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A View on Financial Stability

Remarks by

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Thank you, Alessandra, for organizing us today, and thanks to you, Veronica Guerrieri, and Marina Azzimonti for initiating this effort seven years ago. I am honored to be with so many friends in macroeconomics at the 2025 Women in Macro Conference. I still read, recommend, and cite your work and am grateful to New York University and the University of Chicago for supporting this conference and this research.¹

How has the arc of mainstream macroeconomic research become more closely integrated with issues related to financial stability? This question is what I would like to discuss today. I applaud the advances in incorporating financial stability into macroeconomic models, which have significantly enhanced our understanding of financial market functioning and its effect on the economy. It is a topic that holds special importance to me as a macroeconomist who has worked at the intersection of macroeconomics and finance since my dissertation and as the chair of the Federal Reserve Board’s Committee on Financial Stability. I would like to then offer my assessment of the stability of the U.S. financial system.

Financial stability supports the objectives assigned to the Federal Reserve, including full employment and stable prices, a safe and sound banking system, and an efficient payments system. A financial system is considered stable when banks, other lenders, and financial markets are able to provide households, communities, and businesses with the financing they need to invest, grow, and participate in a well-functioning economy—and can do so even when hit by adverse events, or “shocks.”²

¹ The views expressed here are my own and are not necessarily those of my colleagues on the Federal Reserve Board or the Federal Open Market Committee.

² See Board of Governors of the Federal Reserve System (2024), *Financial Stability Report* (Washington: Board of Governors, April), <https://www.federalreserve.gov/publications/April-2024-financial-stability-report-purpose-and-framework.htm>.

Financial instability, by contrast, arises when vulnerabilities—such as asset bubbles, excessive leverage, liquidity mismatches, or interconnected exposures—can build up to such an extent that they can amplify different shocks and threaten the core functions of the system and the functioning of the broader economy.

Macroeconomic Research and Financial Stability

The idea that supply creates its own demand, or Say’s law, was the prevailing economic orthodoxy of the 1800s. As a result, the core content of macroeconomics as a separate discipline did not exist. Prolonged periods of involuntary unemployment were considered to be impossible. Money and credit were thought to act as a “veil” with no real effects, so money was seen as neutral and banks and other financial intermediaries as essentially passive, despite what we now know.

The Great Depression fundamentally put an end to this comforting orthodoxy and prompted decades of work to better understand the causes of, and policy responses to, economic fluctuations. For the first time, financial factors took center stage in economic theory. Directly responding to the failures of economic theory exposed by the Depression, John Maynard Keynes introduced the concept of a “liquidity trap,” in which fear pushes the demand for money so high that the usual corrective measures become ineffective.³ Friedrich Hayek and the Austrian school of economics emphasized the role of unsustainable credit booms, noting that booms in “malinvestment” would lead to fundamental mismatches that would need to be addressed.⁴ Despite the early focus on panics, credit booms, and extreme dynamics, macroeconomic research evolved in a way

³ See John Maynard Keynes (1936), *The General Theory of Employment, Interest, and Money* (London: Macmillan).

⁴ See Friedrich A. Hayek (1931), *Prices and Production* (London: George Routledge & Sons).

that de-emphasized the role of the financial system, likely reflecting technical limitations and, more broadly, the need to develop policy frameworks for the post–World War II economy where the Great Depression seemed less relevant. Modeling financial crises requires addressing complex nonlinear dynamics, feedback loops, and discontinuities, like defaults and bank runs. All of these were analytically intractable and computationally unmanageable with the tools available at the time.

As a result, the macroeconomic framework that originated from the ideas of Keynes generally assumed stable and frictionless financial markets. The IS-LM, or Investment-Saving Liquidity Preference-Money Supply framework, which describes how the goods market and the money market interact to determine aggregate output and interest rates in the economy, emerged as the central analytical tool for understanding short-run output and interest rate dynamics.⁵

However, the neoclassical synthesis was not without its critics. Joan Robinson argued that capital accumulation and investment behavior were inherently volatile and criticized the prevailing framework for overlooking important sources of instability.⁶ Milton Friedman’s work challenged the Keynesian paradigm by highlighting the importance of monetary policy and the destabilizing effects of monetary mismanagement.⁷ Even as the rational expectations revolution in macro ushered in explicit modeling of micro foundations and dynamic optimization, financial intermediaries, credit frictions, and the potential for systemic crises remained largely

⁵ See J. R. Hicks (1937), “Mr. Keynes and the ‘Classics’: A Suggested Interpretation,” *Econometrica*, vol. 5 (April), pp. 147–59; and Franco Modigliani (1944), “Liquidity Preference and the Theory of Interest and Money,” *Econometrica*, vol. 12 (January), pp. 45–88.

⁶ See Joan Robinson (1956), *The Accumulation of Capital* (London: Macmillan).

⁷ See Milton Friedman and Anna Jacobson Schwartz (1963), *A Monetary History of the United States, 1867–1960* (Princeton, N.J.: Princeton University Press).

absent. Neoclassical growth models prioritized capital accumulation and technological progress as drivers of long-run growth, and real business cycle models emphasized productivity shocks as drivers of fluctuations in employment and growth.⁸

Two papers familiar to many of you here and published in 1983 were instrumental in bringing financial stability considerations back into macroeconomic research. Douglas Diamond and Philip Dybvig showed how banks' role in providing liquidity makes them vulnerable to runs, while Ben Bernanke demonstrated how bank failures deepened the Great Depression.⁹ These contributions, which were recognized with a Nobel Prize in 2022, have helped pave the way for researchers wishing to explore both directions of the relationship between financial fragility and macroeconomic outcomes. In parallel, Hyman Minsky's financial instability hypothesis advanced a dynamic view of systemic risk, emphasizing how periods of sustained economic and financial stability tend to encourage excessive leverage and risk-taking—culminating in what we now call a “Minsky moment.” This phenomenon is when a rapid unwinding of financial positions triggers broader economic distress.¹⁰

Ultimately, it took the Global Financial Crisis to bring home just how deeply the financial system and macroeconomic dynamics are intertwined, as evidenced by the explosion of research on financial stability and financial frictions. Models incorporating

⁸ See Robert M. Solow (1956), “A Contribution to the Theory of Economic Growth,” *Quarterly Journal of Economics*, vol. 70 (February), pp. 65–94; and Finn E. Kydland and Edward C. Prescott (1982), “Time to Build and Aggregate Fluctuations,” *Econometrica*, vol. 50 (November), pp. 1345–70.

⁹ See Douglas W. Diamond and Philip H. Dybvig (1983), “Bank Runs, Deposit Insurance, and Liquidity,” *Journal of Political Economy*, vol. 91 (June), pp. 401–19; Ben S. Bernanke (1983), “Nonmonetary Effects of the Financial Crisis in the Propagation of the Great Depression,” *American Economic Review*, vol. 73 (June), pp. 257–76; and Ben S. Bernanke, Mark Gertler, and Simon Gilchrist (1983), “The Financial Accelerator in a Quantitative Business Cycle Framework,” in John B. Taylor and Michael Woodford, eds., vol. 1: *Handbook of Macroeconomics* (Amsterdam: Elsevier), pp. 1341–93.

¹⁰ See Hyman P. Minsky (1982), *Can “It” Happen Again? Essays on Instability and Finance* (Armonk, N.Y.: M.E. Sharpe).

financial intermediaries, leverage cycles, and endogenous risk became more central to macroeconomic analysis, while empirical work confirmed the critical role of credit booms in preceding financial crises.¹¹

Over the past few years, macroeconomic research, to which some of you have contributed, continued to incorporate important financial stability aspects, ranging from endogenous leverage and bank runs to models studying the effects of monetary policy in the presence of heterogeneous banks.¹² Much of this research is also being done at the Fed, and it has informed our current work in the area. I thought it would be helpful to describe some of that work to you.

Monitoring Financial Stability

Central banks around the world routinely monitor the financial system for risks, because financial crises can lead to severe recessions. A cornerstone of the Fed's work in this area is our framework for monitoring and assessing vulnerabilities. The most recent version of our semiannual *Financial Stability Report* (FSR) was released last month.¹³

Our framework distinguishes between two fundamental elements: shocks and

¹¹ See, for example, Mark Gertler and Nobuhiro Kiyotaki (2010), "Financial Intermediation and Credit Policy in Business Cycle Analysis" in Benjamin M. Friedman and Michael Woodford, eds., vol. 3: *Handbook of Monetary Economics* (Amsterdam: Elsevier), pp. 547–99; Markus K. Brunnermeier and Yuliy Sannikov (2014), "A Macroeconomic Model with a Financial Sector," *American Economic Review*, vol. 104 (February), pp. 379–421; Mark Gertler and Simon Gilchrist (2018), "What Happened: Financial Factors in the Great Recession," *Journal of Economic Perspectives*, vol. 32 (Summer), pp. 3–30; Òscar Jordà, Moritz Schularick, and Alan M. Taylor (2013), "When Credit Bites Back," *Journal of Money, Credit and Banking*, vol. 45 (December), pp. 3–28; Carmen M. Reinhart and Kenneth S. Rogoff (2009), *This Time is Different: Eight Centuries of Financial Folly* (Princeton, N.J.: Princeton University Press).

¹² See, for example, Mark Gertler, Nobuhiro Kiyotaki, and Andrea Prestipino (2020), "A Macroeconomic Model with Financial Panics," *Review of Economic Studies*, vol. 87 (January), pp. 240–88; and Marco Bellifemine, Rustam Jamilov, and Tommaso Monacelli (2022), "Monetary Policy with Heterogeneous Banks," CEPR Discussion Paper No. 17129 (Washington: Center for Economic and Policy Research, March 22), <https://cepr.org/publications/dp17129>.

¹³ See Board of Governors of the Federal Reserve System (2025), *Financial Stability Report* (Washington: Board of Governors, April), <https://www.federalreserve.gov/publications/files/financial-stability-report-20250425.pdf>.

vulnerabilities.¹⁴ Shocks are adverse events that by their nature are difficult to predict and, unfortunately, are all too frequent. Recent examples include the pandemic, Russia's invasion of Ukraine, the collapse of Silicon Valley Bank, and many geopolitical events that still warrant headlines. Vulnerabilities, which are aspects of the financial system that would amplify stress, tend to build up over time and can be identified and assessed. We monitor vulnerabilities in four key categories: asset valuation pressures, household and business borrowing, financial-sector leverage, and liquidity and maturity transformation, or funding risks. Policies to build resilience in the financial system are appropriately targeted at reducing vulnerabilities, because they do not require foreknowledge of any particular shocks.

The financial cycle is recognized as being lower in frequency than the business cycle, with vulnerabilities building over years and typically only to be crystallizing in a short-lived stress event—the classic dynamic of going up by the stairs but down by the elevator.¹⁵ Further, as I mentioned earlier, vulnerabilities often build during prolonged expansions as, for example, investor optimism leads to greater tolerance of risk, excess borrowing, and increased leverage. The realization of stress and associated contraction can put these forces into reverse, resulting in decreased vulnerabilities. But the economic and human costs of such an adjustment can be significant.

¹⁴ Details of the approach are outlined in the framework developed by Tobias Adrian, Daniel Covitz, and Nellie Liang (2013), “Financial Stability Monitoring,” staff report no. 601 (New York: Federal Reserve Bank of New York, February; revised June 2014), https://www.newyorkfed.org/medialibrary/media/research/staff_reports/sr601.pdf.

¹⁵ See Claudio Borio (2014), “The Financial Cycle and Macroeconomics: What Have We Learnt?” *Journal of Banking & Finance*, vol. 45 (August), pp. 182–98.

Financial Stability Assessment

Our most recent FSR reflects data and information generally available as of April 11, a point when financial market volatility and risk-off sentiment were elevated, with, for example, the S&P 500 having fallen more than 10 percent from its prior peak. Nonetheless, the report echoes many of the themes that we had been highlighting for the previous couple of years. I will discuss our most recent report in the context of some of those themes and illustrate a few lessons from the April volatility.

Let me start with one theme that is quite encouraging. Generally, businesses and household finances are in solid shape. Most households are able to service their debt, and overall household debt relative to GDP has declined over the past five years. While we are seeing some stress among low-to-moderate-income borrowers and those with subprime credit scores, the risks posed by overall household borrowing remain moderate. Stable balance sheets and solid income have supported the ability of most nonfinancial businesses to service their debt. At the same time, smaller and riskier businesses—which tend to have lower debt service capacity, measured by the interest coverage ratio—are sensitive to income shocks.

Most households are able to service their debt, and overall household debt relative to GDP has declined over the past five years. While vulnerabilities posed by overall household borrowing remain moderate, we are seeing some signs of stress among borrowers with subprime credit scores, which include many low- and moderate-income households. For instance, auto and credit card delinquency rates for borrowers with subprime credit scores increased substantially in 2022 and 2023 and are at or near their highest levels since the financial crisis. More generally, a sufficiently large income

shock could strain the debt-servicing capacity of a broader group of households and push up delinquency and default rates, resulting in more substantial losses for lenders.

Asset prices have fluctuated significantly over the past several years. Although we do look at asset prices, we tend to focus more on “valuations pressures,” which essentially measure how much prices differ from a variety of benchmarks. For instance, we care whether prices, relative to measures of risk, appear to be out of step with historical experience. In such circumstances, the potential price declines—should risk appetite revert to historical averages—would be larger than normal. Additionally, when the compensation for risk is low, borrowing or leverage could also increase and put further upward pressure on valuations. Coming into the April volatility, valuation pressures were elevated, consistent with the strong economy.

Allow me to discuss our view of valuation pressures in property markets and come back shortly to the imprint of the April volatility on stock and bond prices. The significant rise in house prices during and after the pandemic has slowed substantially over the past couple of years, but price-to-rent ratios and model-based valuation measures are around the record levels last seen in 2005. Two key differences are that lax underwriting standards do not appear to have driven the increase in house prices and owners’ equity appears to be more solid, using both price- and model-based measures.

We also noted that commercial real estate (CRE) valuations had been elevated going into 2022 but declined significantly through the period of higher interest rates and deteriorating CRE fundamentals. Prices and fundamentals appear to have moderated, and valuations are closer to historical norms. Given the significant volume of CRE that is maturing and will need to be refinanced, I am continuing to watch this market closely.

Let me now turn to financial system leverage and funding risks. Capital in the banking system continues to be at historically high levels. However, as you no doubt remember, the intersection of interest rate and liquidity risks played a prominent role in the March 2023 banking-sector stress. High reliance on funding from uninsured deposits was a key vulnerability among some of the most affected banks, including those that failed. When higher interest rates resulted in substantial unrealized losses, we observed rapid outflows of uninsured deposits from a handful of banks. In the April FSR, we describe how over the past couple of years, the share of uninsured deposits relative to total bank funding has decreased for most banks, especially for those that previously relied heavily on uninsured deposits. This outcome is a welcome signal. However, sizable exposure to fixed-rate assets remains, suggesting ongoing exposure to interest rate risk.

Since 2019, our FSRs have noted another development in markets—a decline in market liquidity. “Market liquidity” refers to the cost of quickly buying or selling a desired quantity of a security and being able to do so without having a significant effect on the market price. During periods of asset-price volatility, it is not surprising that liquidity often declines, so we consider whether market liquidity measures are low given the level of volatility. As discussed in previous FSRs, some evidence indicates that a number of measures of liquidity have shifted down over time, particularly in Treasury markets, where volatility has also been relatively high.¹⁶ We have done a lot of work, as

¹⁶ See, for example, Board of Governors of the Federal Reserve System (2023), *Financial Stability Report* (Washington: Board of Governors, May), <https://www.federalreserve.gov/publications/files/financial-stability-report-20230508.pdf>; and Board of Governors of the Federal Reserve System (2024), *Financial Stability Report* (Washington: Board of Governors, November), <https://www.federalreserve.gov/publications/files/financial-stability-report-20241122.pdf>.

have others, to analyze the causes and what lower liquidity in normal times may imply for market functioning during periods of severe stress. One area we are exploring is broker-dealers' intermediation capacity, which has been affected by a number of factors, including elevated Treasury issuance and increased client demand for secured financing—which is typically collateralized by Treasury securities.

With that backdrop, let me now turn to last month's events. The details of the tariff announcements in early April were unexpected. Corporate earnings calls and our own broad-based market outreach suggest three areas of concern among businesses and market participants: One, significantly heightened uncertainty, two, an increased risk of a slowdown in economic activity, and three, prospects for higher inflation. With subsequent announcements some of this uncertainty has ebbed. Nonetheless, the episode offers some insights relevant for financial stability.

Asset prices fell sharply, particularly in equities, but also in corporate bond and other securities markets. By the second week of April, major stock indices had declined almost 20 percent from their mid-February peaks, with over half of the declines coming in a seven-day period in early April. The Chicago Board Options Exchange's Volatility Index, the VIX, was extremely elevated through this period, closing at levels not seen since the onset of the pandemic. Some of the decline in equity prices likely reflected a change in the economic outlook, but investor risk appetite likely fell as well, although this is harder to assess because data on changes in earnings expectations arrive with a lag. As we have flagged in previous FSRs, large asset-price declines, whatever the cause, can trigger margin spirals and other feedback loops that are self-reinforcing, if there is excessive leverage or liquidity mismatches in the system.

Highly leveraged investors, including some large hedge funds, have rapidly unwound positions during past bouts of market volatility. While such dynamics likely contributed to some of the price declines in early April, the overall volumes appear limited. As Roberto Perli, the manager of the Federal Open Market Committee’s System Open Market Account, noted in a recent speech, while there is evidence of some unwinding of the swap spread trade, it was orderly. He said there is no evidence of an unwinding of the cash-futures basis trade, a large and highly leveraged trade that exploits small differences in the prices of Treasury securities and Treasury futures contracts. This stability likely owes in part to the resilience of funding markets through this episode.¹⁷

Large asset-price declines also prompt outflows from open-end mutual funds. Some funds specialize in relatively illiquid assets, such as high-yield corporate bonds or leveraged loans. This is another potential vulnerability we have tracked over time, because a large redemption wave can overwhelm these funds’ cash reserves, leading to fire-sale dynamics in the underlying markets. And redemptions from some funds were quite large in April, particularly given that, in contrast with previous episodes, the general level of interest rates did not fall. Nonetheless, funds were able to handle these redemptions without contributing to stress in corporate debt markets.

Treasury markets also continued to function in an orderly fashion throughout the episode. To be sure, market depth and other liquidity measures decreased from already low levels, but the decline was in line with what would be anticipated, given the elevated volatility in markets. This outcome is in contrast to what we saw in March 2020, when

¹⁷ See Roberto Perli (2025), “Recent Developments in Treasury Market Liquidity and Funding Conditions,” speech delivered at the 8th Short-Term Funding Markets Conference, sponsored by the Board of Governors of the Federal Reserve System, Washington, May 9, <https://www.newyorkfed.org/newsevents/speeches/2025/per250509>.

trading became much more difficult than would have been expected, given the level of volatility because of the broad market dysfunction that characterized the onset of the pandemic.

The episode provided a real-life example of the large asset-price declines and sudden bursts of volatility that can result from shocks when asset valuations are stretched, as well as the importance of stable and resilient funding markets in absorbing shocks. The experience will surely help us hone our ongoing assessment of financial system vulnerabilities and areas of resilience.

Conclusion

I would like to conclude my remarks with a few examples of research areas that I think would be interesting and helpful to me and, perhaps, to other policymakers.

First, I understand the difficulty of developing macroeconomic models in which financial risk is endogenously determined by leverage and liquidity mismatch rather than a reliance on exogenous risk shocks. But I hope that the prospect of making highly impactful policy-relevant contributions will induce researchers to dig in on this topic.

Second, episodes of strain in U.S. Treasury markets over the past several years illustrate the importance of nonbank financial intermediaries, a term that encompasses hedge funds, mutual funds, life insurers, finance companies, and money market funds. This is particularly true in the U.S., where credit is provided by a combination of banks and nonbanks that are often connected through counterparty relationships or common exposure. It would be helpful to have deeper insights into the potential macroeconomic consequences of the shifting interaction between banks and nonbanks.

Third, relatedly, efforts to incorporate private credit and private equity into macroeconomic models could spur important lines of research. Layered leverage in intermediation chains involving private equity, private credit funds, banks, and businesses can transmit and amplify real-economy shocks to different parts of the financial sector. In addition, private equity and private credit are macro-relevant sectors that can transmit shocks to the real economy.

I understand that it is easy to throw out a research wish list and walk away, leaving the substantial modeling and operational challenges to others. But I do think it is worth developing new tools and approaches for better characterizing our evolving macro-financial reality. I hope some of you and your graduate students will take up the challenge.

Thank you again for the opportunity to join you today.