TSP and then across to the TSP's other clients.

To date, the U.S. financial system has suffered only limited disruptions from technology-related issues at TSPs. However, recent TSP failures that caused widespread disruption, such as the July 2024 CrowdStrike incident when a faulty software update affected 8.5 million computers globally, serve as cautionary tales about the potential for more severe events.[1]

2. Businesses and Households

Businesses and households are the ultimate beneficiaries of the financial system. They use financial services to enhance their own operations, investments, consumption, and returns to savings. They benefit from the economic growth that the financial system supports. The financial system enables capital formation, investment, borrowing, economic growth, and the efficient allocation of resources.

Debt financing is key to business and household contributions to growth. Debt financing inherently involves credit risk, or the risk that a borrower will default on principal and interest payments due to the lender. Intermediaries in the financial system use methods and resources like risk pricing, competition, and disclosures to price credit risk appropriately and match capital to its most productive uses while keeping transaction costs low. However, financial instability may result if a large volume of business or household debt defaults and those defaults hinder financial markets or institutions from continuing normal operations.

Because business and household credit risk is borne by many financial institutions and affects trading in many markets, it is efficient to assess the state of such credit risk before turning to the discussion of financial institutions and markets. This chapter discusses credit risk posed by businesses and households, which was not broadly elevated this year.

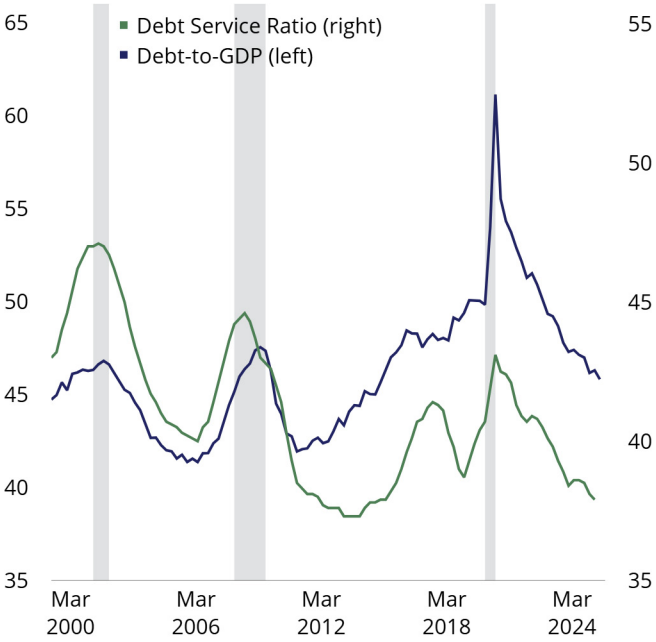
Business Borrowing

Businesses rely on the financial system to finance operational and investment expenses. This access to credit enables firms to manage cash flow, expand capacity, and respond to changing economic conditions without relying solely on retained earnings. Without adequate, timely financing, productivity suffers, and economic growth slows.

Outstanding nonfinancial business debt was about $22 trillion at the end of Q1 2025.[2] The majority

of business debt poses low credit risk. While nonfinancial corporate debt balances have been roughly stable since 2020, balances as a percentage of nominal gross domestic product (GDP) continue to decline from the 2020 peak (**Figure 2-1**). Debt service burdens also decreased during the same period as corporate cash flow improved.

Figure 2-1. Nonfinancial Corporate Debt (percent)



Note: Data as of June 2025. Shaded areas are U.S. recessions. The debt service ratio is debt payments divided by income.

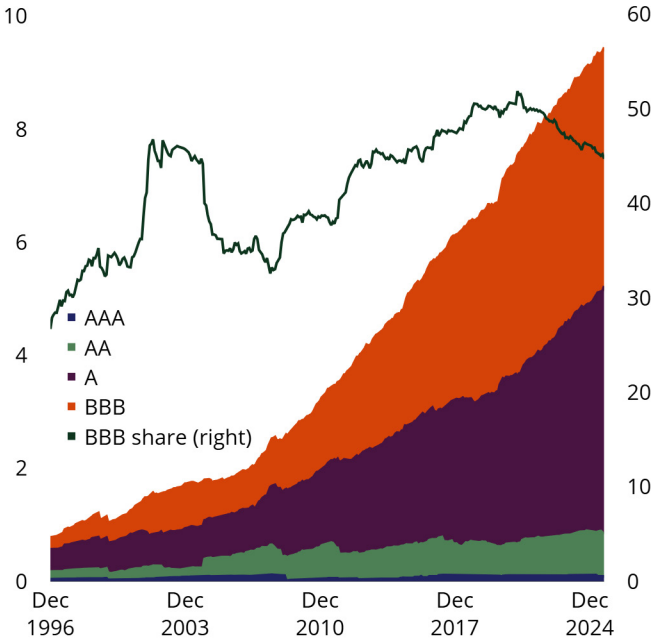
Sources: Board of Governors of the Federal Reserve System, Bank for International Settlements, National Bureau of Economic Research, Bureau of Economic Analysis, obtained through Haver Analytics, Office of Financial Research.

Credit losses on business debt are more a function of the fraction of business debt that poses a high risk of individual default than of the default risk of the average borrower. This is because most credit losses are associated with unusually risky borrowers. The three categories of credit risk are: investment-grade, which poses a lower risk of default; high-yield or leveraged debt, which poses a higher risk of default; and unrated debt. Investment-grade borrowers have a credit rating of BBB- or higher. In contrast, high-yield borrowers have a credit rating of BB+ or lower. Unrated firms can pose risks similar to either category of rated firms depending on their characteristics. All three categories include several types of debt contracts like bonds and loans. Funding is provided by many types of lenders, such as banks, insurance companies, and private lenders.

Investment-Grade Debt

Vulnerabilities associated with investment-grade credit risk are low. Investment-grade firms tend to have lower leverage and higher cash flow than high-yield firms. The share of investment-grade debt rated BBB, the riskiest rating for investment grade, is higher than in 2008 (**Figure 2-2**) but has fallen since 2020. At the end of August 2025, the share was 45%. According to S&P Global Ratings, the default rate on BBB-rated debt has been only 0.14% annually since 1981 on average; thus, vulnerabilities related to investment grade credit risk are muted.

Figure 2-2. U.S. Investment-Grade Corporate Debt by Rating ($ trillions, percent)



Note: Data as of September 2025. The index is the ICE BofA US Corporate Index, which includes financial firms. Each rating category includes debt with + or – rating modifiers.

Sources: Bloomberg Finance L.P., ICE Data Services, obtained through Bloomberg Finance L.P., Office of Financial Research.

High-Yield Debt

Vulnerabilities associated with high-yield credit risk have grown with the share of high-yield corporate debt rated B and riskier. The share of issuance has increased since 2015 for leveraged loans and decreased for high-yield bonds (**Figure 2-3**). The average annual default rate for firms rated B since 1981 is nearly 3%—about 30 times higher than default rates for investment-grade firms, and about five times higher than default rates for firms rated BB (**Figure 2-4**).

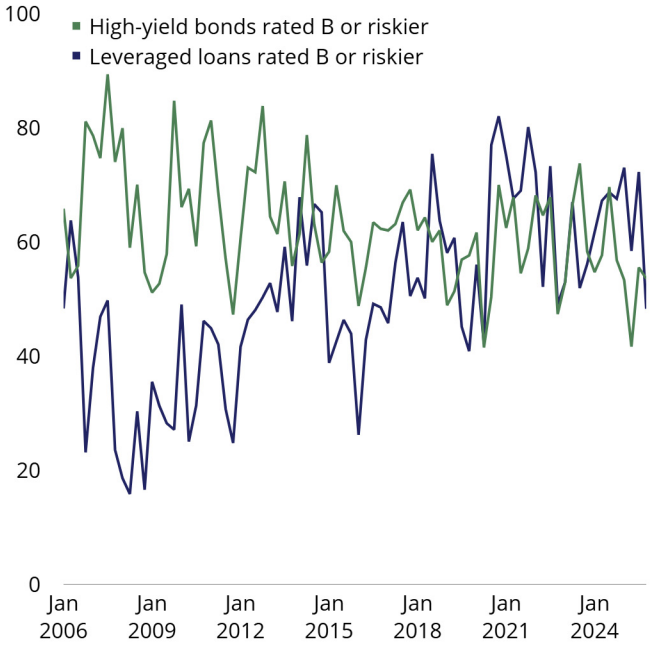
Outstanding balances for U.S. leveraged loans and loans made by private credit funds were almost $3.7 trillion at year-end 2024, or about three times as large as high-yield bond balances.[3] The default rate on leveraged loans has been near 6% in 2025. Loans are more likely than bonds to have floating interest rates such that higher interest rates since 2022 have increased borrowers' debt service costs and reduced interest coverage ratios.

Securitizations

Securitization is a method of pooling assets with the risk divided among different tranches so that investors can target their desired risk and return. It is also a source of funding for the underlying assets. The underlying pool of assets is owned by a bankruptcy-remote special purpose vehicle that issues multiple tranches of liabilities, each posing different risks. In a typical collateralized loan obligation (CLO) structure, for example, tranches differ mainly in the amount of credit risk they transfer to tranche investors with most tranches posing low credit risk (**Figure 2-5**). Assets held in large volumes by securitization vehicles are residential and commercial mortgages, leveraged loans, auto loans, credit card receivables, and other types of debt.

Securitizations increase financial system efficiency by supporting investor specialization, thereby, supporting economic activity and growth. The main vulnerability posed arises when a mismatch exists between the actual risks associated with

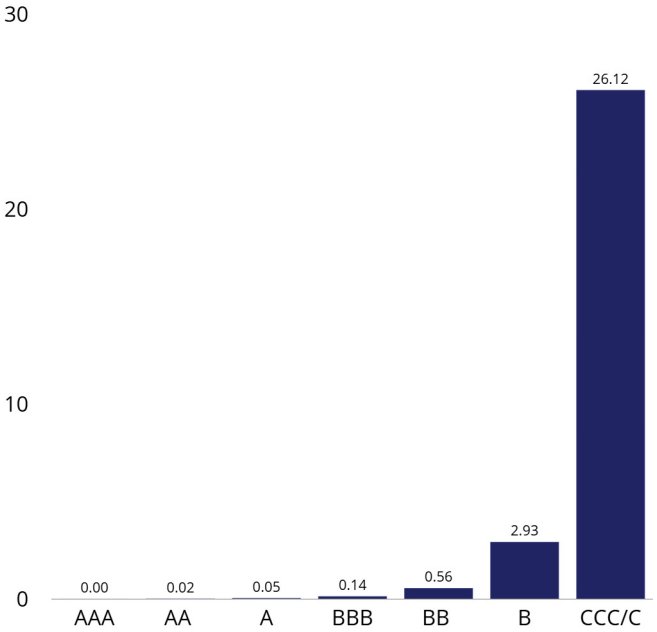
Figure 2-3. Share of Leveraged Loans and High-Yield Bonds Rated B or Riskier (percent)



Note: Data as of September 2025. The primary rating source is Moody's Ratings. Chart excludes loans and bonds that are not rated by S&P Global Ratings or Moody's Ratings.

Sources: PitchBook LCD, Office of Financial Research.

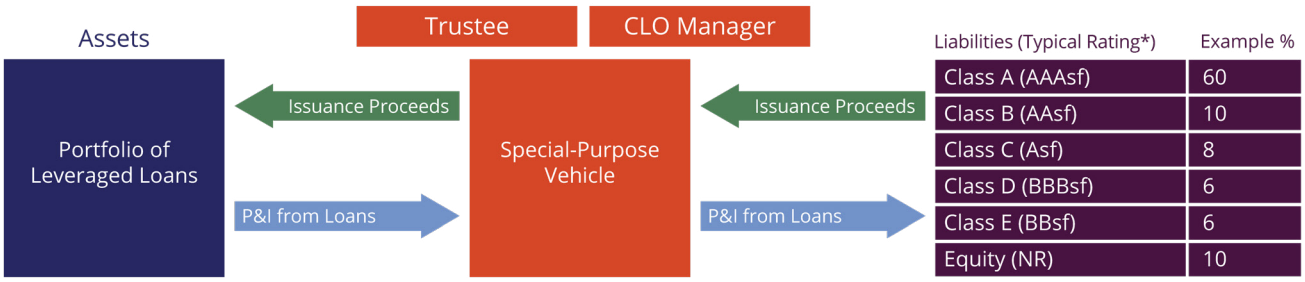
Figure 2-4. Weighted Average Annual Default Rate Since 1981 by Rating (percent)



Note: Data as of December 2024.

Sources: S&P Global Ratings, Office of Financial Research.

Figure 2-5. Structure of an Arbitrage CLO Transaction



Note: The CLO manager typically contributes a portion of the equity. *The sf is Fitch's signal that a letter rating is for a structured finance instrument. Moody's and S&P use (sf).

Source: Office of Financial Research.

a securitization and investors' perceptions of its risks. In these cases, investors may not fully understand the securitization's underlying risks or how market conditions can affect the securitization. This occurred leading up to 2007-08 for certain types of residential mortgage-backed and asset-backed securitizations, particularly those holding subprime mortgages, and certain types of collateralized debt obligations (CDOs). Such misperceptions may arise because key features of the underlying assets change or are misunderstood (for example, mortgage default risk) or because the securitization's structural features are not correctly appraised. Historically, such misperceptions have been rare and usually associated with new types of securitizations. No obvious example exists for a large volume of securitizations outstanding as of the writing of this report, but misperceptions tend to remain unrecognized until trouble surfaces.

Some securitizations have additional protections from credit losses. Mortgage-backed securitizations with pools of mortgage loans purchased by Fannie Mae or Freddie Mac, for example, typically have very little credit risk because the agencies guarantee the payment of principal and interest on their mortgage-backed securities (MBS). Investors bear prepayment risk, which can hasten the return of principal to investors. The securitization's tranches distribute that risk.

Commercial Real Estate Debt

Commercial real estate (CRE) debt plays a vital role in supporting economic activity by financing the development, maintenance, and expansion of income-producing properties, such as office buildings, retail centers, industrial facilities, and multifamily housing. This lending fuels job creation across construction, property management, and related services while also enabling businesses to support productivity and growth.

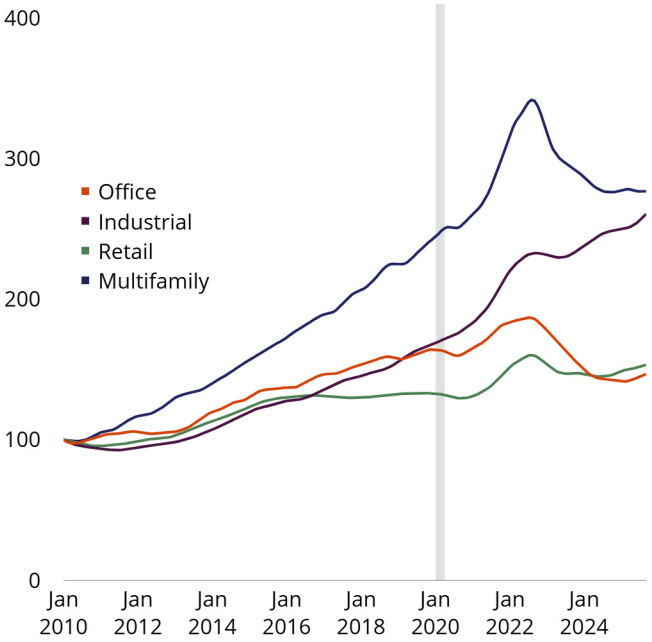
As of Q1 2025, the amount of commercial real estate debt outstanding was $5.3 trillion.[4] It is held by many types of financial institutions, including banks and thrifts, insurance companies, commercial mortgage-backed securities (CMBS) vehicles, and others. Following the COVID-19 pandemic, financial system participants were concerned that losses on CRE loans might be large, particularly for loans secured by office buildings. More widespread work-from-home practices reduced the demand for office space and associated rental income. Over the past year, it has become clearer that losses sufficient to cause financial instability are unlikely because CRE office debt conditions are stabilizing.

Developments in CRE property prices and mortgage balances are key to understanding CRE risks. Mortgages are collateralized by physical real estate, and the value of the collateral affects borrower incentives to repay. Therefore, an important indicator of CRE default risk is the loan-to-value (LTV) ratio. This ratio is the outstanding

mortgage balance divided by the current market value of the property and is a measure of leverage. Underwater mortgages, for which the outstanding balance is greater than the value of the property, are at particularly high risk of default.

CRE price appreciation has varied by property type and reflects the supply and demand for space of each type. From August 2020 to August 2025, industrial property prices rose about 47%, retail property prices rose about 18%, and office property prices fell about 8% (**Figure 2-6**).[5] Average office prices increased in 2021-22 and then declined through early 2024. Since, they have been flat at a value similar to that in 2018.

Figure 2-6. Commercial Real Estate Price Trends (indexes)



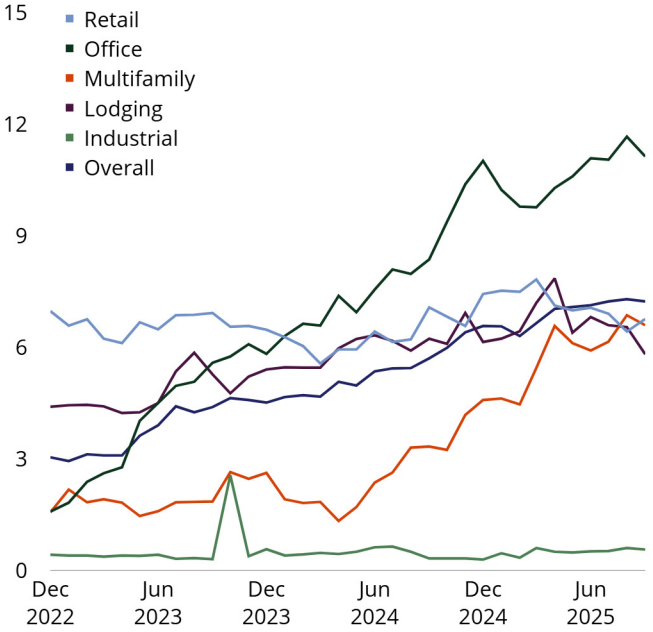
Note: Data as of August 2025. Shaded area is U.S. recession. December 31, 2009 = 100 for all indexes.

Sources: MSCI Real Capital Analytics, National Bureau of Economic Research, obtained through Haver Analytics, Office of Financial Research.

The average price decline for office buildings was not large enough to cause the average mortgage to be underwater. However, prices of some large office buildings in some central business districts have fallen more. A substantial fraction of mortgages on such buildings issued in the last dozen years are likely to be underwater and at high risk of delinquency.

Delinquency data by property type are available for CMBS. The overall CMBS delinquency rate was 7.2% in September 2025 (**Figure 2-7**). For office loans, the delinquency rate was 11.1%, a sharp year-over-year increase of 2.8 percentage points and far higher than before 2020. Recently, delinquency rates have been fairly stable for other property types. CMBS tend to own mortgages on large properties and blanket mortgages that finance multiple properties, which, in the case of office buildings, are likely to be large buildings in central business districts, the most distressed type of CRE. However, holdings of CMBS liabilities are not concentrated and do not pose a material financial stability risk. As shown in the next chapter, delinquency rates on CRE loans held by banks have not risen much over the last two years. Mortgages on large central city office buildings are held mainly by large banks but are not a large share of their assets.

Figure 2-7. CMBS Delinquency Rates by Property Type (percent)



Note: Data as of September 2025. Loan delinquency defined as 30 days or more past due.

Sources: Trepp, Office of Financial Research.

Household Borrowing

Household debt supports economic growth by enabling consumers to make significant purchases, such as homes, vehicles, and education, by borrowing against future income. This access to credit boosts demand across key sectors, stimulates production and employment, and contributes to broader economic activity.

As of Q2 2025, U.S. households had about $19.7 trillion in debt outstanding.[6] About two-thirds of this debt is from residential mortgages, and the rest is a mix of auto loans, credit card debt, student loans, and other loan types. Rapid growth in household debt and leverage has been shown to be linked to the likelihood of financial crises.[7] However, the portion of household debt that has grown rapidly during the past five years, which are mostly mortgages to prime borrowers, presents little credit risk.

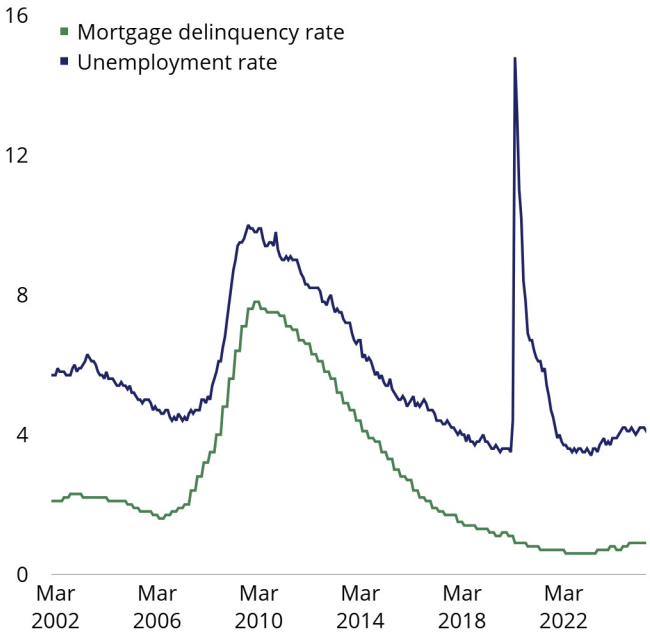
Moreover, the great majority of all household debt poses low credit risk. Credit risk is substantial mainly for the debt of subprime and student loan borrowers. Defaults for subprime borrowers have increased since 2020 and such borrowers' ability to make payments is vulnerable to income declines and increases in necessary household expenses.

Household Mortgage Debt

There is little indication of distress in residential mortgage debt. There are stronger underwriting standards and less widespread subprime mortgage lending than before the 2007-09 financial crisis.

As of Q2 2025, outstanding mortgage debt on 1- to 4-unit residences was about 44% of GDP, according to the Federal Reserve Financial Accounts. Only about 7% of outstanding mortgages as of Q2 2025 were to subprime borrowers. According to the Federal Housing Finance Agency (FHFA) National Mortgage Database, the delinquency rate on

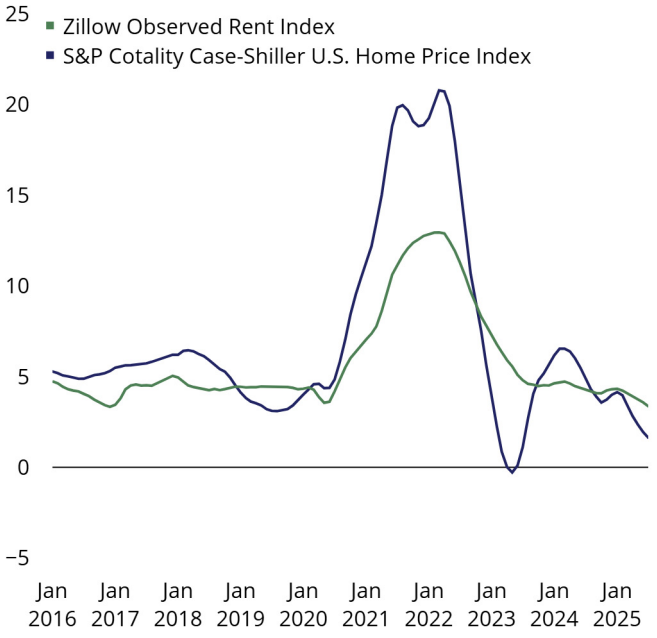
Figure 2-8. Mortgage Delinquency and Unemployment Rates (percent)



Note: Data as of June 2025. Delinquency rate is for loans that are 90+ days delinquent plus loans that are in foreclosure, bankruptcy, or deed in lieu.

Sources: Bureau of Labor Statistics, Federal Reserve Bank of St. Louis, Federal Housing Finance Agency, Office of Financial Research.

Figure 2-9. Home Price Appreciation and Rent Growth (percent)



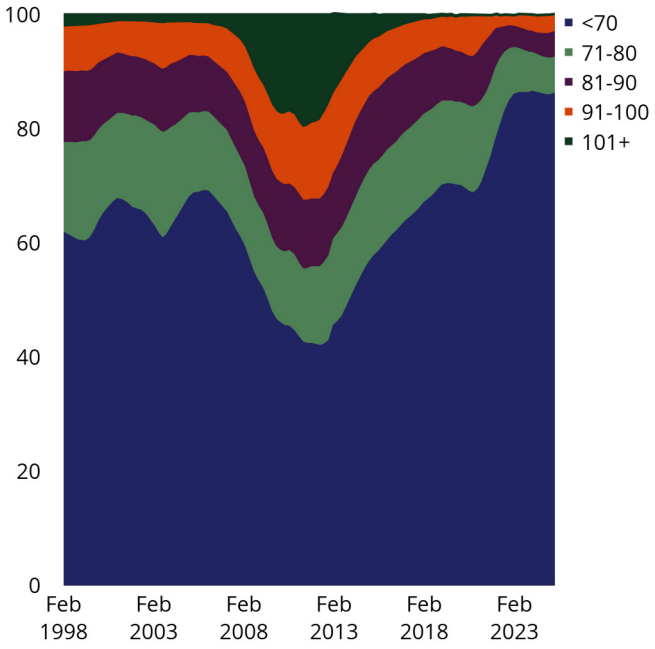
Note: Data as of July 2025. Values are year-over-year growth rates in the price indexes.

Sources: S&P Dow Jones Indices LLC, Federal Reserve Bank of St. Louis, Zillow, Office of Financial Research.

residential mortgages was 1.0%, well below the average of 3% since 2002, but up 20 basis points (bps) from the same period in 2024 (**Figure 2-8**). The ratio of households' mortgage debt service payments to disposable personal income was also below its long-run average.

Home prices grew at an average annual rate of 13% from 2020-22 and then decelerated sharply, appreciating 1.9% from July 2024 through June 2025. Higher mortgage rates and reduced affordability contributed to the change. For the past year, home price growth rates have been below rental rate growth rates (**Figure 2-9**), and home prices have fallen in a few states. If price declines continue, mortgages originated at high prices might be more likely to become distressed in the future, but currently, most homeowners have substantial equity. More than 80% of active loans had a current mark-to-market LTV ratio of less than 70% as of Q1 2025 (**Figure 2-10**).

Figure 2-10. Share of Mortgages by Current Mark-to-Market LTV (percent)



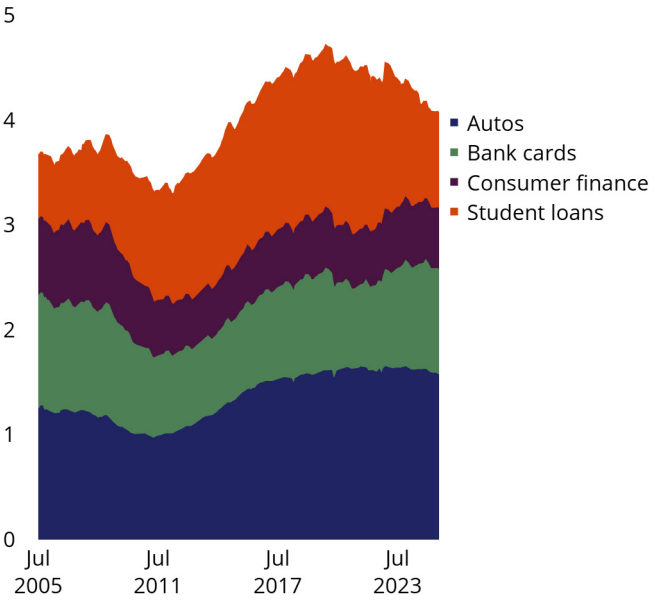
Note: Data as of June 2025 from FHFA National Mortgage Database. LTV shares are calculated for all active loans.

Sources: Federal Housing Finance Agency, Office of Financial Research.

Nonmortgage Household Borrowing

Households have nonmortgage debt in the form of auto loans, student loans, credit card debts, and other consumer loans. According to data from Equifax, about $4 trillion of this type of debt was outstanding in July 2025 (**Figure 2-11**). Vulnerabilities associated with nonmortgage consumer debt are stable to slightly declining overall because of declining balances for prime borrowers. However, the debt of subprime borrowers with credit scores less than 620 has increased.

Figure 2-11. Aggregate Nonhousing Consumer Debt ($ trillions)



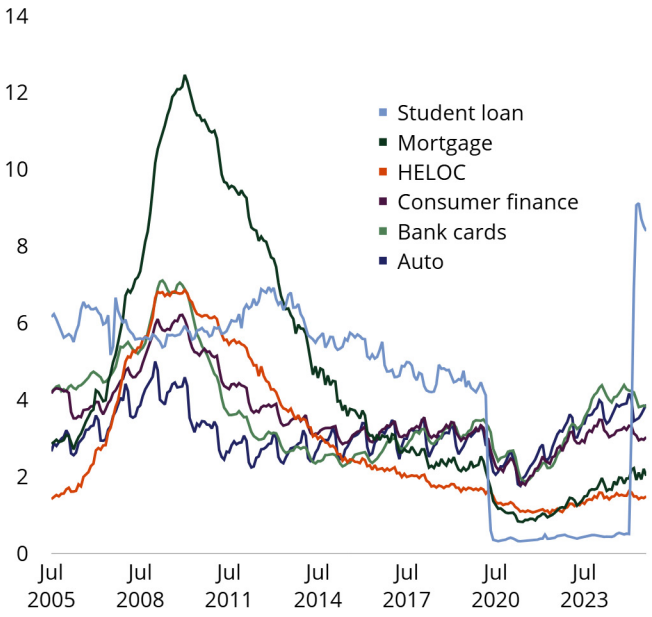
Note: Data as of August 2025. Amounts are adjusted for inflation using the August 2025 Consumer Price Index value.

Sources: Equifax Information Services LLC, Bureau of Labor Statistics, obtained through Federal Reserve Bank of St. Louis, Office of Financial Research.

From January 2025 through August 2025, loan balances increased by 0.6% in nominal terms but declined by 1.3% in real terms. Delinquencies on consumer loans have flattened and shown some signs of decreasing over the past year, although the decrease for student loans was small compared to the recent spike (**Figure 2-12**).

Large increases in home prices during the past five years and the low interest rate environment that ended in 2022 provided prime households

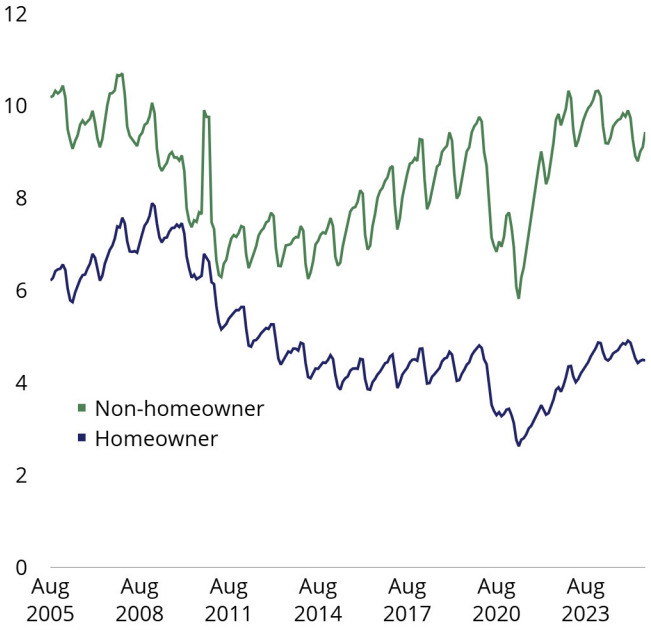
Figure 2-12. Delinquency Rate by Debt Product Type (percent)



Note: Data as of August 2025. Delinquency rates are the share of aggregate consumer debt balances that are 30 or more days past due. HELOC = Home Equity Line Of Credit.

Sources: Equifax Information Services LLC, Office of Financial Research.

Figure 2-13. Nonhousing Delinquency Rate by Homeownership Status (percent)



Note: Data as of August 2025. Homeowners are defined as consumers who currently or previously had a mortgage, and non-homeowners are defined as consumers who have never had a mortgage. The nonhousing delinquency rate is the share of consumers who are 30 or more days past due on a bank card, auto, or consumer finance loan. Student loans, mortgages, and home equity lines of credit are excluded.

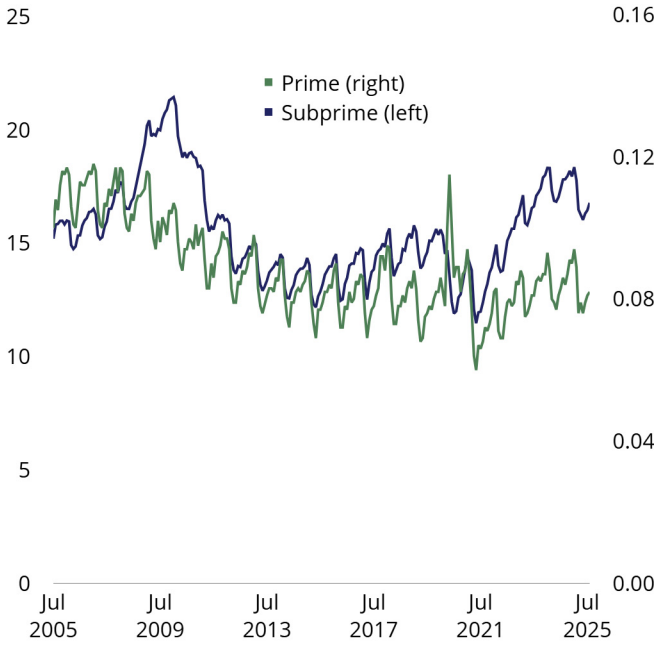
Sources: Equifax Information Services LLC, Office of Financial Research.

with a reserve of home equity and lower mortgage payments. At 4.5%, the 30-day delinquency rate on nonhousing debt among homeowners is less than half the 9.4% rate among non-homeowners, which are measured as consumers who have never been mortgage borrowers (**Figure 2-13**). A large shock to incomes or credit availability would be needed before the provision of credit to most prime households that are homeowners would become degraded.

Household debt owed by subprime borrowers is more likely to become nonperforming than prime debt. Subprime borrowers' ability to repay debt is more vulnerable to declines in income because they typically have smaller savings and higher debt payments as a share of their incomes. Their debt represents about 23% of all nonhousing debt, according to Equifax. For the 12 months through May 2025, subprime balances grew 3.7% in real terms, which are adjusted for inflation using the consumer price index from the Bureau of Labor Statistics, while prime households' balances contracted 6.4%. Delinquency rates for credit cards, autos, and other consumer loans differ for prime and subprime households. Overall, rates increased during the past two years but decreased during Q1 2025. Prime households' delinquency rates remain near zero (**Figure 2-14**). For auto and credit card debt, subprime delinquency rates now exceed levels before the COVID-19 pandemic.

Student loans have become the most distressed form of household debt during 2025. The share of outstanding student loan balances reported as delinquent spiked to record highs above 9% after nearly five years of historically low delinquencies. The low delinquencies were due to forbearance policies during the COVID-19 pandemic. The pause on federal student loan payments ended in late 2023, and borrowers were given a 12-month "on-ramp" period that insulated them from negative reporting in their credit records. Credit reporting for student loan payments resumed in late 2024,

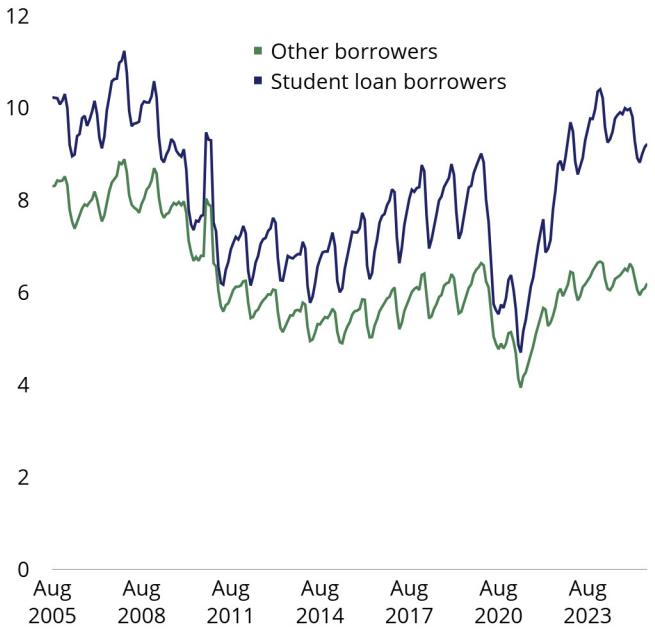
Figure 2-14. Nonhousing Delinquency Rate by Credit Score (percent)



Note: Data as of August 2025. The nonhousing delinquency rate is the share of total debt balances on bank cards, autos, and consumer finance loans that are 30 or more days past due. Student loans, mortgages, and home equity lines of credit are excluded. Subprime consumers have credit scores below 620, and prime consumers have credit scores of 660 or greater.

Sources: Equifax Information Services LLC, Office of Financial Research.

Figure 2-15. Nonhousing Delinquency Rate by Student Loan Borrowing (percent)



Note: Data as of August 2025. The nonhousing delinquency rate is the share of consumers who are 30 or more days past due on a bank card, auto, or consumer finance loan. Student loans, mortgages, and home equity lines of credit are excluded.

Sources: Equifax Information Services LLC, Office of Financial Research.

and delinquencies began to rise 90 days later in February 2025.

Since February 2025, over 9 million consumers, or more than 20% of all student loan borrowers, have had a new student loan delinquency. About 6 million of these student loan borrowers remained delinquent as of August 2025, according to Equifax. These newly delinquent borrowers have seen sharp declines in credit scores, and some may eventually face wage garnishments that may limit the liquidity of these households and make it more difficult to remain current on other credit accounts. Student loan borrowers tend to have higher delinquency rates on other nonhousing debt compared to those without student loans, but their aggregate nonhousing delinquency rates have declined since the beginning of 2025 (**Figure 2-15**).

3. Financial Institutions

Financial institutions provide a wide array of financial services to the economy. They support economic activity and growth with a variety of functions that include making credit available to businesses and households, facilitating payments, making markets for financial instruments, and providing insurance and asset management services. Many financial institutions are conglomerates that own several types of financial institutions discussed in this chapter. Some conglomerates are categorized as asset managers while others are insurance companies or banks.

An inability of one or more financial institutions, especially large ones, to provide financial services can disrupt financial stability directly or by causing stress at other financial institutions. Such disruptions are rare. When they do occur, they can have tangible consequences for households and businesses across the real economy. The financial vulnerabilities that are usually associated with such impairments include excess leverage (insufficient capital), lack of access to capital markets or asset illiquidity (the inability to issue liabilities or sell assets quickly), or elevated portfolio risk.

Vulnerabilities differ across and within categories of financial institutions, reflecting distinct business models and risk profiles. Currently, however, these vulnerabilities remain modest overall.

Banks

Banking organizations provide many financial services. For example, they supply credit to the economy, supporting economic activity and growth. Their deposits serve as cash-like instruments and short-term investments for households and many businesses. They provide, for example, brokerage and investment banking, payment services, and asset management.

Banks fund their assets mostly with short- to medium-term liabilities. Such liabilities tend to be rolled over and, thus, are generally a stable funding source. However, in some situations, liabilities can run off quickly and endanger a bank's ability to operate. Banks also bear significant amounts of credit and market risk and are financed with less equity than some other types of financial institution, such as private credit funds. Thus, banking system stress is typically triggered by illiquidity and/or threats to solvency. The latter are a combination of inadequate equity capital and large balance sheet losses. Currently, these vulnerabilities appear modest because credit risk, market risk, and leverage are not unusually high.

Liquidity

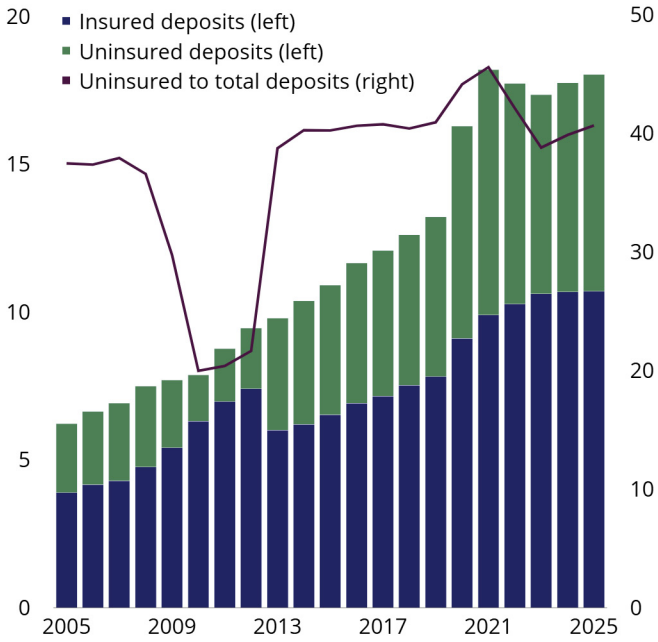
Overreliance on uninsured deposits is an important source of bank funding risk. Banks can be vulnerable to rapid withdrawals if holders of uninsured deposits fear that they may suffer losses if their bank fails. Most uninsured deposits are in amounts exceeding the Federal Deposit Insurance Corporation (FDIC) insurance coverage limit of $250,000.[8]

These events do not happen frequently. A recent example is the banking turmoil that occurred in early 2023 that involved large withdrawals of deposits at Silicon Valley Bank and other mid-sized banks. This event was followed by a modest fall in total banking system deposits, which have since recovered (**Figure 3-1**). The ratio of estimated uninsured deposits to total deposits has fluctuated moderately over the past 12 years, but that ratio varies widely across individual banks. A bank can prepare for large withdrawals of deposits by posting sufficient collateral at backstop wholesale lenders like the Federal Reserve and Federal Home Loan Banks (FHLBs).

Capital

Sufficient equity capital is a key resource for preserving bank solvency. One measure of bank capital, the aggregate equity-to-asset ratio for all insured institutions, was 10.1% at the end of Q2 2025, down from the peak of 11.3% in 2019 but still above pre-2007 levels, according to the FDIC Quarterly Banking Profile Statistics at a Glance. Federal Reserve stress tests assess solvency-related risks borne by large banks relative to their capital by running severe scenarios that reduce capital by imposing large losses. The 2025 results show that all tested banks would remain solvent in a scenario with severe credit losses and large losses

Figure 3-1. Uninsured and Insured Deposits and Ratio of Uninsured to Total Deposits ($ trillions, percent)



Note: Data at year-end except 2025. Data are for all FDIC-insured financial institutions from the FDIC Quarterly Banking Profile Statistics at a Glance as of June 2025. Uninsured and insured deposits are estimates.

Sources: Federal Deposit Insurance Corporation, Office of Financial Research.

in trading books. In addition, the capital of each participating bank would remain above regulatory minimums. For example, for all participating banks, the average Tier 1 leverage ratio would fall from 7.7% to 6.7%, which is well above the 4% regulatory minimum value for the ratio.[9]

Interest Rate Risk

Following the bank distress in early 2023, public attention focused on the large number of banks with unrealized losses on their securities holdings. Most of these bank holdings were (and remain) fixed-rate securities—the values of which fell when interest rates rose in 2022-23. Large unrealized securities losses remain on banks' books today. However, the effect of changes in interest rates on bank solvency requires reviewing both bank liabilities and assets. As interest rates increase, if the value of deposits increases and the value of fixed-rate assets falls, there may be little impact on bank solvency.

Suppose a bank has 10% of its assets in 10-year Treasury bonds and the remaining 90% in floating-rate investments and loans. If interest rates rise, market prices of its Treasury bonds will fall, and the bonds will now provide below market interest income. But if only about 10% of depositors do not demand an increased interest rate on their accounts to stay with the bank, then the market value of the deposits increases in an amount similar to the fall in value of fixed-rate assets. Bank solvency and the bank's net interest income will not change materially. The OFR examined changes in individual banks' net interest income during 2022-23 (the period of rising interest rates) and found that few banks experienced material changes in net interest income.[10] That is, the net effect of the increase in interest rates on bank solvency will be much smaller than the effect on bond portfolio market value.

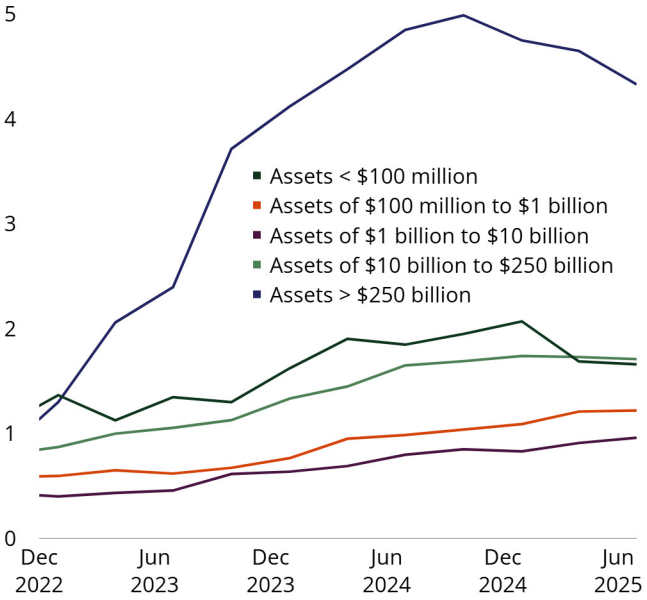
Credit Risk

In 2025, most bank loans performed well. In recent years, nonperforming loans were largest for CRE loans secured by large office buildings in central business districts. Large banks hold most of the banking system's loans against large central city office buildings and, thus, have the highest rate of noncurrent CRE loans (**Figure 3-2**). CRE loans are a modest share of large banks' assets and do not threaten such banks' solvency. In contrast, small and mid-sized banks have CRE loan books that are a large fraction of their total loans, but they finance few large central city office buildings.[11] Also, their noncurrent loan rates have risen only a little. Moreover, bank regulatory agencies have been especially attentive to CRE risks in recent years.

Lending to Nonbank Financial Institutions

Bank lending to nonbank financial institutions (NBFIs) involves direct exposures among financial institutions, raising the possibility of contagion of distress at NBFIs to banks and the broader financial system. As of 2024, the largest NBFI recipients of bank funding were broker-dealers followed by finance companies, asset-backed securities (ABS) vehicles, and money market funds (MMF). Aggregate bank funded exposures to NBFIs represented about 7% of total banking system assets, but exposures to any one type of NBFI are

Figure 3-2. Noncurrent Rates for CRE Loan Portfolios by Bank Size (percent)



Note: Data as of June 2025.

Sources: Federal Deposit Insurance Corporation, Office of Financial Research.

modest in size relative to assets, especially given the low risk of such exposures.[12] For example, MMFs use lines of credit with banks to satisfy some redemption requests, and these lines are secured by MMFs' high-quality, short-term asset portfolios.[13]

Insurance Companies

Insurance companies, especially large insurance companies, are financial conglomerates that provide both economically important insurance services and asset management services. Their investment activities provide direct and indirect funding to large and small businesses, thereby supporting economic activity and growth. Insurers' cash and invested assets totaled almost $9 trillion at the end of 2024.[14] Their business models involve careful management of insurance claim risk, duration matching of assets and liabilities, and management of liquidity and solvency risk. Overall, financial stability vulnerabilities associated with insurance companies are modest and little changed over the past year; yet, continued monitoring of such vulnerabilities is worthwhile.

Life Insurers

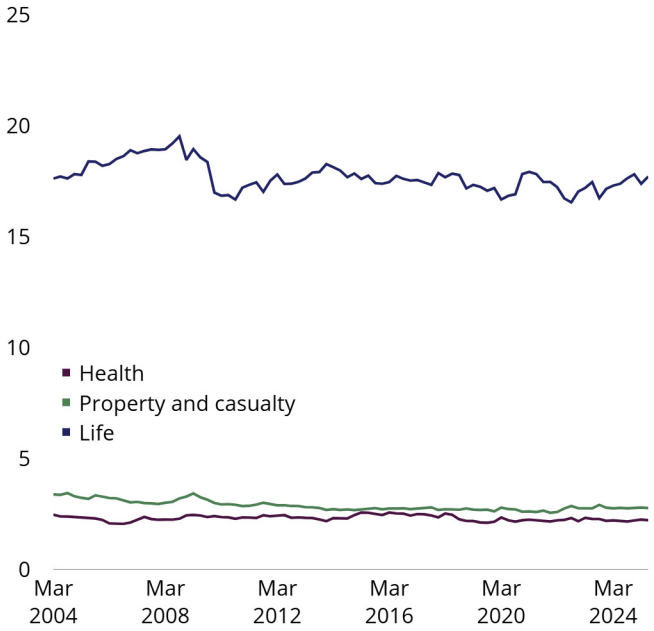
Life insurance companies offer annuities and a variety of other products in addition to life insurance, such as long-term care and disability insurance. The financial services they provide are important to both households and businesses as they assume obligations from corporate pension plan sponsors, for example.

Life insurers are exposed to interest rate and credit risks that affect their investment returns, losses associated with larger than expected claims on their policies, and investment returns that do not support the payments promised on annuities and other products. They actively manage these risks. Although holders of life insurers' liabilities do not typically view them as a source of liquidity, life insurers have occasionally experienced a withdrawal of liabilities. Insurers utilize surrender charges, which are fees for withdrawing money before maturity, and other withdrawal penalties that limit incentives to withdraw. These incentives may be insufficient when concerns about an insurance company's soundness are acute.

Measured as the ratio of general account assets to capital and surplus, leverage at life insurers has changed little during the past 20 years. Their leverage remains consistently higher than that of property and casualty (P&C) or health insurers (**Figure 3-3**) and higher than that of banks. Capital and surplus are similar to insurer equity capital, and data on policyholder surplus are available for all insurers, including mutual insurance companies, which is not the case for some other measures of equity capital.

Like banks, life insurers' insolvency risk depends on the risk embedded in their portfolios and their leverage. Portfolio credit risk is smaller than at banks but has been increasing for more than a decade. The share of bonds in life insurers' portfolios fell, and the shares of mortgages and alternative investments rose (**Figure 3-4**). The mix of assets within each category matters as well. Among bond holdings, the share of high-yield bonds decreased to 4.2%, but the share of medium quality and riskier commercial mortgages rose to 10.5%, almost doubling the share in 2018.[15]

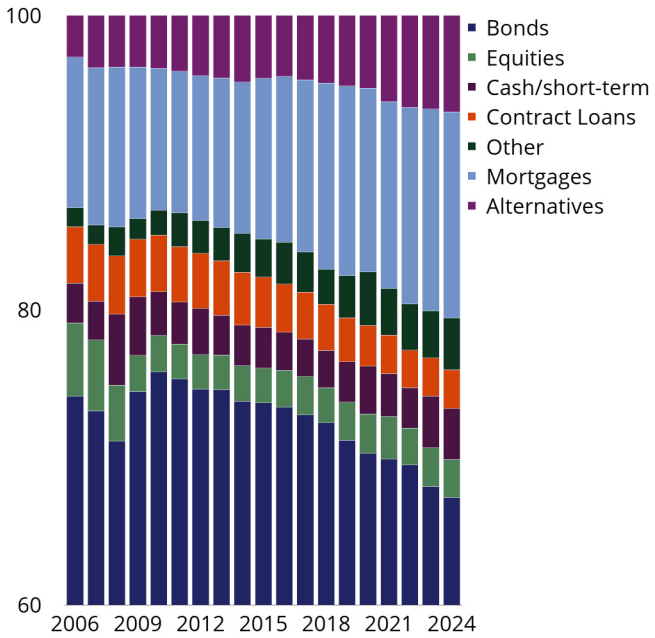
Figure 3-3. U.S. Insurers' Leverage (ratio)



Note: Quarterly data as of June 2025. Leverage is the ratio of assets to policyholder surplus, which is the difference between an insurer's assets and its liabilities.

Source: S&P Capital IQ Pro, Office of Financial Research.

Figure 3-4. Life Insurers' Investment Portfolios (percent)



Note: Data as of December 2024.

Sources: S&P Capital IQ Pro, Office of Financial Research.

Property and Casualty Insurers

P&C insurers offer coverage that protects against financial loss or liability, including auto, home, property, and business liability insurance. They also provide specialized products tailored to the needs of specific industries and businesses. For households, this coverage helps safeguard financial well-being by mitigating the impact of unexpected events, such as accidents, natural disasters, and theft.

P&C insurers are vulnerable to insolvency from large-scale claims that exceed the insurers' claims paying ability, for example claims associated with wildfires that affect a sizable fraction of policyholders. Though the number and cost of such claims have grown, P&C insurers' ability to absorb the claims without impaired solvency is influenced by the premiums they charge, which have risen in lockstep.

Leverage (**Figure 3-3**) and portfolio risk are lower for P&C insurers than for life insurers and banks. P&C insurers' investment portfolios have shorter duration assets because policy terms are typically one year with annual renewals, and soaring claims can require liquidating assets.

Hedge Funds

Hedge funds are investment vehicles that pool capital from many sources and use a variety of strategies in search of investment returns. Though investments vary widely, the most common investments are in traded securities and derivatives. Hedge funds provide several benefits to financial markets. For example, they exploit arbitrage opportunities and so reduce price discrepancies across similar securities. They also support trading liquidity in capital markets.

The main vulnerability associated with hedge funds is not the potential for large portfolio losses but, rather, the possibility of abrupt pullbacks from markets. Portfolio losses are borne by sophisticated investors that are usually able to bear them. However, the departure of a large volume of hedge fund activity from one or more markets may create and/or add to market stress. Historically,

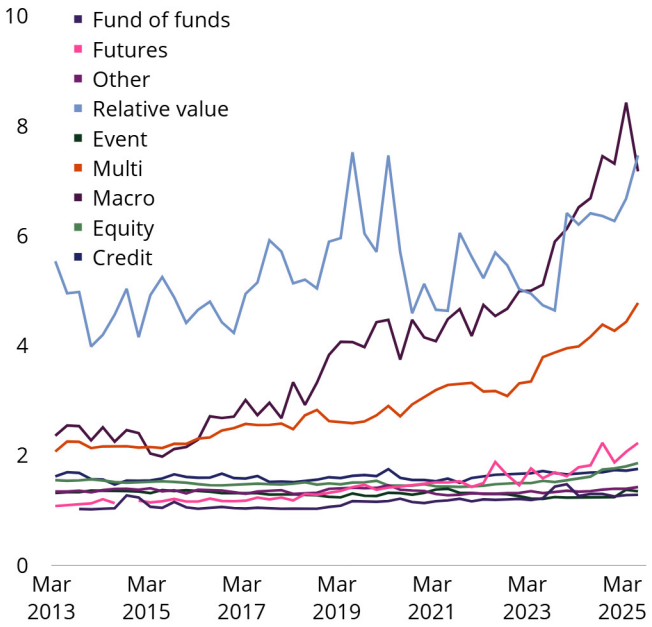
stress related to pullbacks has usually been short-lived. Pullbacks are often more intense at highly leveraged hedge funds because of larger margin calls during periods of increased volatility. Hedge fund leverage has risen over the past two years.

The OFR focuses on what the Securities and Exchange Commission (SEC) defines as Qualifying Hedge Funds (QHFs), which are generally those with over $500 million in assets. These funds also tend to be the largest borrowers and those with the highest degree of interconnectedness with bank counterparties. QHFs are the only hedge funds that provide quarterly disclosures to the SEC.

As of June 2025, QHFs held about $11.8 trillion in total gross assets and $4.5 trillion in net assets, according to the OFR Hedge Fund Monitor, which are gross assets less outstanding debt and accrued but unpaid liabilities. This means that, on average, QHFs had a leverage ratio of about 2.6 times (meaning the ratio of gross assets to net assets is 2.6:1). Leverage was much higher for hedge funds following certain investment strategies, especially macro, multi, and relative value funds. According to the OFR Hedge Fund Monitor, macro and relative value funds had a net asset-weighted average leverage ratio of over 6:1 (**Figure 3-5**).[16]

Most hedge funds obtain financing from securities dealers and bank affiliates that provide repurchase agreement (repo) and prime brokerage loans. From Q4 2022 through Q2 2025, hedge fund repo borrowing surged 154% to $3.1 trillion. During the same period, prime brokerage borrowing increased 83% to $3 trillion (**Figure 3-6**), according to the OFR Hedge Fund Monitor. Both repo and prime brokerage arrangements typically require the borrower to post more collateral as market volatility increases and the value of the hedge fund's positions falls. If a hedge fund experiences material losses or market volatility increases, the fund may face collateral calls or be bound by risk limits that force it to rapidly unwind large, leveraged positions. Such unwinding can potentially increase market volatility and the risk of fire sales.

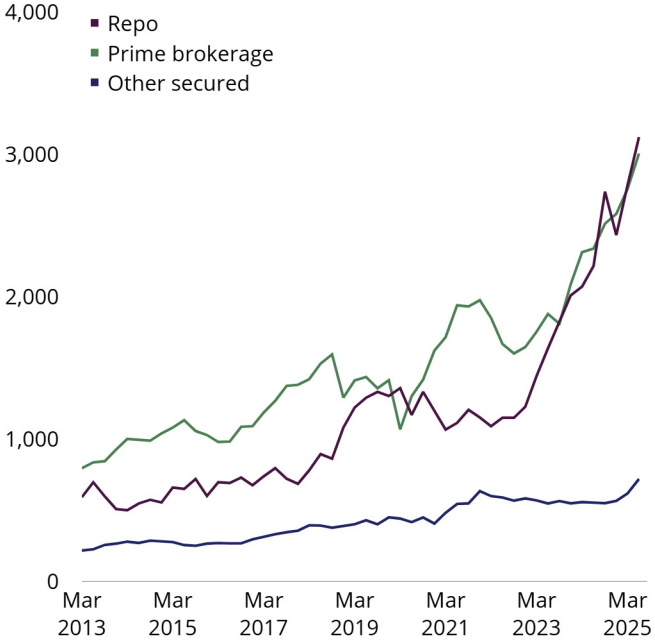
Figure 3-5. Leverage by Strategy (ratio)



Note: Data as of June 2025. Leverage is the average ratio of gross assets to net assets weighted by net assets. Data reflect only QHFs.

Sources: Securities and Exchange Commission Form PF questions 8, 9, 20, and 31; obtained through OFR Hedge Fund Monitor; Office of Financial Research.

Figure 3-6. Hedge Fund Borrowing ($ billions)



Note: Data as of June 2025. Data reflect only QHFs.

Sources: Securities and Exchange Commission, obtained through OFR Hedge Fund Monitor, Office of Financial Research.

Some hedge funds have large positions in trades that affect Treasury market conditions. For the year ending Q1 2025, hedge funds' gross exposure to Treasuries, Treasury futures, and other derivatives increased by $1 trillion to $4.1 trillion, according to the OFR Hedge Fund Monitor.[17] Hedge funds may rapidly reduce their positions in Treasuries when asset prices change sharply, potentially decreasing market liquidity during stressed periods (see **Treasury Market Volatility in April 2025**).

Private Lenders

Private lenders provide a large and growing volume of financing for real economy businesses that supports economic activity and growth. Financial stability vulnerabilities associated with private credit appear low because private lenders are not very leveraged, and most have financing that is locked up for long periods.

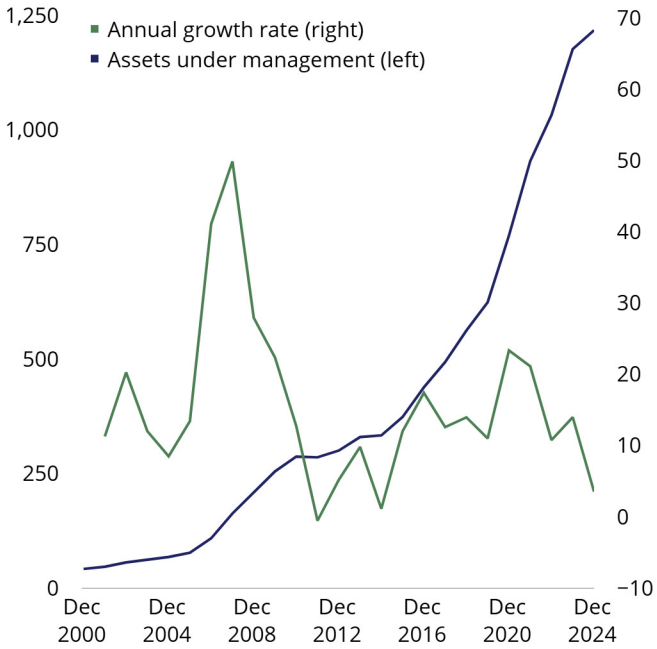
There are different types of private lenders: traditional private credit funds, which are closed-end funds that provide debt financing to real economy entities; small numbers of "evergreen" and other private credit funds that provide investors with a limited ability to withdraw; and business development companies (BDCs). Assets managed by U.S. private credit funds (not including BDCs) have grown particularly fast during the past decade (**Figure 3-7**).

The business model of private lenders involves obtaining mostly long-term, locked-up financing from wholesale sources, such as from limited-partner equity investors or bond issues. Private lenders originate mostly floating-rate loans to businesses that pose relatively high credit risk and/or that want some combination of rapid, confidential progress toward a loan agreement that has flexibility and customized loan terms. Such loan characteristics are generally associated with higher interest rate spreads. Information about spreads on loans made by private lenders is limited, but one source measures such spreads in 2023 at about 650 bps, more than 400 bps higher than the average spread of 225 bps on commercial and industrial business loans made by banks in 2023.[18]

Leverage of BDCs and private credit funds is much lower than bank leverage. All but the most extraordinarily large credit losses on private lenders' portfolios would be borne by their equity holders. The total amount of debt owed by private lenders is also modest relative to the aggregate size of the balance sheets of providers of such debt.

Taken together, these facts make it unlikely that distress at private lenders would transmit to the broader financial system.

Figure 3-7. Growth of the Private Credit Industry ($ billions, percent)



Note: Data as of December 2024. "Dry powder," or committed funds that are not yet drawn and invested, is included. Preqin backfills historical data when private lenders are added to their database.

Sources: Preqin, Office of Financial Research.

Mutual Funds and Exchange-Traded Funds

According to the Federal Reserve's Financial Accounts of the United States, U.S. registered investment company assets were almost $42 trillion at the end of June 2025, or nearly 28% of all financial sector assets. This includes about $23 trillion in open-end funds, excluding MMFs, and about $12 trillion in exchange-traded funds (ETFs). Mutual funds and ETFs provide household and business investors with cost-effective access

to a wide variety of investments and, in doing so, provide funding for businesses, aiding economic activity and growth.

The main vulnerability associated with open-end funds is the possibility that they will be forced to liquidate assets in a fire sale, which would increase asset price volatility and potentially disrupt the operation of securities markets. Open-end funds can invest in stocks, bonds, money market instruments, or other securities, as well as take on leverage, subject to SEC regulatory limitations established under the Investment Company Act. These funds allow daily redemptions while potentially holding assets that can take longer than one day to sell. Bond funds have the largest volume of assets that sometimes have limited secondary market liquidity.

Investors that remain in open-end funds tend to bear the costs of large redemptions. This feature creates a first-mover advantage, meaning an incentive for investors to redeem quickly if they fear other investors will redeem, which tends to occur during periods when asset market liquidity is impaired. A first-mover advantage is also created when funds first sell their more liquid assets to meet redemptions, leaving remaining investors with claims on a less liquid portfolio. First-mover incentives can trigger large outflows from funds and broader market disruptions particularly if there are fire sales by multiple funds within a given asset class.

This vulnerability of mutual funds is difficult to avoid without substantially reducing benefits. Fortunately, fire sales are rare, and the associated disruptions in asset prices are usually short-lived.

ETFs are pooled investment vehicles that hold a basket of securities and trade on exchanges. Typically, an ETF tracks the performance of the basket, benchmark, or index that defines it. Since ETF shares trade on exchanges, they offer continuous pricing unlike open-end mutual funds that only offer end-of-day pricing. Both open-end mutual funds and ETFs must have mechanisms to create and redeem shares in their investments as money flows in and out. In contrast to an open-end mutual fund that issues and redeems shares for the fund investor, the number of shares of an ETF does not change when market demand for the ETF increases or decreases. Share numbers change mainly when the ETF price diverges from the value of the underlying basket of securities. In such cases, an authorized participant exchanges securities or cash for ETF shares or vice versa. ETFs that exchange units for the underlying assets and vice versa do not confer a material first-mover advantage on early redeemers and, thus, pose few financial stability vulnerabilities.

4. Asset Markets

Smooth, efficient asset market functioning provides important support for economic activity and growth. Asset markets enable households to build wealth and manage financial risks by investing in instruments such as stocks, bonds, and real estate. For businesses, they provide access to capital for growth and innovation while offering tools to hedge against financial uncertainty.

Examples of financial services provided by asset markets are trading and price discovery. A breakdown in trading interferes with market participants' ability to rebalance their portfolios, as well as to obtain funding by originating and refinancing financial assets. It also impairs price discovery. Though impaired asset market functioning is rare, the quality of many financial activities and services is diminished if the quality of asset prices degrades because of nonfunctioning asset markets.

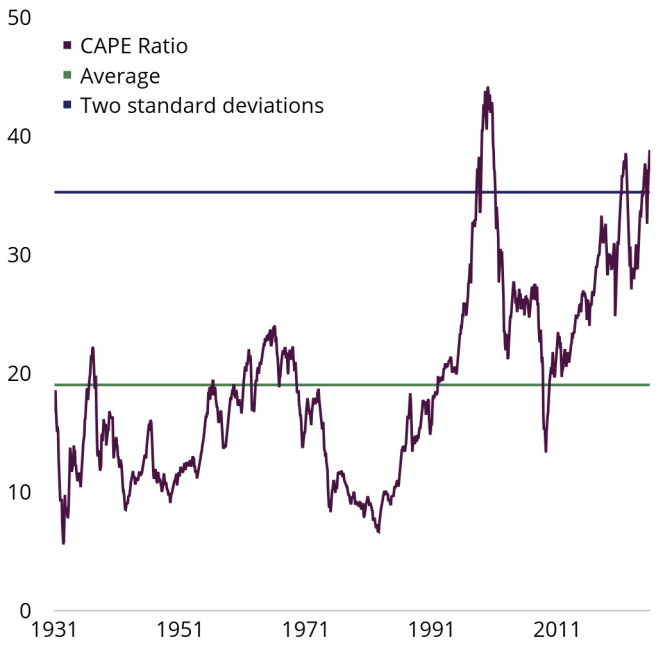
Equities

Equity markets provide essential benefits to the economy. They enable businesses to raise capital for growth and innovation while offering households a pathway to build wealth through equity ownership. Equity markets also promote transparency, liquidity, and efficient capital allocation, supporting long-term economic growth.

Approximately $66 trillion in publicly traded U.S. corporate stock was outstanding as of September 30, 2025, as measured by the market cap of New York Stock Exchange (NYSE) and NASDAQ stocks. Changes in equity prices are not themselves a threat to financial stability, but financial services associated with the equity market, such as financing portfolios of hedge funds and other financial institutions that hold large volumes of equities, may pose vulnerabilities related to price changes. The volume of debt-financed positions has risen during the last year but remains manageable.

Many equity valuation metrics are elevated compared to historical averages. For example, the cyclically adjusted price-to-earnings (CAPE) ratio for the S&P 500 index is at the 98th percentile of historical values (**Figure 4-1**).

Figure 4-1. Cyclically Adjusted Price-to-Earnings (CAPE) Ratio



Note: Data as of September 2025. The CAPE ratio is the S&P 500 index divided by trailing 10-year average inflation-adjusted earnings.

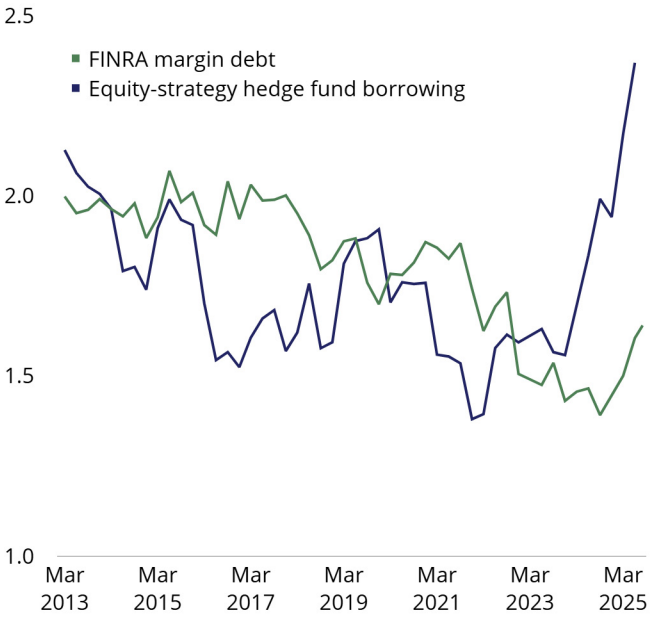
Sources: Obtained through Haver Analytics, Office of Financial Research.

The S&P 500 index increased by about 14% year-to-date through September 30, 2025, driven by robust earnings growth. However, in early April, the benchmark index decreased 19% from its February high due to heightened economic uncertainty at the time. The market reached a new all-time high in mid-September.

Large declines in equity prices can lead to increases in margin loan collateral requirements associated with leveraged positions, stressing some market participants. Margin debt outstanding, according to the Financial Industry Regulatory Authority (FINRA), exceeds $1 trillion, surpassing its prior peak in October 2021. From December 2024 through August, it rose 18%, outpacing the S&P 500 index's 9% year to date increase. However, margin debt as a share of the U.S. equity market capitalization was 1.64%, only slightly higher than its historical

average of 1.45%, according to FINRA. In contrast, the leverage of hedge funds that follow equity strategies is increasing rapidly and represents a larger share of the U.S. equity market capitalization than in the past 12 years (**Figure 4-2**).

Figure 4-2. Leverage in the U.S. Equity Market (percent of market capitalization)



Note: Data as of June 2025 for Form PF and August 2025 for FINRA margin debt. Hedge fund borrowing only reflects equity strategies and excludes other strategies. Equity strategy borrowing includes prime brokerage, repurchase agreement, and other secured. FINRA margin debt does not reflect all hedge fund borrowings and includes entitles that are not hedge funds (e.g., retail and long-only institutional investors).

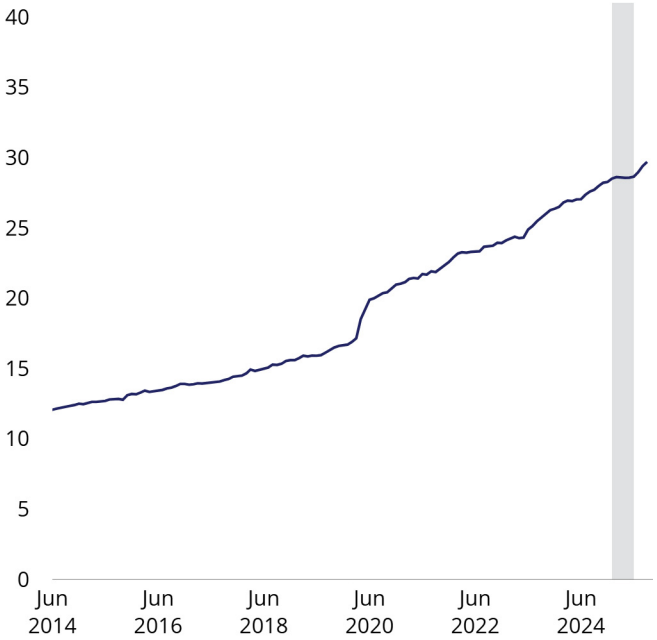
Sources: Financial Industry Regulatory Authority, Nasdaq, New York Stock Exchange, obtained through Haver Analytics, Securities and Exchange Commission, obtained through OFR Hedge Fund Monitor, Office of Financial Research.

Treasuries

The U.S. Treasury market is the world's largest, deepest, and most liquid government securities market (**Figure 4-3**). As a result, it plays a critical role in global finance, for example, by providing risk-free benchmarks that are used to price many other financial instruments.

Treasury securities are considered safe, liquid assets that are used for many purposes, such as for collateral. As a result, distress in this important market can be extremely disruptive to the global financial system.

Figure 4-3. U.S. Treasury Debt Outstanding ($ trillions)



Note: Data as of September 2025 and are for marketable debt held by the public. Shaded area represents the period when Treasury debt was at the debt ceiling.

Sources: U.S. Department of the Treasury, Office of Financial Research.

The debt ceiling represents a vulnerability for the Treasury market and financial markets more broadly. Raising or suspending the debt ceiling requires Congress to pass legislation and the President to sign it. A failure to raise or suspend the debt ceiling in a timely fashion could cause the Treasury General Account (TGA) cash balance to fall below a prudent level. The TGA is like a checking account for the federal government: If the balance falls too low, the risk is increased that there could be insufficient funds to meet all the government's obligations, including payments for interest on the debt, Social Security, Medicare, and military expenditures.

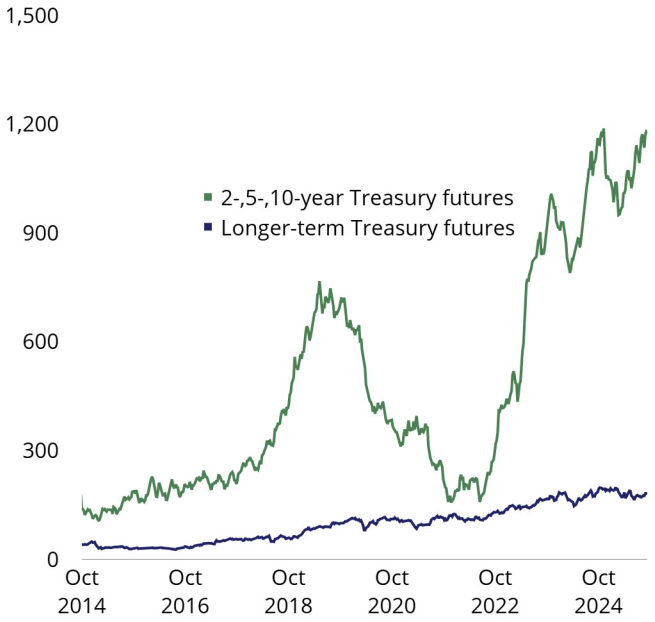
A debt ceiling cycle was recently completed. In January 2025, the previous suspension of the debt ceiling expired, and a new debt ceiling was established pursuant to the Fiscal Responsibility Act of 2023. Later that month, the level of outstanding Treasury debt reached the new debt ceiling, and Treasury had a limited ability to issue net additional debt. Accordingly, Treasury relied on

its cash balance and used extraordinary measures to make payments on federal obligations that included debt outstanding. This accounts for the flattening of debt outstanding in the first half of 2025 (**Figure 4-3**). With the increase in the ceiling enacted as part of the fiscal year (FY) 2025 budget reconciliation law, sometimes referred to as the One Big Beautiful Bill Act in July 2025, increased borrowing resumed, and the amount outstanding began to increase again.

The secondary market for Treasuries generally functioned smoothly during the first half of 2025 despite some market volatility in April when yields rapidly increased (see **Treasury Market Volatility in April 2025**). Unwinding of the Treasury cash-futures basis trade—an arbitrage strategy that keeps cash Treasury and futures prices closely aligned—does not appear to have been a material contributor. Available data do not support precise measurement of the basis trade. However, one indicator of basis-trade activity is the size of hedge funds' short positions in Treasury futures (**Figure 4-4**). These positions have declined only a small amount from their 2024 all-time highs.

Mandatory central clearing of certain Treasury secondary market transactions is set to begin at year-end 2026 for eligible cash Treasury trades and at month-end June 2027 for eligible Treasury repo transactions. Expanded central clearing can enhance Treasury market robustness. It will support more efficient use of collateral and reduce risks associated with the failure of a market participant to settle a large volume of its trades. Currently, the Fixed Income Clearing Corporation (FICC) operates the only central clearinghouse for cash Treasury securities, but others, such as the Chicago Mercantile Exchange (CME) Group and Intercontinental Exchange (ICE), are seeking to enter the business of centrally clearing Treasury securities.

Figure 4-4. Notional Value of Short Treasury Futures Positions at Hedge Funds ($ billions)



Note: Data as of September 2025. Only leveraged funds are included, which typically are hedge funds and various types of money managers, including registered commodity trading advisors, registered commodity pool operators, or unregistered funds identified by the Commodity Futures Trading Commission. The Ultra 10-year, 30-year, and Ultra 30-year are longer-term Treasury futures.

Sources: Commodity Futures Trading Commission, obtained through OFR Hedge Fund Monitor, Office of Financial Research.

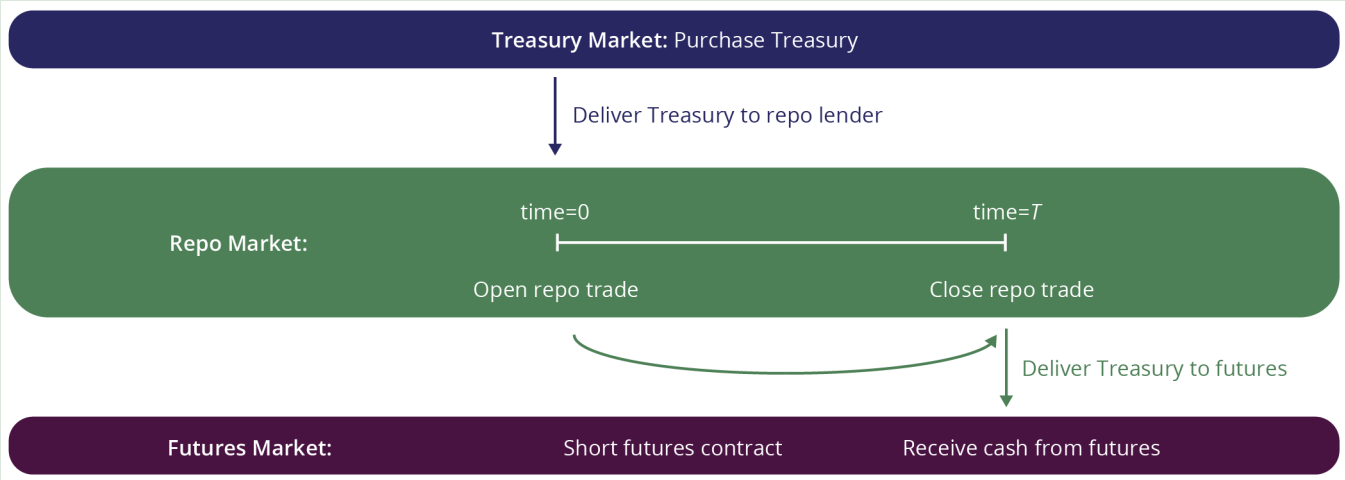
Treasury Market Volatility in April 2025

Treasury markets experienced heightened volatility during April 2025 but operated without material disruption. During stressed situations, investors tend to sell riskier assets and buy safer assets, such as Treasuries, in a flight to quality, causing Treasury prices to increase and yields to decline. While this occurred initially in April 2025, it reversed somewhat abruptly. Financial market volatility surged during the first weeks of April, and constant-maturity 10-year Treasury yields increased 47 bps between April 4 and April 11, according to the Federal Reserve Bank of St. Louis' FRED database. During March 2020, Treasury markets also functioned during another volatility event that saw surging long-end yields (from 54 bps on March 9 to 119 bps on March 18) in part because of an unwinding by hedge funds of the Treasury cash-futures basis trade.[19] However, a material unwind of this trade did not occur in April 2025, and the causes of amplified volatility in yields are not very clear. This box discusses some of the drivers that were cited at the time, none of which are strongly supported by the data.

Not the Cash-Futures Basis Trade

Hedge funds are active Treasury market participants. According to the OFR Hedge Fund Monitor, there was about $2.3 trillion in long exposure as of March 2025—some of which is used in relative-value trades like the cash-futures basis trade. This trade arbitrages price differences between Treasury securities and futures contracts. Hedge funds finance the Treasury purchases through the repo market, and some use overnight repo and continuously roll over this funding until the Treasury futures delivery date (**Figure 4-A**). This activity acts as a form of liquidity provision in the futures market and can aid Treasury market liquidity by connecting Treasury futures and cash securities market segments.

Figure 4-A. Cash-Futures Basis Trade Diagram



Note: Arrows show flow of securities. Cash, not shown, moves in the opposite direction.

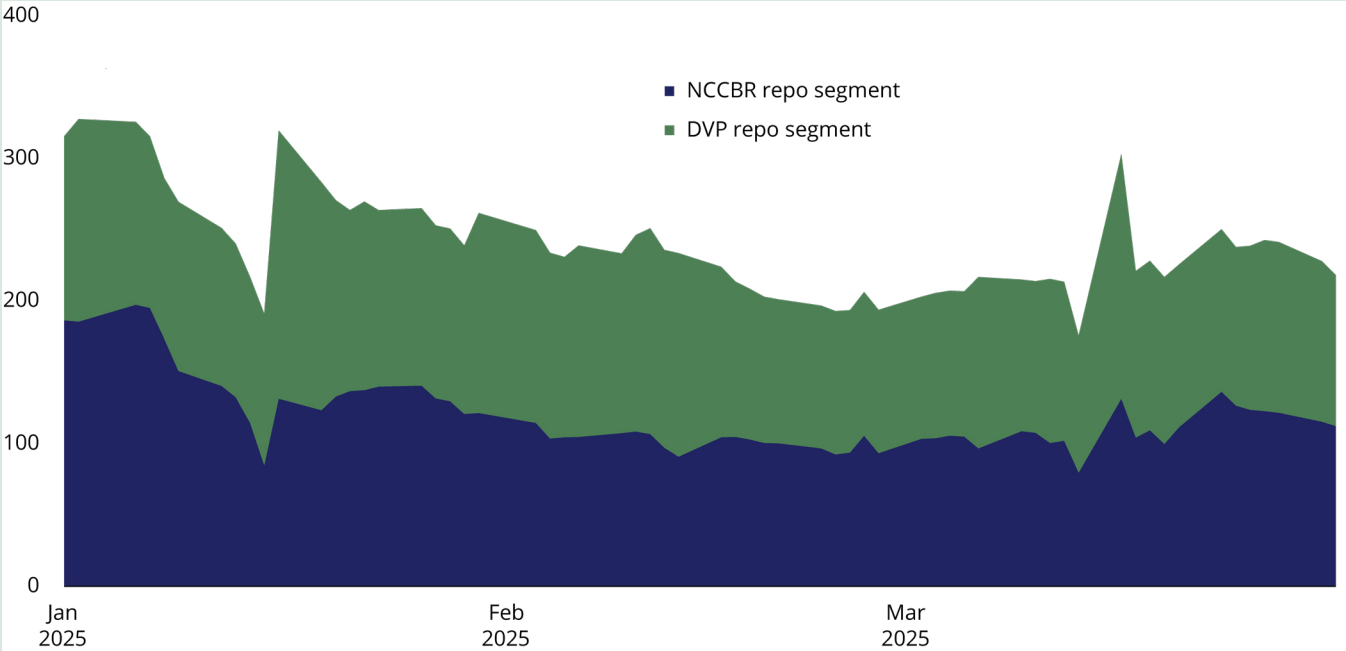
Source: Office of Financial Research

Hedge funds often hold levered positions—unwinding these positions can cause significant selling pressure and volatility in Treasury markets. During the week starting April 7, yields on 10-year Treasuries increased, and corresponding prices of Treasury futures decreased by a commensurate amount. Despite speculation that the increases were related to a basis trade unwind, repo borrowing against the Treasuries usually delivered at futures contract expiration did not decline, which is inconsistent with a material unwind. According to the OFR's NCCBR data collection, hedge fund repo borrowing with Treasuries as collateral was at least $1.4 trillion with no large declines in April or May. The cheapest to deliver (CTD) bond is the most economical bond to deliver to satisfy an expiring futures contract, and there was a rise in the use of CTD 10-year Treasuries as repo collateral. This is the opposite of what would happen if the basis trade unwound (**Figure 4-B**). Hedge funds' repo borrowing rates rose slightly but stayed within the normal range.

Foreign Holders Did Not Sell Many Treasuries

Foreign investors hold Treasuries in part because they are a safe, liquid investment. While foreign investors did sell a small amount of Treasuries on net during April 2025, such sales were not large enough to materially move Treasury yields (**Figure 4-C**), and holdings remained near all-time highs. Foreign purchases of Treasuries during February and March were larger than net sales during April, and, yet, yields did not move significantly during those months.

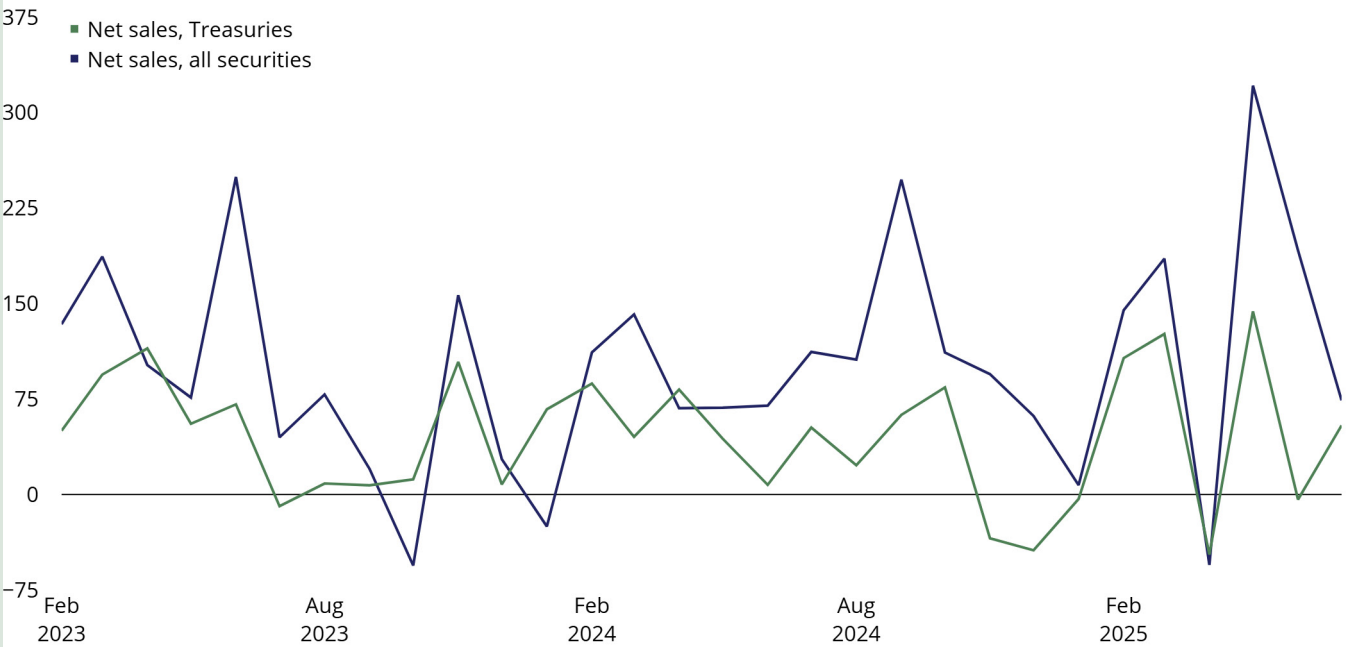
Figure 4-B. Hedge Fund Repo Outstandings Using Cheapest to Deliver Collateral ($ billions)



Note: Data through April 15, 2025. 2-Year, 5-Year, and 10-Year Treasury maturities only. DVP = Delivery Versus Payment. NCCBR = Non-Centrally Cleared Bilateral Repo.

Source: Office of Financial Research.

Figure 4-C. Treasury Security International Capital Flows ($ billions)



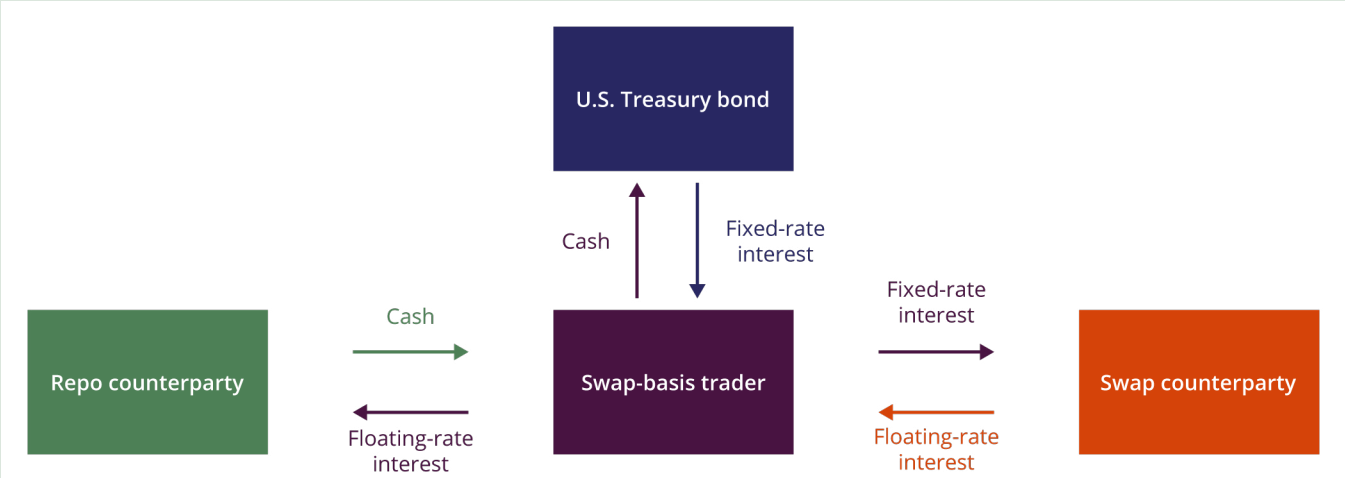
Note: Data as of July 2025.

Sources: U.S. Department of the Treasury, Office of Financial Research.

The Treasury Swap Spread Trade Was Not the Sole Cause

The swap spread trade can involve the purchase of a Treasury bond financed via repo and the payment of a fixed rate in an interest rate swap of comparable maturity (**Figure 4-D**). A fixed-for-floating interest rate swap is a contract in which counterparties agree to exchange fixed and floating interest rate payments based on a notional amount. Traders expect the cash-swap basis trade to be profitable when the yield on a Treasury bond net of financing costs is more than the fixed interest rate paid in a swap, which may occur for a variety of reasons like asset manager preferences for swaps.

Figure 4-D. Swap Spread Trade Diagram



Source: Office of Financial Research.

This trade involves leverage, so a rapid unwind may amplify market volatility. Quantitative evidence is lacking, but market intelligence suggests that the cash-swap basis trade became popular in Q1 2025 as hedge funds anticipated policy actions that would increase demand for Treasuries. When the auction for three-year Treasuries had weaker demand than expected on April 8, some funds found that the swap spread trade had become too risky and exited. Still, funding conditions in U.S. dollar repo remained strong. This is consistent with an orderly deleveraging. Moreover, the OFR's daily repo data do not show a large decline in outstanding hedge fund repo with Treasury collateral having the maturities normally associated with the swap basis trade. Unwinding of some swap spread trades may have contributed to volatility in April but did not cause market dysfunction.

Corporate Bonds and Loans

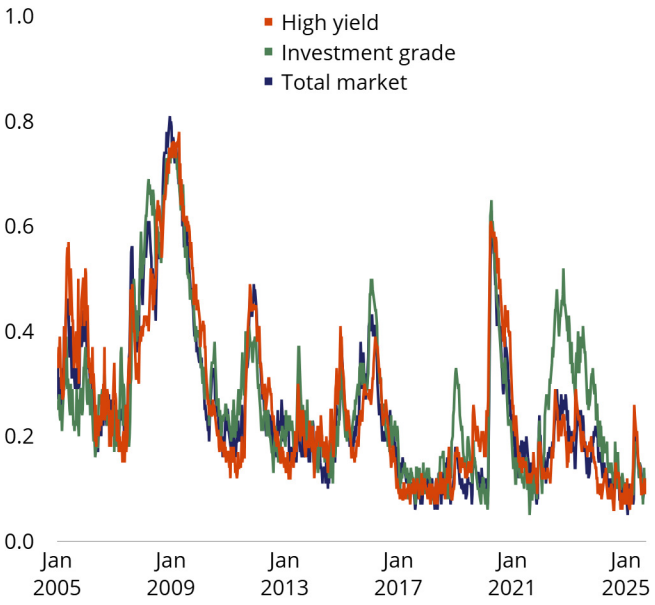
Among other funding sources, larger companies borrow funds by issuing bonds and syndicated loans. Debt provides businesses with capital to finance operations, expansion, and investment without diluting ownership. For investors, debt offers relatively stable returns and lower risk compared to equities, making debt a valuable component of diversified portfolios.

Corporate debt falls into three broad categories: investment grade, high yield, and unrated. The former is a large market in which companies with low default risk issue debt. In contrast, in the smaller high-yield market, companies with a higher risk of default issue leveraged loans and high-yield bonds.

Bonds and loans have the potential to contribute to financial instability if secondary market functioning becomes degraded or changes in value are unusually large or if default losses are large, which can impair the solvency of financial institutions. When widespread repricing of debt occurs, both secondary market functioning and the issuance of new debt can be degraded.

Both the high-yield and investment-grade bond markets functioned well in 2025 through the third quarter. The Corporate Bond Market Distress Index (CMDI), which combines a variety of distress measures from primary and secondary markets, was in the 17th percentile of its historical distribution as of late September 2025 (**Figure 4-5**). The CMDI surged in early April 2025 but then retreated.

Figure 4-5. Corporate Bond Market Distress Index



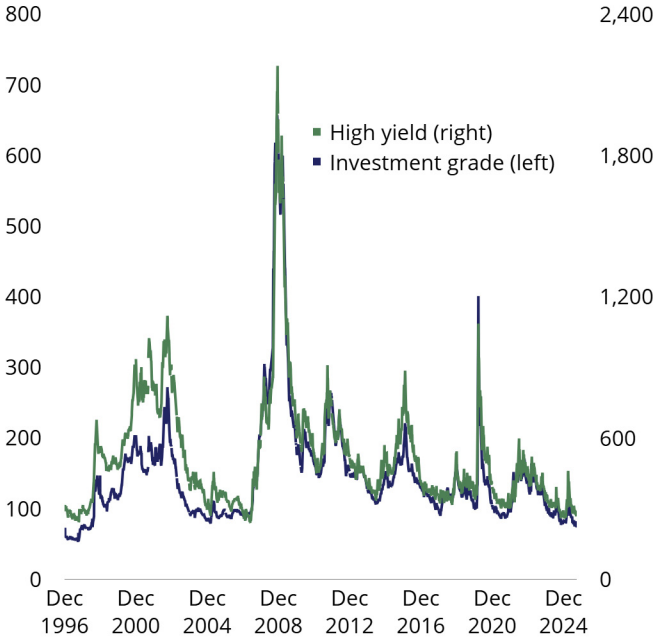
Note: Data as of September 2025. Total market refers to the combination of high yield and investment grade bonds.

Sources: Obtained through Haver Analytics, Office of Financial Research.

The corporate spread is the difference between the yield on a corporate debt security and a Treasury security of similar maturity. This spread reflects the market's pricing of corporate bond credit risk and trading liquidity. Average spreads on investment-grade and high-yield bonds are low by historical standards (**Figure 4-6**).

The average cost of trading corporate bonds is low and has been trending down for many years, implying improved efficiency of price discovery and portfolio reallocation (**Figure 4-7**).

Figure 4-6. Corporate Bond Spreads (basis points)



Note: Data as of September 2025. The two series represent the option-adjusted spreads based on the ICE BofA U.S. corporate bond indexes for investment-grade (C0A0) and high-yield debt (H0A0).

Sources: ICE Data Services, obtained through Haver Analytics, Office of Financial Research.

Exchanges and Trading Platforms

Exchanges and electronic trading platforms provide a marketplace for buying and selling that increase the accessibility and efficiency of asset trading. These platforms act as intermediaries, connecting buyers and sellers and facilitating transactions. They improve the efficiency of price discovery and, thus, support economic activity and growth.

Executing trades was once a manual process, but a substantial amount of exchange and all platform trading now occurs electronically. The extent of electronic trading varies across asset classes. More than half the volume of corporate bond trading still relies on requests not made electronically (**Figure 4-8**). Likely due to their highly varied nature, municipal, MBS, and ABS bonds have not experienced a widespread transition to electronic trading.

Exchanges and electronic trading platforms improve efficiency but also create operational

Figure 4-7. Average Cost of Trading Corporate Bonds (percentage points)

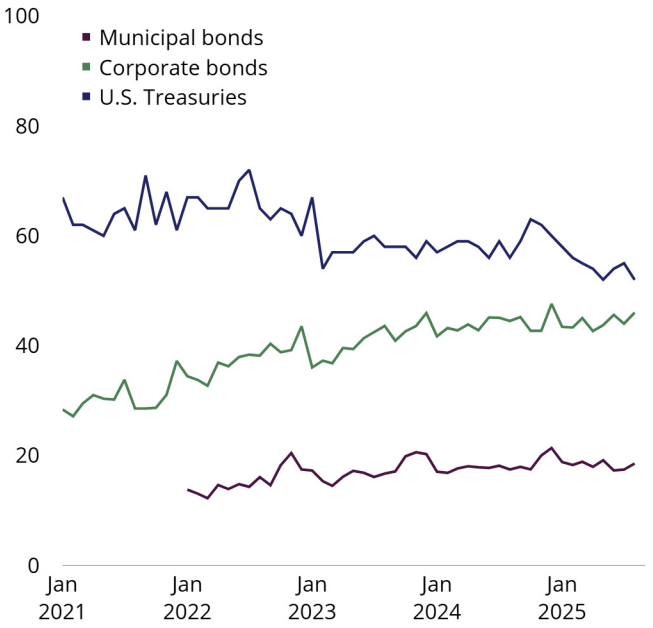
Note: Data as of August 2025. The trading cost is measured as half the difference between the price at which dealers will sell a bond (the ask) and the price at which they will buy the bond (the bid) divided by the trade price.

Sources: Financial Industry Regulatory Authority, Office of Financial Research.

vulnerabilities. They are subject to outages. The associated vulnerability diminishes as the number of competing platforms increases. For example, electronic trading in fixed income is distributed among five major platforms and many smaller ones (**Figure 4-9**). Participants report that they shop among platforms to find the best price. Similarly, equity markets have seen growth in the number of trading venues. Fragmentation, both on- and off-exchange, may provide operational resilience because trading in one environment may continue if trading in another is disrupted. Also, operators of exchanges and electronic trading platforms have taken steps to minimize operational and cyber risks.

Proprietary trading firms (PTFs), sometimes called high-frequency traders, execute trading strategies that use high-performance computing. Liquidity in systemically important markets like on-the-run U.S. Treasuries is increasingly provided by PTFs in addition to conventional bank-owned dealers.[20]

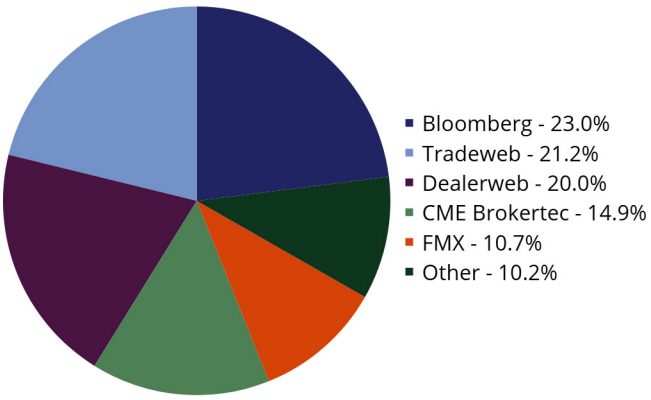
Figure 4-8. Share of Fixed Income Trading Done Electronically (percent)



Note: Data as of August 2025.

Sources: Coalition Greenwich, Office of Financial Research.

Figure 4-9. Fixed Income Electronic Trading Share by Platform (percent)



Note: Data as of August 2025. Shares were calculated based on average daily trading volume for U.S. Treasuries, corporate bonds, and municipal bonds and may sum to greater than 100 due to rounding. The "Other" category includes MarketAxess, Nasdaq, Bilateral Stream, Trumid, Intercontinental Exchange (ICE), Bonds.com, and Liquid.net.

Sources: Coalition Greenwich, Office of Financial Research.

Historically, PTFs have continued to provide liquidity in stressed situations. For example, at least in the futures market, PTFs were observed to be relatively resilient to the financial stress observed

during March 2020 and in April 2025. However, unlike conventional dealers, PTFs are not covered under prudential or dealer-based regulatory frameworks and may withdraw more liquidity during stressed periods than traditional dealers.[21]

Central Counterparties and Clearing

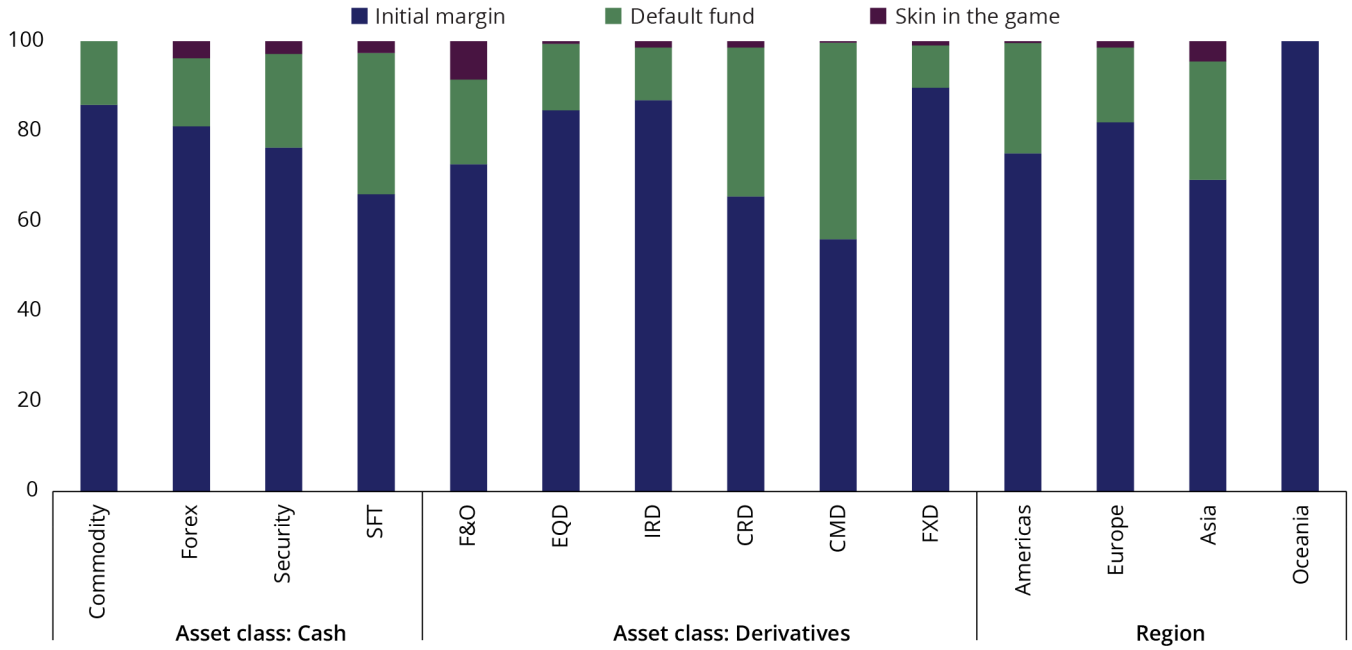
Central counterparties (CCPs) play a critical role in promoting financial stability by facilitating the clearing and settlement of financial transactions. Central clearing reduces counterparty risk by ensuring that CCPs guarantee the performance of trades, even if one party defaults. It also improves transparency and operational efficiency by standardizing settlement processes, facilitating netting of exposures, and supporting robust risk management practices. The share of centrally-cleared transactions has increased significantly during the past 15 years largely due to global regulatory requirements.

CCPs also simplify the resolution of defaults. Rather than requiring bilateral resolution of the defaulting party's failure to perform with each individual counterparty, which is complex and time-consuming, resolution of trades submitted to the CCP is conducted by the CCP in accordance with a prespecified process.

In the unlikely event that the CCP itself fails, all trades and counterparties served would be affected, and the operation of associated markets might be impaired. Many markets rely on one or two CCPs, and their interconnected member networks create channels through which stress can propagate across institutions and geographies. As a result, the failure of a large CCP would cause major financial instability. Regulators are attentive to this risk and have taken steps to limit its likelihood and consequences.

Failure of one or more clearing members to meet their obligations would stress a CCP. To safeguard against potential losses, CCPs collect collateral from members. This includes initial margin and default fund contributions posted before trades fluctuate in value, as well as daily variation margin collected when prices change.

Figure 4-10. CCP Prefunded Resources (percent)



Note: Data as of March 2025. SFT = Secured Financing Transactions. F&O = Futures and Options. EQD = Equity Derivatives. IRD = Interest Rate Derivatives. CRD = Credit Derivatives. CMD = Commodity Derivatives. FXD = Foreign Exchange Derivatives.

Sources: Clarus Financial Technology, Office of Financial Research.

If a clearing member defaults, the CCP draws on prefunded resources to fulfill contractual obligations and prevent disruption to non-defaulting members. Prefunded resources would be used in a specified sequence, known as the default waterfall. The size and composition of default waterfalls differ significantly across CCPs that clear different financial instruments and are located in various geographic regions (**Figure 4-10**). In general, the order of use is the defaulting party's initial margin and default fund contribution, the CCP's own capital or "skin in the game," the remainder of the mutualized default fund, and, finally, additional assessments on remaining clearing members. Initial margin represents the majority of prefunded resources. It is typically 60% to 80% of such resources across asset classes and jurisdictions. CCP contributions of their own capital are modest; all other resources are provided by clearing members.[22]

The availability of initial margin if a clearing member defaults is more complicated than the "prefunded" label implies. The CCP may freely use the defaulted member's initial margin but not other members' initial margin when satisfying the defaulted member's obligations. When the defaulting member's initial margin is exhausted, the CCP must turn to the default fund and its skin in the game. After these are exhausted, it can make assessments on the remaining members. In some cases, the CCP could hasten receipt of assessed amounts by taking remaining members' initial margin, but members must then replenish their initial margin. Some CCPs also require their members to prearrange liquidity resources that would be available to settle open trades in case of a member default.

CCPs can cause stress by demanding that clearing members and their clients rapidly transfer large amounts of funds to them. Such demands tend to be large during periods of high market volatility when other demands on financial institution liquidity may also be high. For example, when volatility increases, calls for additional variation margin increase due to the larger moves in asset prices. Simultaneously, CCPs may increase their initial margin requirements, and these are passed to clearing members and their clients. During the market uncertainty at the onset of the COVID-19 pandemic, clearing members were able to meet demands for more margin, but some of their clients struggled.

Overall, failure of or stress at a CCP has the potential to spawn widespread financial instability. The chance of such events is difficult to measure and does not appear to change much over time.

5. Money Markets

Money markets offer savers and investors access to short-term debt instruments with features like cash. Holders use these debt instruments to store value, to support their ability to make payments, and as collateral. Issuers use these debt instruments to manage the ebbs and flows of cash and to fund investments in other assets. While many money market participants are financial sector entities, they also play a crucial role in economic activity. Without functioning money markets, real-economy investment and economic growth would be impaired.

Money markets are liquid when lenders and borrowers can readily access and obtain funds. The primary vulnerability is associated with a sudden loss of confidence, which can lead to runs and asset fire sales, causing funding to become less available to money market borrowers. Money markets operated without signs of stress during 2025, much like in 2024.

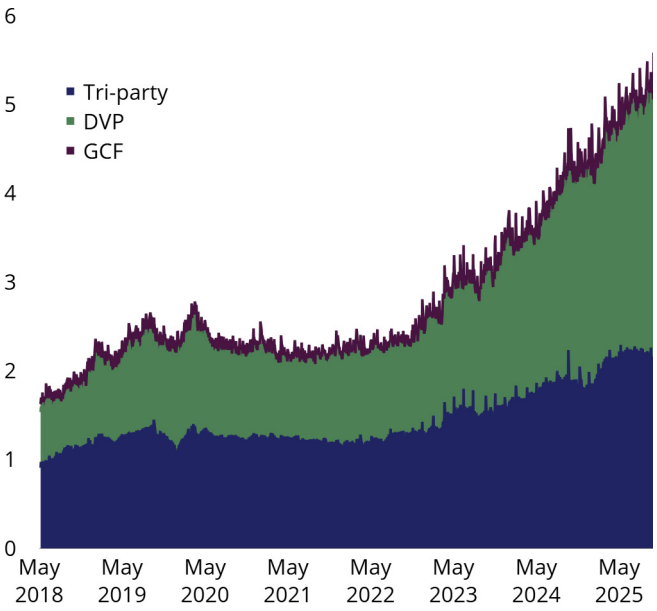
Repo and other money markets functioned without disruption in April 2025 despite substantial market volatility. Data gaps in repo markets have been reduced with the beginning of regular collection of NCCBR data, which promotes market transparency and market discipline.

Repurchase Agreements

A repo is a contract in which a market participant sells an asset with an agreement to buy it back. The price at which it is repurchased is typically higher than the selling price, providing the original buyer with the equivalent of an interest payment. This makes the original seller a cash borrower and the original buyer a cash lender. Repos are attractive to lenders because they are collateralized and short-term; they are attractive to borrowers because they provide debt-like financing at low interest rates. They also can be used to source securities. Repos are often issued with a one-day or overnight term and rolled over. Overnight repos backed by Treasuries are a common source of funding in financial markets. Most repo market participants are financial firms, but the benefits of repo financing flow through to nonfinancial firms and to economic growth. Repo market vulnerabilities are modest.

U.S. repo markets are among the largest and most liquid short-term funding markets in the world, with $12.6 trillion average daily outstanding positions in Q3 2025. Total private (or non-Federal Reserve) repo volume excluding NCCBR has risen since 2021 (**Figure 5-1**). Part of the increase in private repo is a result of declines in Federal Reserve Overnight Reverse Repo Facility (ON RRP) balances. Since 2022, the Federal Reserve has used quantitative tightening (QT) to lower the size of its balance sheet (**Figure 5-2**). Though the Federal Reserve primarily uses the ON RRP facility to implement monetary policy, the facility also helps to anchor rates in the repo market. This is because the Federal Reserve's ON RRP and Standing Repo facilities also serve as backstops for repos and reverse repos involving the most important types of repo collateral. Thus, the impact of any repo market disruptions on repo

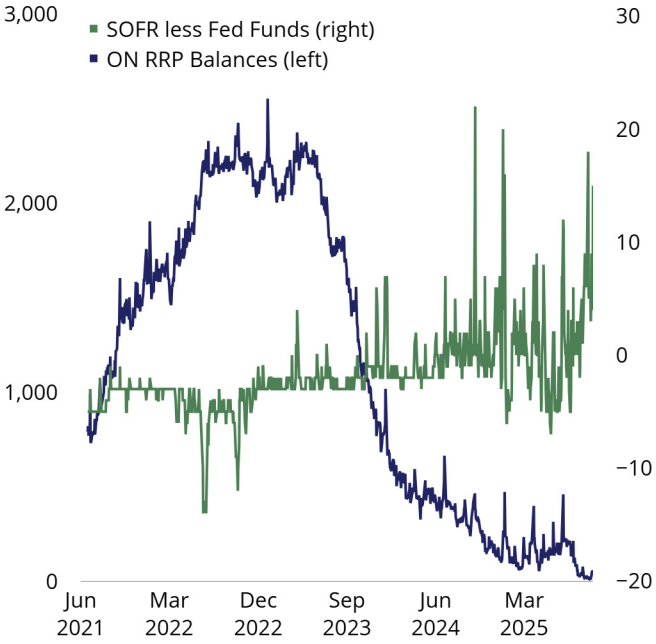
Figure 5-1. Private Repo Transaction Volumes ($ trillions)



Note: Data as of September 2025. Overnight Treasury repo volume includes DVP overnight, GCF Treasury repo, and tri-party Treasury transactions but excludes the Federal Reserve's Overnight Reverse Repo Facility. GCF = General Collateral Finance. DVP = Delivery Versus Payment.

Sources: Obtained through OFR Short-term Funding Monitor, Office of Financial Research.

Figure 5-2. Repo Rates During Quantitative Tightening ($ billions, basis points)



Note: Data as of September 2025.

Sources: Federal Reserve Bank of St. Louis FRED, Office of Financial Research.

market borrowers and lenders would be limited. As ON RRP balances have declined, rates have increased and become more volatile.

A portion of repo volume is the basis for calculating the Secured Overnight Financing Rate (SOFR). This rate is a broad measure of the cost of overnight repos collateralized by Treasuries. SOFR is a benchmark interest rate used to determine interest payments for many financial instruments, including floating-rate bonds and loans, adjustable-rate mortgages, and derivatives. If activity in repo markets freezes for an extended period of time and updated values of SOFR cannot be calculated, many financial contracts would have no settlement price and could be disrupted (depending on the fallback language in these contracts).

The repo market is comprised of four segments which are distinguished by whether they are settled via a third party (tri-party) and cleared by a clearinghouse or CCP (**Figure 5-3**). Regulators previously collected data for three of the four segments to monitor vulnerabilities, and the OFR is now able to monitor the remaining segment through its permanent data collection of NCCBR trades, which began in December 2024 (see **The OFR's NCCBR Collection**).

Dealers stand in the middle of repo markets. They are intermediaries for cash and collateral across the segments. They borrow cash secured by collateral from one counterparty in a reverse repo transaction and relend that cash for collateral to another counterparty in a repo transaction (see **Repo Market Intermediation**).

If large lenders suddenly decide not to roll over repo, borrowers, many of which are securities dealers, must quickly find other sources of

Figure 5-3. The Four Main Segments of the U.S. Repo Market

		Settlement	
		Tri-Party	**Bilateral**
Clearing	**Centrally Cleared**	**FICC GCF Repo** • Centrally cleared by FICC • Settled on BNY's Tri-Party platform • General collateral repo only	**FICC DVP Service** • Centrally cleared by FICC • No central custodian • Specific collateral repo possible
	Non-Centrally	**BNY Tri-Party Platform** • No central counterparty • Settled on BNY's Tri-Party platform • General collateral repo only	**Non-Centrally Cleared Bilateral Repo** • No central counterparty • No central custodian • Specific collateral repo possible

Note: FICC = Fixed Income Clearing Corporation. DVP = Delivery Versus Payment. GCF = General Collateral Finance. BNY = Bank of New York Mellon.

Source: Office of Financial Research.

financing or sell assets, which may transmit repo market stress to other markets. For example, many dealers lend to hedge funds using funds borrowed through repos with MMFs. Withdrawals from MMFs can quickly transmit to hedge funds via repo markets. Dealers and other market participants actively manage these risks.

The OFR's NCCBR Collection

The OFR began collecting NCCBR data in December 2024. Before this collection began, data on individual repos were available only for the centrally cleared and tri-party segments of the U.S. repo market. The OFR's new collection has added over $5 trillion in visible repo to the existing $7 trillion that was observable in other segments. The amount of newly observable repo is more than twice the amount that the OFR anticipated.

The new collection gathers repo data from banks, financial intermediaries, and NBFIs, such as funds and asset managers. The data gathered from NBFIs is not redundant with that from banks and intermediaries even though NBFIs do much of their repo with U.S. banks. About $1.5 trillion of the NBFIs' NCCBR is with counterparties that do not report repo to the OFR, including repo between an NBFI and a foreign counterparty.

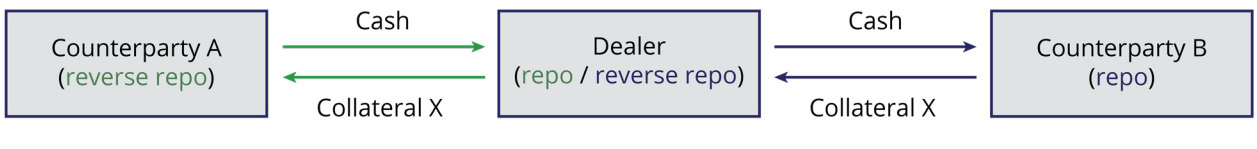
Repos in the NCCBR collection have unique characteristics. For example, this segment of U.S. repo uses about 10 times the number of individual securities as collateral than what other repo segments use. A fifth of the NCCBR use non-U.S. sovereign bonds as collateral. NCCBR is also more of a term market, with most of the repo outstanding having maturities longer than one week compared to 4% for DVP.

OFR is already providing some information to regulators. Aggregates will appear on OFR's Short-Term Funding Monitor (STFM) site in the coming year. Addition of these data to other published repo data makes the market more transparent to its participants and improves market discipline and resilience.

Repo Market Intermediation

Repo dealers play a vital role in facilitating liquidity and short-term funding by connecting cash-rich investors with securities holders, thereby supporting efficient market functioning and enhancing financial stability (**Figure 5-A**). Often, dealers pass the collateral received in a transaction with one counterparty to another counterparty in a separate transaction. They lend to the first and borrow from the second, a practice known as rehypothecation.

Figure 5-A. Repo Dealer Intermediation



Note: This figure provides a simple example of how a dealer intermediates cash and collateral between counterparties A and B. The dealer borrows cash in a repo with counterparty A on the left and then, on the right, lends cash against that same piece of collateral in the reverse repo with counterparty B.

Source: Office of Financial Research.

OFR researchers have shown that dealers tend to reuse a large portion of the cash and collateral from transactions. Dealers rehypothecate about 65% of their reverse repo collateral, the equivalent of $607 billion of repos outstanding.[23]

Rehypothecation is not free of risk. Market participants differ in their preferences for repo contract terms, such as interest rates and maturities. Because dealers sit in the middle of the transactions, they are exposed to counterparty, collateral, liquidity, and maturity risks. Heightened market volatility in the value of the underlying collateral may prompt a dealer to lend less against the collateral. Changes in the term profile of a dealer's repo commitments can cause the dealer to reduce lending.

Managing these risks becomes more challenging for dealers during economic downturns. Notably, during the 2007-09 financial crisis, some repo dealers saw decreases in funding supply due to concerns over counterparty risk and collateral quality. For example, Lehman Brothers lost access to most of the funds it had obtained in repo markets as its exposure to the mortgage market became more salient. This was a run on its repo similar to a traditional bank run.

Interconnectedness created by the high rate of rehypothecation in the United States highlights the potential for spillovers across the financial system. Once the Treasury Clearing rule takes effect, netting will increase and counterparty risk will be less, reducing spillovers.[24]

Commercial Paper

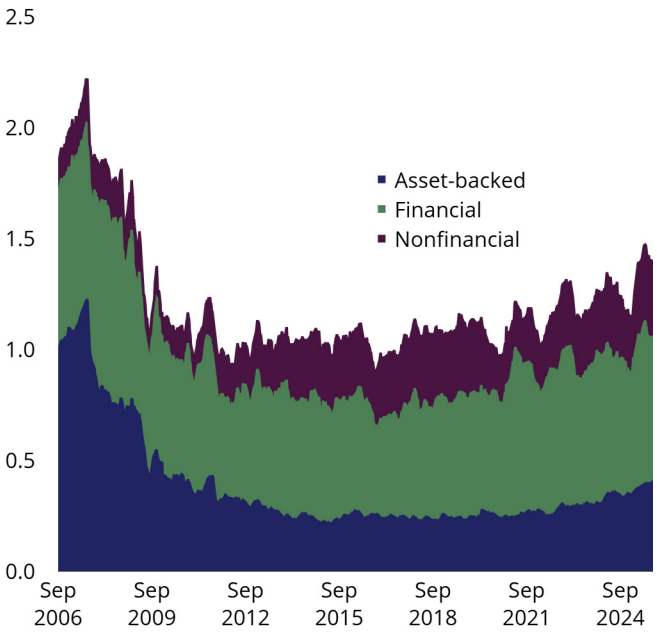
Most commercial paper (CP) is issued by financial institutions and asset-backed structures and not by nonfinancial corporations (**Figure 5-4**). CP provides nonfinancial firms with flexible, low-cost, short-term funding that aids management of the daily ebbs and flows of such firms' cash flows, thereby improving business efficiency and economic growth. Asset-backed commercial paper (ABCP) funds invest in certain types of loans, such as auto loans and credit card receivables, that benefit from portfolio diversification and are more efficiently financed off the balance sheets of traditional financial institutions. Financial CP is a source of on-balance-sheet funding for financial institutions, typically foreign banks. Financial CP and ABCP improve the efficiency of the financial system and, thus, support economic activity and growth.

U.S. dollar-denominated CP outstanding was $1.3 trillion at the end of September 2025, according to the Federal Reserve, which was little changed from recent years. Because CP is short-term, investors usually hold the paper to maturity.

CP vulnerabilities include those associated with runs and maturity transformation. These vulnerabilities are structural and do not change much over time. A primary cause of runs is a sudden change in views about CP issuer creditworthiness. The large decline in outstanding CP during the 2007-09 financial crisis was associated with a loss of confidence in some types of ABCP outstanding at the time. Issuers at the center of the loss of confidence were not able to roll over their CP and, instead, had to repay at maturity or default.

In 2025, most issuers of financial CP have backup sources of financing that increase confidence in their ability to repay CP, and ABCP vehicles largely finance more stable, well-understood assets,

Figure 5-4. Commercial Paper Outstanding ($ trillions)



Note: Data as of September 2025. Includes commercial paper issued in the United States by entities with foreign parents.

Sources: Board of Governors of the Federal Reserve System, obtained through Haver Analytics, Office of Financial Research.

increasing market understanding and confidence in them.

Money Market Funds

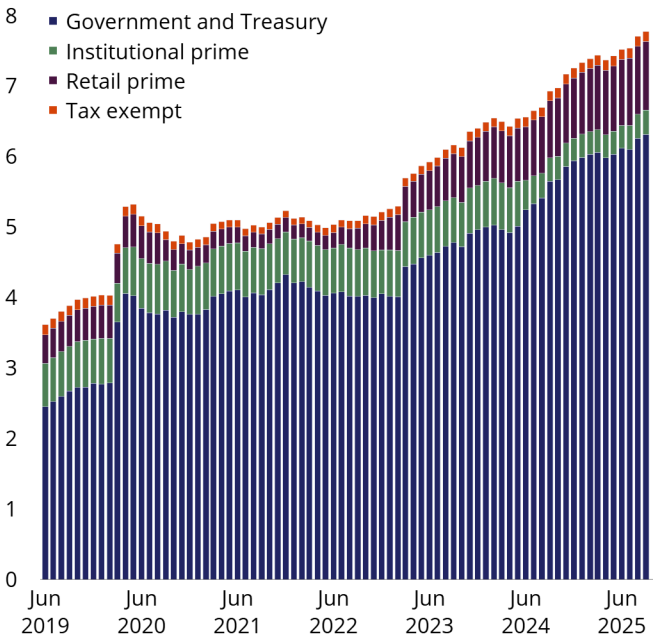
MMFs are open-end mutual funds that accept investments from households, businesses, and government entities. MMFs support the real economy by offering low-risk, liquid investment options for managing short-term cash balances. This enhances financial flexibility and resilience of their investors while indirectly providing issuers with support for their operations and growth. This support is through MMF purchases of short-term paper, such as commercial paper, repos, and Treasury bills that help to maintain market liquidity and efficient capital allocation. Their vulnerabilities are smaller than in the past because of recent regulatory changes.

Withdrawals from MMFs are usually settled the same day or overnight, and balances can be moved quickly to another investment, although regulations allow settlements to be delayed by as much as seven days. Investors in MMFs often use them as cash substitutes. MMF assets were about $7.8 trillion as of September 2025 (**Figure 5-5**).

MMF vulnerabilities are driven by run risk. MMFs can experience runs if their investors become concerned that they may not be able to withdraw funds on demand at a net asset value (NAV) of $1 per share. One way to prevent run behavior is for MMFs to invest solely in money market instruments with a one-day maturity and issued by entities certain to repay on time. As a practical matter, a sizable share of MMF investments have maturity dates longer than one day, and prime MMFs' investments pose some credit risk.

The SEC revised regulations in 2023 with the goal of improving the resiliency and transparency of MMFs.[25] For example, prime MMFs must now hold a larger share of their assets in investments that mature within one day and within one week. This increases MMFs' ability to maintain market confidence by meeting large redemption requests without disruptions. But even if new regulations ensure that MMFs are able to satisfy large, sudden redemption requests, financial stability vulnerabilities associated with MMFs remain

Figure 5-5. U.S. Money Market Mutual Fund Assets by Fund Type ($ trillions)



Note: Data as of September 2025.

Sources: Securities and Exchange Commission, obtained through OFR Money Market Fund Monitor, Office of Financial Research.

because if such redemptions occur, MMFs' sharply smaller assets would affect the provision of short-term credit and, thus, would affect real activity and investment.

Institutional and retail prime funds differ from U.S. government funds because they may invest a large share of portfolio assets in unsecured obligations of private-sector entities.[26] Though such investments are relatively safe, they carry more credit risk than U.S. government obligations. Over the last 25 years, prime funds have experienced more runs than government funds. The most recent episode was in March 2020.

Several types of institutional MMFs are required to sell and redeem their shares at market-based NAVs, but some investors may be concerned that NAVs will fall well below the value at which they purchased shares and withdraw before that happens. In earlier periods of stress, MMF sponsors played a critical role in preventing NAVs from falling below $1, for example, by buying assets from their affiliated MMF at above market

prices or by providing guarantees (a sponsor is typically the operator of a mutual fund complex but may also be a bank or other financial institution that is associated with an MMFs' brand). Sponsors have also mitigated potential spillovers to affiliate funds and short-term funding markets more broadly.

Part 2:
Status of the Office of Financial Research

The mission of the OFR is to support the Council in fulfilling its purposes and duties, including identifying risks to the financial stability of the United States. In pursuit of that mission, the OFR delivers high-quality financial data and analysis and standardizes the types and formats of data reported and collected in support of the Council and its member agencies.

This report outlines the OFR's strategic direction and accomplishments in supporting the financial stability work of the Council through data-driven analysis and research. The OFR presents its progress across three main goals:

1. Research and Analysis Support
2. Data, Technology, and Security
3. Organizational Excellence

Goal 1: Research and Analysis Support

The OFR conducts applied and essential long-term research and analysis. Throughout FY 2025, the OFR utilized its advanced analytical capabilities and subject matter expertise to answer various questions related to financial markets, financial institutions, and the connections between the two and the broader economy. During FY 2025, the OFR conducted research and briefed the Council and other stakeholders and authored a variety of publications, including working papers, briefs, and blogs, that examined critical aspects of financial stability. A full listing of OFR publications can be found on financialresearch.gov.

Subject Matter Expertise

The OFR focused its research portfolio on several key areas: financial sector technology and cybersecurity risks, wholesale funding and liquidity management, central counterparties, hedge funds, and household finance.

Financial Sector Technology and Cybersecurity Risks

Technology is used extensively within the financial system. Whether benign or malicious, technology disruptions can present a threat to financial stability. Malicious disruptions, or cyberattacks, are particularly concerning because they can be timed and targeted for maximum effect. The cybersecurity of financial institutions and financial market utilities is critical to safeguarding the U.S. financial system. The OFR explored the risk that cyber events impede the functioning of the financial system and how operational dependencies across institutions, markets, and technology providers affect that risk.

Wholesale Funding and Liquidity Management

Wholesale funding includes financing vehicles like interbank lending, repos, and debt securities that are used by banks and nonbank financial intermediaries to fund their businesses. The OFR's

new data collection of NCCBR transactions provides visibility into risks that may be accumulating in the financial system and supports efforts by the Council and the OFR to identify and monitor these risks. Using daily transaction-level data beginning in December 2024, the OFR conducted analysis to understand how financial institutions effectively manage liquidity needs and requirements.

Central Counterparties

Since the 2007-09 financial crisis, financial firms have been incentivized to clear their trades through CCPs, which have become key players in the global financial system. Assessing the preparedness of CCPs is critical, in particular for their ability to withstand severe market stress and defaults by clearing members. The latter would stress CCP resources and could place CCPs at risk of default. The OFR studied and monitored the adequacy of CCP risk management, their structure, and their ability to meet obligations. These efforts are intended to help Council member agencies understand the risks to U.S. financial stability that are posed by CCPs within the United States and abroad.

Hedge Funds

Hedge funds are investment vehicles that pool capital from many sources and provide several benefits to financial markets. They perform arbitrage that reduces or eliminates price discrepancies across similar securities and instruments, and they provide liquidity and add depth and breadth to capital markets. Hedge funds also sometimes employ trading strategies involving leverage that relies upon short-term funding. If they abruptly pull back from markets, their departure may create or add market stress. The OFR focused on understanding and monitoring hedge funds and their activities because of their integral role in markets.

Households

U.S. households held about $20 trillion in debt outstanding as of Q2 2025.[27] About two-thirds of this debt is from residential mortgages, and the rest is a mix of auto loans, credit card debt, student loans, and other loan types. Historically, rapid growth in household debt and leverage has been linked to the likelihood of financial crises. The OFR examined household-related risks to better understand and monitor financial stability risks.

Financial Monitors

During FY 2025, the OFR maintained and updated its suite of monitoring tools with new data that provide insights into financial system stability. The OFR also added new features to several of its monitors.

The Money Market Fund Monitor (MMFM), which tracks trends and developments across the MMF industry, now better reflects credit and liquidity factors. With this update, users can review changes in asset levels, flows, holdings, and outliers through improved data visualization and processing capabilities.

The STFM offers real-time visibility into repo dynamics and liquidity conditions. The OFR removed certain trades to reduce the spread between the OFR's reported tri-party statistics and prevailing market trends. Reporting criteria were enhanced in compliance with disclosure editing standards for more frequent publication of overnight volumes. Finally, by expanding the tenor series, the OFR provided distinct market behavior profiles associated with shorter contract maturity windows.

The Bank Systemic Risk Monitor (BSRM) is a collection of key measures for monitoring systemic risks posed by the largest banks. The OFR updated the monitor to include the Common Equity Tier 1 (CET1) ratio. This ratio measures a bank's equity capital against its risk-weighted assets and is used to assess a bank's financial strength and ability to absorb losses.

Further, the OFR maintained application program interfaces (APIs) for two of its monitors: the STFM and Hedge Fund Monitor (HFM). Financial institutions, academia, and other stakeholders can use these programming tools to query the data without human involvement or manual downloads. API availability increases the accessibility of data for OFR stakeholders by providing seamless integration with user's systems.

In addition to improving the MMFM, STFM, and BSRM, the OFR continued maintaining its other publicly available web-based monitors and tools, collectively providing a broad view of financial stability indicators. These include the Financial Stress Index, the HFM, the Financial Instrument Reference Database, and the Legal Entity Identifier (LEI) Counter.

Research Partnerships

Partnerships are essential for building a more collaborative research community focused on financial stability vulnerabilities. The OFR fostered knowledge exchange, innovative research approaches, and analytic capabilities by partnering with Council member agencies, international regulatory bodies, leading academic institutions, and other research organizations. Additionally, the OFR's work with the Over-the-Counter (OTC) Derivatives Regulators' Forum enhanced its global perspective on OTC derivatives, trade repository data, and central counterparty monitoring. The OFR exchanged insights with scholars through coauthored research and engagements on a range of financial stability topics. The National Science Foundation used funds provided by the OFR to issue a grant award that helped create a research partnership with the National Bureau of Economic Research (NBER). This partnership delivered high-quality publications that advanced understanding of financial stability risks. The OFR also leveraged its partnerships to host and support various conferences. A listing of these conferences and public appearances are posted on financialresearch.gov.

Goal 2: Data, Technology, and Security

Data Collection

The OFR's previously established financial data collection covers the centrally cleared repo market. In FY 2025, the OFR closed another substantial data gap for regulators and market participants with its new NCCBR collection. Although NCCBR was estimated to be the largest of four distinct U.S. repo market segments, it was the only one lacking transaction-level data reporting. In May 2024, the OFR adopted a Final Rule establishing daily reporting to the OFR by certain brokers, dealers, and other U.S. financial companies that have large NCCBR exposures of at least $10 billion outstanding on a daily basis.

The Final Rule required brokers and dealers that met reporting thresholds to begin data submissions on December 3, 2024. Other financial companies that met thresholds began reporting on July 1, 2025.

FY 2025 also marked the first time the OFR used its Data Collection Utility (DCU), a technology infrastructure that allows companies to submit data directly and securely to the OFR. Although the DCU was developed first for the NCCBR collection, it represents significant progress in the OFR's overall ability to collect, process, and validate financial data while maintaining the highest standards for data integrity and operational efficiency.

In advance of the December 2024 NCCBR reporting deadline, the OFR developed comprehensive procedures to validate, quality check, and identify duplicate transactions, ensuring the accuracy and reliability of reported information. The OFR also worked with self-identified covered reporters throughout the year, assisting with technical aspects of data submissions and responding to questions about the Final Rule and submission requirements. The OFR posted many widely applicable questions and answers on its website for external stakeholders, including covered reporters, to access.

As noted above, the NCCBR collection has helped to close a data gap in short-term funding markets. The OFR's most recent estimates confirmed that NCCBR transactions represent the largest of the four segments at roughly $5 trillion in daily outstanding commitments. The data will not only be used to support the financial stability work of the Council and its member agencies but also to improve transparency for market participants.

Data Standards

The OFR's leadership in developing and implementing robust financial data standards is instrumental in enhancing market transparency, reducing systemic risk, and enabling more effective regulatory oversight across the global financial ecosystem. In FY 2025, the OFR participated in several U.S. and international forums focused on developing and implementing financial data standards, including the Regulatory Oversight Committee (ROC), the International Organization for Standardization (ISO), the Accredited Standards Committee X9 (ASC X9), and multiple groups within these organizations. The OFR contributed to the joint rulemaking requirements under the Financial Data Transparency Act of 2022 and supported several offices of the Treasury Department and other federal agencies on matters pertaining to financial data standards. The OFR intends to continue supporting data standards work through forums such as ASC X9 and ROC.

Regulatory Oversight Committee

The OFR assumed chairmanship of the ROC in FY 2025. The ROC is an association of more than 80 government authorities responsible for overseeing a set of global data standards that are critical to the financial system. These standards include the LEI, the Unique Transaction Identifier, the Unique Product Identifier, and more than 100 Critical Data Elements for OTC derivatives transaction reporting. In addition to an OFR expert serving as Chair of the ROC, OFR staff led work within the ROC's Committee on Evaluation and Standards. After concluding a successful tenure as ROC Secretariat, the OFR worked during the latter part of FY 2025 to transition these responsibilities to a new, permanent secretariat.

International Organization for Standardization

The OFR served in multiple leadership roles within ISO Technical Committee 68 (TC 68), which develops and maintains international standards for the financial services industry. As Chair of TC 68's Communications Group and member of TC 68's Strategic Leadership Group, the OFR supported information sharing, planning, and decision-making. The OFR also co-chaired the digital currencies joint working group with ISO/TC 307 (Blockchain and Distributed Ledger Technologies) and served as TC 68's liaison to TC 307, helping develop a standardized vocabulary for digital currencies.

Accredited Standards Committee X9

ASC X9 is accredited by the American National Standards Institute to develop and maintain voluntary consensus standards for the U.S. financial services industry and represents the U.S. in ISO voting. As Chair of ASC X9's Securities Subcommittee and as a member of ASC X9's Board of Directors and Executive Committee, the OFR continued to provide biannual reports to the Board and monthly reports to the Executive Committee on the Securities Subcommittee's work. The OFR also served as a member of several other ASC X9 subcommittees and groups.

Financial Data Transparency Act

As Treasury's delegate during the period of this report, the OFR facilitated meetings with the Chief Data Officers and other relevant staff of covered federal agencies to address the joint rulemaking requirements of the Financial Data Transparency Act of 2022. The nine covered agencies posted the Notice of Proposed Rulemaking (NPRM) to the Federal Register on August 22, 2024, for a 60-day comment period. The OFR compiled and analyzed responses to the comments received on the NPRM and reviewed the initial draft of the final rule.

Technology and Core Analytics Infrastructure

Infrastructure Changes and Resource Optimization

Due to recent resource limitations, the OFR made the strategic decision to decommission the Joint Analysis Data Environment (JADE) in 2025. JADE was a collaborative platform intended for use by all Council member agencies, facilitating cross-agency analytical work and research coordination.

With JADE's decommissioning, the OFR Analytics Environment (OFRAE) remains OFR's core analytics resource and provides support for OFR's research. The OFRAE is also leveraged by the Council Secretariat and available to other Treasury users for approved research efforts supporting financial stability. Enhanced security features protect sensitive financial data while maintaining accessibility for authorized users within the OFR and Treasury.

This year marked significant advancements in the OFR's computational infrastructure with the release of updated versions of its mission critical, high-performance computing and data analytics clusters. These upgrades strengthen the OFR's capacity to support complex analytical workloads and meet evolving user requirements. Key enhancements include updated cloud-based service offerings and a transition to a specialized operating system optimized for analytics workflows. Additionally, the OFR introduced accelerated graphics processing unit (GPU) computing capabilities that reduce processing times for computationally intensive analyses. OFR also deployed multiple new data analytics software suites to ensure that OFR researchers have access to appropriate tools for their specific analytical needs. These improvements position the OFR to better serve stakeholders by providing modern, efficient, and powerful computational resources. The upgraded infrastructure supports faster insights, enables more sophisticated analyses, and accommodates growing data needs while maintaining security standards and budgetary efficiency.

Goal 3: Organizational Excellence

Artificial Intelligence and Automation

The OFR is leveraging AI to streamline operational functions, enhance service delivery, and increase efficiency. The OFR's AI initiatives include automating data processing workflows to improve efficiency and accuracy, implementing AI-driven security compliance monitoring, and deploying intelligent automation for various technology support tasks.

This year, the OFR introduced ChatOFR, a secure general service chatbot that provides enhanced support desk capabilities and improves internal service delivery. ChatOFR assists users with writing and analysis tasks and supports the OFR procurement team in comparing and analyzing procurement options and guidance documentation. These AI implementations enable the OFR workforce to focus on higher-value analytical and research activities while ensuring consistent and reliable operational support across multiple business functions.

Workforce and Budget

The OFR started the fiscal year with 188 employees and grew to 205 by January 2025 as the OFR increased its service offerings to the Council and its member agencies. Subsequently, the OFR applied a framework for agile response and rapid adaptation in response to the Administration's goal to decrease the size of the federal workforce. Thirty percent of OFR staff voluntarily participated in federal Deferred Resignation Programs. Coupled with natural attrition, the OFR ended FY 2025 with 109 employees on board. This downsizing in the OFR workforce required a rebalancing of responsibilities across the organization.

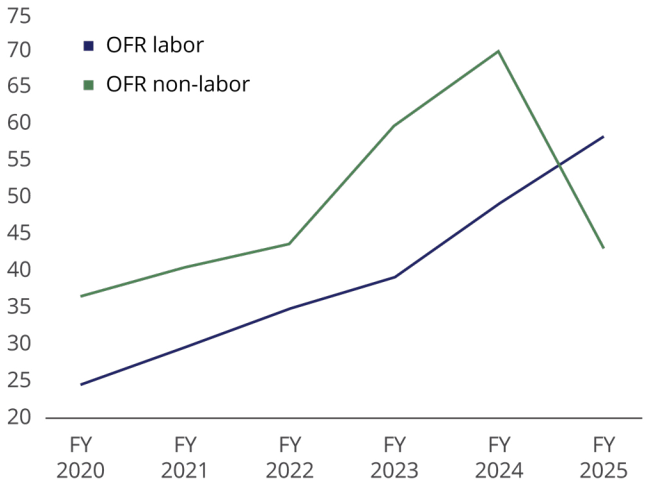
The OFR narrowed its focus to the Administration's three priorities within the OFR's mission:

- Collecting, standardizing, and protecting data on behalf of the Council;

- Performing applied research and analysis; and
- Providing risk measurement and monitoring tools.

With the narrower focus and the Administration's initiative to improve government efficiency and effectiveness, the OFR reduced its FY 2025 budget from $124.6 million to $110.7 million (**Figure P2-1**). The OFR implemented additional cost-saving measures across OFR activities for maximized efficiency and began limiting its operations to the Administration's three priorities within the OFR's mission. These measures included reducing travel, service contractors, technology and training investments, research conference engagements, and data procurements; identifying nonessential data contracts; ending research partnerships; and decommissioning JADE.

Figure P2-1. OFR Labor Versus Non-Labor Historical Budget Comparison ($ millions)



Note: All amounts are actual.

Source: Office of Financial Research.

Summary

The OFR continues to provide essential support to the Council and its member agencies through advanced data analytics and applied research capabilities. Its efficient resource sharing model maximizes the value of investments in technology and research infrastructure. Continuous innovation in financial research methodologies help the OFR remain at the forefront of financial stability analysis and research.

The OFR will continue to adapt to any future reductions in its workforce and innovate to maintain core operations within budget. This approach enables the OFR to fulfill the Administration's focused priorities within the OFR's financial stability mission.

APPENDIX A: ABBREVIATIONS AND ACRONYMS

ABCP	Asset-Backed Commercial Paper
ABS	Asset-Backed Securities
ACH	Automated Clearinghouse
AI	Artificial Intelligence
API	Application Program Interface
ASC X9	Accredited Standards Committee X9
BDC	Business Development Company
BHC	Bank Holding Company
BNY	Bank of New York Mellon
bp	Basis Point
BSRM	Bank Systemic Risk Monitor
CAPE	Cyclically Adjusted Price-to-Earnings
CBOE	Chicago Board Option Exchange
CCB	Capital Conservation Buffer
CCP	Central Counterparty
CDO	Collateralized Debt Obligation
CET1	Common Equity Tier 1
CLO	Collateralized Loan Obligation
CMBS	Commercial Mortgage-Backed Securities
CMD	Commodity Derivatives
CMDI	Corporate Bond Market Distress Index
CME	Chicago Mercantile Exchange
CP	Commercial Paper
CRD	Credit Derivatives
CRE	Commercial Real Estate
CTD	Cheapest to Deliver
DCU	Data Collection Utility
DVP	Delivery Versus Payment
EQD	Equity Derivatives
ETF	Exchange-Traded Fund
F&O	Futures and Options
FDIC	Federal Deposit Insurance Corporation
FEDS	Finance and Economics Discussion Series
FFIEC	Federal Financial Institutions Examination Council
FHFA	Federal Housing Finance Agency
FHLB	Federal Home Loan Bank
FICC	Fixed Income Clearing Corporation
FINRA	Financial Industry Regulatory Authority
FMU	Financial Market Utility
FSI	Financial Stress Index
FS-ISAC	Financial Services Information Sharing and Analysis Center
FSOC or Council	Financial Stability Oversight Council
FXD	Foreign Exchange Derivatives
FY	Fiscal Year
GCF	General Collateral Finance
GDP	Gross Domestic Product
GNE	Gross Notional Exposure
GPU	Graphics Processing Unit

G-SIB	Global Systemically Important Bank
HELOC	Home Equity Line of Credit
HFM	Hedge Fund Monitor
ICE	Intercontinental Exchange
IRD	Interest Rate Derivatives
ISO	International Organization for Standardization
JADE	Joint Analysis Data Environment
LEI	Legal Entity Identifier
LTV	Loan-to-Value
MBS	Mortgage-Backed Securities
MMF	Money Market Funds
MMFM	Money Market Fund Monitor
NAIC	National Association of Insurance Commissioners
NAV	Net Asset Value
NBER	National Bureau of Economic Research
NBFI	Nonbank Financial Institution
NCCBR	Non-Centrally Cleared Bilateral Repurchase Agreement
NPRM	Notice Of Proposed Rulemaking
NYSE	New York Stock Exchange
OFR	Office of Financial Research
OFRAE	OFR Analytics Environment
ON RRP	Overnight Reverse Repo Facility
OTC	Over-the-Counter
P&C	Property And Casualty
P/E	Price-to-Earnings
PTF	Proprietary Trading Firm
QHF	Qualifying Hedge Fund
QT	Quantitative Tightening
Repo	Repurchase Agreement
RMBS	Residential Mortgage-Backed Security
ROC	Regulatory Oversight Committee
SEC	Securities and Exchange Commission
SFT	Secured Financing Transactions
SOFR	Secured Overnight Financing Rate
STFM	Short-Term Funding Monitor
TC 68	Technical Committee 68
TGA	Treasury General Account
TSP	Third-Party Service Provider
UPI	Unique Product Identifier
UTI	Unique Transaction Identifier

APPENDIX B: GLOSSARY

Note: Not all terms in this glossary appear in this document.

Accredited Standards Committee X9 (ASC X9): An organization that produces standard communication protocols for electronic data interchange in the financial services industry.

Asset-Backed Securities (ABS): Debt securities issued by a securitization vehicle that invests in a pool of consumer loans, mortgages, commercial loans, royalties, or other activity that generates income or provides cash flows. Payments to securities holders are supported by interest and principal payments on the underlying loans or cash flows from the underlying activities. See **Securitization Vehicle**.

Authorized Participant: A liquidity provider to an exchange-traded fund. When there is a shortage of exchange-traded fund shares in the market, the authorized participant buys the assets underlying the fund and creates more shares. When there is an excess supply of shares, the participant sells the underlying assets and redeems shares to reduce the number of shares on the market.

Bank Holding Company (BHC): Any company that has direct or indirect control of one or more chartered commercial banks and is regulated and supervised by the Federal Reserve under the Bank Holding Company Act of 1956. BHCs may also own nonbanking subsidiaries, such as broker-dealers and asset managers.

Blockchain: A decentralized, digital, distributed ledger that securely stores records across a network of computers in a way that is transparent, immutable, and intended to be resistant to tampering. Each block contains data, and blocks are linked in a chronological chain. Blockchain technology has been used to record digital asset transactions and for other purposes.

Business Development Company (BDC): Type of closed-end fund that primarily invests in small or developing companies. BDCs are often publicly traded companies and are regulated by the Securities and Exchange Commission.

Cyclically Adjusted Price-to-Earnings (CAPE) Ratio: A price-to-earnings (P/E) ratio is a stock's price divided by its earnings and is a measure of whether a stock's value is high or low relative to the earnings a company generates. Standard P/E ratios are volatile, particularly during recessions when earnings often fall sharply. The CAPE ratio substitutes the 10-year average of inflation-adjusted earnings for the single recent year of earnings used in a standard P/E ratio and, thus, is less volatile.

Capital: A measure of a bank's ability to absorb losses. One measure of bank capital is the aggregate equity-to-asset ratio.

Capital Conservation Buffer (CCB): Additional capital that banks are required to hold outside of periods of financial stress meant to be drawn down during times of stress. This buffer is intended to reduce the likelihood that minimum required capital ratios are breached. See **Capital and Capital Requirement**.

Capital Requirement: The amount of capital that a regulator requires a regulated financial institution to have as a cushion to absorb unanticipated losses and declines in asset values that could otherwise cause the institution to become insolvent or fail. The definition of "capital" varies across regulators. See **Capital**.

Central Clearing: A settlement system in which securities or derivatives of a specific type are cleared by one entity that guarantees the trades, such as a clearinghouse or central counterparty. Central clearing is an alternative to other ways of clearing, such as bilateral clearing. See **Central Counterparty**.

Central Counterparty (CCP): An entity that becomes the buyer to every seller and the seller to every buyer to help ensure the completion of financial trades and the performance of open contracts. CCPs provide central clearing and manage margin for the open contracts that they clear.

Cheapest to Deliver (CTD) Bond: The most economical bond to deliver to satisfy an expiring futures contract.

Clearing: The activity of ensuring that all the characteristics of a trade are correct and ensuring the trade complies with regulations. See **Settlement** and **Central Clearing**.

Clearing Member: A financial institution that is entitled to enter into a transaction with a central counterparty.

Collateral: Assets allocated to a lender by a borrower in the event of nonpayment of a debt governed by a contract between them. Some contracts permit the lender to seize and sell the collateral if the borrower is in violation of contract terms. In other contracts, such as loans to nonfinancial businesses, the collateral may give the lender a higher priority in bankruptcy court for repayment of what it is owed.

Collateralized Debt Obligation (CDO): Debt securities issued by a securitization vehicle that invests in a pool of debt instruments, typically those issued by businesses or governments. Payments to securities holders are supported by interest and principal payments on the underlying debt instruments. See **Securitization Vehicle**.

Collateralized Loan Obligation (CLO): Debt securities issued by a securitization vehicle that invests in a pool of commercial loans. Payments to securities holders are supported by interest and principal payments on the underlying debt instruments. See **Securitization Vehicle**.

Commercial Mortgage-Backed Security (CMBS): Debt security issued by a securitization vehicle that invests in a pool of commercial mortgages. Payments to securities holders are supported by interest and principal payments on the underlying mortgages. See **Securitization Vehicle**.

Commercial Paper (CP): Short-term (maturity of up to 270 days), unsecured corporate debt.

Counterparty Risk: The risk that one party to a contract, trade, or investment will default or impose losses on the other party.

COVID-19: A highly contagious respiratory illness caused by a coronavirus and declared a pandemic in 2020 by the World Health Organization.

Credit Rating Agency: A company that assesses the creditworthiness of a borrower or a financial instrument.

Credit Risk: The risk that a lender will suffer losses due to a borrower's default on its obligations or due to an increase in its chance of default.

Cybersecurity Risk: The chance of loss of confidentiality, integrity, or availability of information technology or computer systems resulting from unauthorized access of those systems.

Debt Securitization: See **Securitization**.

Default Waterfall: The financial resources available to a central counterparty to cover losses arising from the default of one or more clearing members. The waterfall specifies the financial assets available and the order in which they will be used. See **Central Counterparty**.

Delivery Versus Payment (DVP): A repo clearing service in which general collateral repos can be cleared with the Fixed Income Clearing Corporation (FICC) as the central counterparty and with Bank of New York Mellon managing the settlement of the collateral.

Derivative: A financial contract, the value of which is derived from the performance of underlying assets or market factors such as interest rates, currency exchange rates, or commodity, credit, and equity prices. Derivatives include structured debt obligations, swaps, futures, options, caps, floors, collars, and forwards.

Distributed Ledger Technology: A digital system or database where data are replicated and shared across a network without a central

authority. Blockchain is a type of distributed ledger technology. See **Blockchain**.

Dodd-Frank Act: Short name for the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010. One of the main objectives of the Act is to promote financial stability.

Dodd-Frank Act Stress Test: The Dodd-Frank Act, as amended, requires banks with more than $250 billion in total assets to conduct their own stress tests using scenarios provided by bank regulators. A bank must publish a summary of test results. These differ from the stress tests conducted by the Federal Reserve.

Dry Powder: Funds that have been committed but not yet drawn and invested. Often used to refer to money that limited partners in a private credit or private equity fund have committed to provide but have not yet invested.

Equity-to-Asset Ratio: The equity of an entity divided by its total assets. In banking, this is a measure of capital adequacy.

Exchange-Traded Fund (ETF): An investment fund whose shares are traded on an exchange. Because ETFs are exchange-traded products, their shares are continuously priced, unlike mutual funds, which offer only end-of-day pricing. ETFs are often designed to track an index or a portfolio of assets.

Federal Financial Institutions Examination Council (FFIEC): An interagency body that prescribes uniform principles, standards, and report forms for the federal examination of financial institutions. The FFIEC makes recommendations to promote uniformity in banking supervision.

Federal Home Loan Banks (FHLBs): Eleven U.S. government-sponsored banks, cooperatively owned by member financial institutions, that provide funding for member financial institutions. Funding ("advances") is collateralized by mortgages, small business, agriculture or community development loans, or government securities. The FHLBs fund themselves by issuing securities in the government agency market.

Federal Housing Finance Agency (FHFA): Agency responsible for supervision, regulation, and housing mission oversight of Fannie Mae, Freddie Mac, and the Federal Home Loan Bank System; it is also the conservator of Fannie Mae and Freddie Mac.

Financial Contagion: When financial or economic shocks initially affect only a few financial markets or institutions and then spread to other parts of the financial system. The risk of contagion increases with the number and complexity of interconnections among financial markets and institutions.

Financial Data Transparency Act of 2022: This bill requires federal financial regulatory agencies to adopt specified data standards with respect to format, searchability, and transparency.

Financial Market Utility (FMU): As defined by the Dodd-Frank Act, "any person that manages or operates a multilateral system for the purpose of transferring, clearing, or settling payments, securities, or other financial transactions among financial institutions or between financial institutions and the person."

Financial Stability: The ability of the financial system to provide its basic functions for the economy, even under stress.

Financial Stability Oversight Council (Council or FSOC): A government body created by the Dodd-Frank Act that consists of the heads of nine federal financial regulatory agencies and others and has a statutory mandate to identify risks and respond to emerging threats to financial stability. Chaired by the Secretary of the U.S. Treasury, the Council consists of 10 voting members and five nonvoting members, including the OFR Director, bringing together the expertise of federal financial regulators, state regulators, and an independent insurance expert appointed by the President.

Fire Sale: The disorderly liquidation of assets to meet margin requirements or other urgent cash needs. Fire sales may drive prices below their fundamental value. The quantities sold are large relative to the typical volume of transactions.

Forbearance (Debt Forbearance): An agreement between borrowers and lenders, or a government mandate, to suspend debt payments temporarily without the borrower being considered in default. Also, a decision by a lender to delay steps that would otherwise be taken to recover the amount it is owed.

Form N-MFP: A monthly disclosure of portfolio holdings submitted by money market funds to the Securities and Exchange Commission, which makes the information publicly available. SEC Rule 30b1-7 established the technical and legal details of Form N-MFP filings.

Form PF: A periodic report of portfolio holdings, leverage, and risk management practices submitted by hedge funds, private equity funds, and related entities. The report is filed with the Securities and Exchange Commission and the Commodity Futures Trading Commission, and the reported information is kept confidential. The Dodd-Frank Act mandated the reporting to help the Council monitor financial stability risks.

General Collateral Finance (GCF): A repo clearing service in which specific collateral repos can be cleared with the Fixed Income Clearing Corporation (FICC) as the central counterparty.

Global Systemically Important Banks (G-SIBs): Banks identified as having the potential to cause international financial instability. The designations are based on bank size, interconnectedness, complexity, dominance in certain businesses, and global scope.

Gross Notional Exposure (GNE): One measure of total portfolio leverage, for example, in a hedge fund. GNE is the sum of the absolute values of long and short notional positions, including both securities and derivatives.

Hedge Fund: A pooled investment vehicle in which accredited investors, such as wealthy individuals, banks, insurance companies, and trusts, may make investments. Hedge funds can employ a wide variety of investment and trading strategies. Many are highly leveraged. See **Qualified Hedge Fund**.

Hedging: An investment strategy to offset the risk of portfolio or business loss in response to a change in the value of assets, liabilities, or services. An example of hedging is buying a stock and also buying a future, the value of which will change in the opposite direction of the value of the stock.

High-Frequency Trading: The use of computerized securities trading algorithms to make large numbers of transactions at high speeds.

High-Yield Debt: Bonds and other financial instruments rated riskier than BBB- or Baa3, also known as speculative grade debt. Such instruments usually pay interest at higher rates than investment-grade instruments to compensate the investor for greater default risk.

Initial Margin: The amount of collateral an investor must provide when funding the purchase of securities with margin loans or when investing in derivatives. The initial margin can change after the security or derivative is purchased, but it does not change in response to a change in the value of the collateral. See **Variation Margin**.

Insurer Equity Capital: For insurance companies that are not mutual companies, the amount of equity on their balance sheet. A related measure of capital adequacy that can be drawn from insurance company regulatory reports for all insurance companies is policyholder surplus, which is the difference between assets and liabilities.

Interest Coverage Ratio: A measure of borrower cash flow divided by a measure of interest expense. Lower values are often associated with higher default risk.

Interest Rate Swap: A swap in which two parties exchange interest rate cash flows with one typically making payments based on a fixed interest rate applied to a notional principal amount and the other making payments based on a floating rate. Only the net payment is exchanged. See **Swap**.

Intermediation: A financial intermediary is an entity that acts as the middleman between two parties to a financial transaction or activity. Intermediation is the activity or transaction. For example, a broker-dealer intermediates security trades, and a bank intermediates lenders and borrowers.

International Organization for Standardization (ISO): An independent, nongovernmental international organization that provides best practices and standards for various business processes.

Investment-Grade Debt: Bonds and other financial instruments rated BBB- or Baa3 or higher.

Legal Entity Identifier (LEI): A unique 20-digit alphanumeric code used to identify each legal entity within a company that participates in financial markets.

Leverage: The use of debt or borrowed funds to invest.

Leverage Ratio: Measure of indebtedness and, thus, the risk of default and loss. For banks, the leverage ratio is the equity capital of a bank divided by its total assets plus its total exposures to derivatives, securities financing transactions, and off-balance-sheet exposures. For insurance companies, the leverage ratio is assets to policyholder surplus. For hedge funds, the leverage ratio is gross asset value divided by net asset value. See **Leverage** and **Tier 1 Capital Ratio**.

Leveraged Loan: Leveraged loans are loans to companies with non-investment grade ratings (lower than BBB- or Baa3). If the borrower is not rated, these loans have an interest rate spread wider than 125 bps above a risk-free reference rate, such as the SOFR. Leveraged loans are usually senior secured instruments. See **Secured Overnight Financing Rate (SOFR)**.

Liquidity: For a market, when buyers and sellers can easily trade financial instruments in customary volumes without a material impact on price. For an entity, when the entity has sufficient cash or assets that can be sold quickly to cover expenses.

Liquidity Risk: The risk that a firm will not be able to meet its current and future cash flow and collateral needs even if it has positive net worth. See **Liquidity**.

Loan-to-Value Ratio: The amount of a loan as a percent of the estimated value of the asset serving as the loan's collateral.

Margin: The amount of equity or collateral an investor or trader deposits in an account and then borrows against to make additional trades, for example.

Margin Call: A requirement that a borrower of a margin loan (or similar securities financing arrangement) increases the collateral pledged against the loan in response to reductions in the collateral's value. See **Margin Requirement**.

Margin Requirement: Rules governing the necessary collateral for a derivative, loan, or securities financing arrangement. The collateral is intended to protect the lender, in whole or in part, against the risk that the borrower will not fulfill its obligations under the contract.

Mark to Market: Accounting for the value of an asset at its current market price rather than in other ways, such as historical cost.

Market Discipline: The idea that markets can rein in risk through individual participants behaving in their own interest. For example, if risks are priced effectively and market participants are appropriately exposed to default and other risks, excessive risk-taking may be curbed.

Market Risk: The risk that an asset's market price will change by a substantial amount.

Maturity Transformation: Funding long-term assets with short-term liabilities. A market participant engaging in this practice faces the risk of conducting a fire sale of its assets if short-term funding markets are constrained.

Money Market Fund (MMF): A type of open-end mutual fund that typically invests in short-term government securities, certificates of deposit, commercial paper, or other highly liquid, low-risk securities with short remaining time to maturity. See **Mutual Fund**.

Mortgage-Backed Security (MBS): Debt securities issued by a securitization vehicle that invests in a pool of commercial mortgages. Payments to securities holders are supported by interest and principal payments on the underlying mortgages. See **Securitization Vehicle**, **Commercial**

Mortgage-Backed Security (CMBS), and **Residential Mortgage-Backed Security (RMBS)**.

Mutual Fund: An open-end investment company, regulated by the SEC, that can invest in stocks, bonds, money market instruments, other securities, or cash, and sell its own shares to the public. Most mutual funds specialize in investing in only one or a few types of assets.

National Association of Insurance Commissioners (NAIC): An organization that represents U.S. state insurance regulators. Through the NAIC, regulators establish accreditation standards and practices, conduct peer review, and coordinate their regulatory oversight of insurance companies.

Net Asset Value (NAV): The market value of an entity's assets per share. For example, a mutual fund calculates its NAV daily by dividing the fund's net value by the number of outstanding shares.

Non-Centrally Cleared Bilateral Repurchase Agreement (NCCBR): Transactions in the repurchase agreement market that are not cleared through a central counterparty. See **Central Clearing**, **Central Counterparty** and **Repurchase Agreement**.

Non-Investment Grade Debt: See **High-Yield Debt**.

Off-Balance Sheet: Assets or entities that are not recorded on a company's balance sheet. Rather, they are disclosed only in notes to financial statements, if at all.

On-the-Run Treasury Securities: The most recently issued Treasury securities of each term to maturity. These are often traded more frequently than their off-the-run predecessors.

Operational Risk: The risk of loss from events or flawed or failed processes, policies, or systems that disrupt business operations.

Option: A financial contract granting the holder the right, but not the obligation, to engage in a future transaction on an underlying security or real asset. For example, an equity call option provides the right, but not the obligation, during a fixed period to buy a block of shares at a fixed price. A put option provides the right, but not the obligation, to sell an asset during a fixed period at a fixed price.

Originate: To extend credit after processing a loan application. Banks, for example, originate mortgage loans and either hold them or sell them to other financial market participants either by direct sale or securitization.

Over-the-Counter (OTC) Derivatives: Derivatives contracts negotiated privately between two parties rather than traded on a formal securities exchange. Unlike standard exchange-traded products, OTC derivatives can be tailored to fit specific needs, such as the effect of a foreign exchange rate or commodity price over a given period.

Overnight Reverse Repo Facility (ON RRP): A facility operated by the Federal Reserve in which an eligible investor may deposit cash and receive a security that the investor commits to sell back to the Federal Reserve at a price consistent with an interest rate set by the Federal Reserve. A tool for implementing monetary policy and also for limiting volatility in money markets.

Policyholder Surplus: The difference between an insurance company's assets and liabilities.

Price Discovery: The process of determining the prices of assets through the interactions of buyers and sellers in markets.

Prime Broker: Companies that provide hedge funds and other investors with services such as loans, market making, or securities lending.

Qualifying Hedge Fund (QHF): Hedge fund advised by a large hedge fund adviser and with a net asset value of at least $500 million. Large hedge fund advisers have at least $1.5 billion in hedge fund assets under management.

Reciprocal Deposit: A bank deposit in which an intermediary spreads the total amount among several banks so that the investor has deposit insurance covered in excess of the $250,000 FDIC limit. These deposits are viewed as having higher risk because they may leave the banks in which they are deposited quicker than other deposits.

Regulatory Oversight Committee (ROC): A global group of public authorities that oversee

the Global Legal Entity Identifier (LEI) System and promotes quality reporting of financial data across jurisdictions.

Rehypothecate: When a party that has received collateral from another party pledges the collateral to a third party. For example, repo contracts involve transfers of both cash and collateral. A dealer that receives securities in a repo transaction and uses those same securities to obtain cash in a reverse repo transaction would rehypothecate the securities.

Reinsurance: The risk management practice of insurers to transfer some of their policy risk to other insurers. A different insurer (the reinsurer), for example, could assume a portion of liability in return for a proportional amount of the premium income.

Repurchase Agreement (Repo): A transaction in which one party sells a security to another party and agrees to repurchase it at an agreed price on a future date. A repo is similar to a collateralized loan.

Residential Mortgage-Backed Security (RMBS): A mortgage-backed security that is collateralized by a pool of residential mortgage loans. See **Mortgage-Backed Security (MBS)**.

Resilience: Ability of the financial system or parts of the system to absorb shocks and continue to provide basic functions.

Risk Management: The business and regulatory practice of identifying and measuring risks and developing strategies and procedures to limit them. Examples of categories of risk include credit, market, liquidity, operational, model, and regulatory.

Risk Spreads: The difference in yields of riskier assets versus assets perceived as safer, such as Treasuries and bank deposits.

Risk-Based Capital Requirement: A regulation that specifies the minimum amount of capital that a financial institution must hold to protect against losses based on the risk weight the regulation assigns to different asset categories.

Risk Weighted Assets: Bank assets or off-balance-sheet exposures weighted according to regulatory estimates of the risk they pose to bank solvency. This asset measure is used to determine a bank's regulatory risk-based capital requirements.

Run Risk: The risk that investors lose confidence in a market participant and respond by pulling back their funding or demanding more margin or collateral.

Secured Overnight Financing Rate (SOFR): The interest rate benchmark based on repurchase agreement (repo) rates and used to set rates on financial products. Reflects the general cost of large bank borrowing that is backed by Treasury securities as collateral and, thus, is a near-risk-free interest rate.

Securities Lending/Borrowing: The temporary transfer of securities from one party to another for a specified fee and time period in exchange for collateral in the form of cash or securities.

Securitization: A financial transaction in which assets such as mortgage loans are pooled, securities representing interests in the pool are issued, and proceeds from the underlying pooled assets are used to service and repay the securities. See **Securitization Vehicle**.

Securitization Vehicle: A bankruptcy-remote legal entity that is used to issue multiple tranches of liabilities and to own assets. The vehicle distributes cash flows from the assets to holders of its liabilities. All actions are specified by rules in the agreements that establish the vehicle. The vehicle has no employees; it uses service providers (such as asset managers) to conduct all its activities.

Settlement: The process of transferring ownership of securities and transferring cash in payment for the securities. Some settlement systems can include institutional arrangements for confirmation, clearing, and safekeeping of securities, as well as settlement. See **Clearing**.

Shock: An event, usually unexpected, that if sufficiently large and adverse can disrupt the functioning of vulnerable parts of the financial system.

Skin in the Game: When originators of loans or participants in risky activities keep at least part of the risk.

Spread: The difference in yields between one debt instrument and another. Often used to refer to the spread between an instrument posing credit risk and one with similar duration that poses no credit risk.

Stable Net Asset Value (NAV): A characteristic of some money market funds in which the value of a single share remains the same, usually $1, even when the value of the underlying assets shifts.

Standing Repo Facility: A facility operated by the Federal Reserve that allows an eligible investor to borrow cash at a set interest rate in return for a security posted as collateral as part of a repo agreement. A tool for implementing monetary policy and for limiting volatility in money markets.

Stress Test: An exercise that shocks asset prices by a prespecified amount sometimes along with other financial and economic variables to estimate the effect on financial institutions or markets. Under the Dodd-Frank Act, banking regulators run annual stress tests of the largest U.S. bank holding companies. See **Dodd-Frank Act Stress Test**.

Surrender Charges: A charge a customer must pay an insurance company if the customer ends a policy or other arrangement with the insurance company early. Used by insurance companies to limit outflows of funds in response to changes in financial and insurance market prices and interest rates.

Swap: An exchange of cash flows agreed by two parties with defined terms over a fixed period.

Syndicated Loan: Loan provided under a single debt contract by a group of lenders.

Systemic Risk: Risk to systemwide financial stability.

Tier 1 Capital Ratio and Common Equity Tier 1 Capital Ratio: Two measures comparing a bank's capital to its risk-weighted assets to show the bank's ability to absorb unexpected losses. Tier 1 capital includes common stock, preferred stock, and retained earnings. Common Equity Tier 1 capital excludes preferred stock.

Tranche: A liability of a securitization vehicle that provides funding for the vehicle. Holders of a tranche bear a specified portion of the risks posed by the vehicle's portfolio or activities.

Tri-Party Repo: A repurchase agreement in which a third party, such as a clearing bank, acts as an intermediary for the exchange of cash and collateral between two counterparties. In addition to providing operational services to participants, agents in the U.S. tri-party repo market extend intraday credit to facilitate settlement of tri-party repos.

Underwater Mortgages: A mortgage is underwater if the market value of the mortgaged property falls below the mortgage's remaining principal outstanding.

Unique Product Identifier (UPI): A distinct code assigned OTC derivative products, as defined by a specific set of reference data elements, for the purpose of regulatory reporting to trade repositories.

Unique Transaction Identifier (UTI): The UTI is a unique alpha-numeric code comprised of 52 characters that is assigned to a securities trade.

Variation Margin: Payment made by a counterparty to a loan or derivative arrangement if the value of the collateral or of the derivative changes. See **Initial Margin**.

VIX: Chicago Board Option Exchange (CBOE) Volatility Index, a measure of 30-day expected volatility in the U.S. stock market.

Vulnerability: In the context of a financial stability risk assessment, an underlying weakness in some part of the financial system that makes the financial system susceptible to disruption and instability if hit by a shock. See **Shock**.

APPENDIX C: ENDNOTES

1 David Weston, "Helping our customers through the CrowdStrike outage," Official Microsoft Blog, July 20, 2024, https://blogs.microsoft.com/blog/2024/07/20/helping-our-customers-through-the-crowdstrike-outage/.

2 Using data from the Federal Reserve's Financial Accounts, the estimate of $22 trillion combines corporate debt and noncorporate business debt balances. For corporate nonfinancial, the data series is FL204122005 ($8653.8) (debt securities) plus FL104123005 ($5311.6) (loans), while for noncorporate nonfinancial the series is FL114123005 ($7897.3). https://www.federalreserve.gov/releases/z1/.

3 Using data from PitchBook LCD, the U.S. leveraged loan aggregate combines institutional leveraged loans ($1.42 trillion), pro rata leveraged loans ($659 billion), private credit assets under management ($1.22 trillion), and business development company assets under management ($420 billion). High-yield corporate bonds outstanding are $1.27 trillion, calculated by multiplying total corporate bonds outstanding from the Federal Reserve Financial Accounts times the approximate fraction that is high yield.

4 $5.3 trillion is composed of two kinds of loans. The first is about $0.5 trillion of bank construction and land development loans, according to the FDIC Quarterly Banking Profile (Q2 2025). The second is about $4.8 trillion of commercial mortgage. Mortgage Bankers Association, "Commercial and Multifamily Mortgage Debt Outstanding Increased in First-Quarter 2025," June 17, 2025, https://www.mba.org/news-and-research/newsroom/news/2025/06/17/commercial-and-multifamily-mortgage-debt-outstanding-increased-in-first-quarter-2025.

5 Data providers estimate property prices with different methodologies. Some of those methodologies show a much larger decline in the value of office properties than what Figure 2-6 depicts.

6 Based on the Federal Reserve Financial Accounts (Table B.101), the aggregate debt outstanding is total household and nonprofit liabilities less CRE loans to nonprofits, municipal security liabilities of nonprofits, and trade payables owed by nonprofits.

7 Atif Mian and Amir Sufi, *House of Debt: How They (and You) Caused the Great Recession, and How We Can Prevent It from Happening Again* (University of Chicago Press, 2014).

8 Throughout the remainder of the discussion of bank vulnerabilities, some uses of the term "banks" will reference all FDIC-insured financial institutions, which include commercial banks, thrifts, and savings banks. Banks are the vast majority of insured financial institutions by number and by assets.

9 *2025 Federal Reserve Stress Test Results* (Board of Governors of the Federal Reserve System, 2025), https://www.federalreserve.gov/publications/files/2025-dfast-results-20250627.pdf.

10 *Annual Report 2024* (Office of Financial Research, 2024), 50-51, https://www.financialresearch.gov/annual-reports/files/OFR-AR-2024_web.pdf.

11 David Glancy and Robert Kurzmann, "Determinants of Recent CRE Distress: Implications for the Banking Sector," Finance and Economics Discussion Series (FEDS) Working Paper No. 2024-072 (Board of Governors of the Federal Reserve System, August 27, 2024), https://www.federalreserve.gov/econres/feds/files/2024072pap.pdf.

12 Gabriel, Ricardo Duque and Julianna Sterling, "Shifting Dynamics in Bank Funding of NBFIs: The Rise of Credit Lines," *FEDS Notes*, July 14, 2025, https://www.federalreserve.gov/econres/notes/feds-notes/shifting-dynamics-in-bank-funding-of-nbis-the-rise-of-credit-lines-20250714.html.

13 Jose Berrospide et al., "Bank Lending to Private Credit: Size, Characteristics, and Financial Stability Implications," *FEDS Notes*, May 23, 2025, https://www.federalreserve.gov/econres/notes/feds-notes/bank-lending-to-private-credit-size-characteristics-and-financial-stability-implications-20250523.html.

14 Wong, Michele, "U.S. Insurance Industry's Cash and Invested Assets Rise Over 5% to Close in on $9 Trillion as of Year-End 2024," National Association of Insurance Commissioners Capital Markets Special Report, May 2025, https://content.naic.org/sites/default/files/capital-markets-special-reports-asset-mix-ye2024.pdf.

15 "High yield" and "medium quality and riskier" means as risky or riskier than rating NAIC 3 for fixed income and CM3 for commercial mortgages, respectively, on the NAIC's rating scales. Rupawala, Husain and Tim Zawacki, "2025 US Insurance Investments Market Report: The power of the private markets," S&P Global, July 30, 2025, https://www.spglobal.com/market-intelligence/en/news-insights/research/2025-us-insurance-investments-market-report-the-power-of-the-private-markets.

16 The mean net asset weighted leverage ratio is the mean of each fund's leverage ratio multiplied by a weight equal to that fund's net assets divided by the sum of all funds' net assets.

17 Gross exposure is the sum of long and short positions.

18 Fang Cai and Sharjil Haque, "Private Credit: Characteristics and Risks," *FEDS Notes*, February 23, 2024, https://www.federalreserve.gov/econres/notes/feds-notes/private-credit-characteristics-and-risks-20240223.html.

19 The March 2020 increase in yields is especially remarkable because the Federal Reserve announced a cut in its policy rate of 150 bps on March 16. Eisenbach, Thomas M. and Gregory Phelan, "Fragility of Safe Assets," OFR Working Paper No. 23-02 (Office of Financial Research, April 3, 2023), https://www.financialresearch.gov/working-papers/2023/04/03/fragility-of-safe-assets/; Barth, Daniel and R. Jay Kahn, "Hedge Funds and the Treasury Cash-Futures Disconnect," OFR Working Paper No. 21-01 (Office of Financial Research, April 1, 2021), https://www.financialresearch.gov/working-papers/2021/04/01/hedge-funds-and-the-treasury-cash-futures-disconnect/.

20 Tobias Adrian et al., "The Evolution of Treasury Market Liquidity: Evidence from 30 Years of Limit Order Book Data," Staff Reports No. 827 (Federal Reserve Bank of New York, January 2023), https://www.newyorkfed.org/medialibrary/media/research/staff_reports/sr827.pdf.

21 Eleni Gousgounis et al., "Market Liquidity in Treasury Futures Market During March 2020," FEDS Working Paper No. 2025-38, (Board of Governors of the Federal Reserve System, May 29, 2025), https://www.federalreserve.gov/econres/feds/files/2025038pap.pdf.

22 Paul Glasserman et al., "Hidden Illiquidity with Multiple Central Counterparties," OFR Working Paper No. 15-07 (Office of Financial Research, May 7, 2015), https://www.financialresearch.gov/working-papers/files/OFRwp-2015-07_Hidden-Illiquidity-with-Multiple-Central-Counterparties.pdf.

23 Samuel J. Hempel et al., "Repo Market Intermediation: Dealer Cash and Collateral Flow Management across the U.S. Repo Market," OFR Brief No. 24-07 (Office of Financial Research, November 14, 2024), https://www.financialresearch.gov/briefs/files/OFRBrief-24-07-repo-market-intermediation.pdf.

24 Securities and Exchange Commission, "Standards for Covered Clearing Agencies for U.S. Treasury Securities and Application of the Broker-Dealer Customer Protection Rule with Respect to U.S. Treasury Securities," Final Rule, Federal Register 89, no. 10 (January 16, 2024): 2714-2830, https://www.govinfo.gov/content/pkg/FR-2024-01-16/pdf/2023-27860.pdf.

25 Securities and Exchange Commission, "Money Market Fund Reforms; Form PF Reporting Requirements for Large Liquidity Fund Advisers; and Technical Amendments to Form N–CSR and Form N–1A," Final Rule, Federal Register 88, no. 148 (August 3, 2023): 51404-51549, https://www.govinfo.gov/content/pkg/FR-2023-08-03/pdf/2023-15124.pdf.

26 Government funds can hold repos backed by government collateral with long maturities or agency securities not explicitly guaranteed by the U.S. government (e.g., Federal Home Loan Bank system obligations).

27 Based on the Federal Reserve Financial Accounts (Table B.101), the aggregate debt outstanding is total household and nonprofit liabilities less CRE loans to nonprofits, municipal security liabilities of nonprofits, and trade payables owed by nonprofits.

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