# The Macroprudential Myth

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*According to conventional wisdom, the 2008 financial crisis fundamentally changed how policymakers approach financial regulation. Before the crisis, regulators sought to prevent individual financial institutions from collapsing, but this "microprudential" strategy proved inadequate to stop the market-wide meltdown. In response, policymakers purportedly turned to a new "macroprudential" approach that prioritizes the stability of the financial system as a whole instead of individual institutions in isolation. Regulators in the United States and abroad enthusiastically embraced macroprudential policy, implementing stress tests, capital buffers, liquidity requirements, and other supposed macroprudential tools. As the United States' top bank regulator declared in 2015, "[W]e are all macroprudentialists now."*

*There is just one problem, though, with using the term "macroprudential" to describe modern financial regulation: it is a myth. Despite the macroprudential label, the prevailing regulatory framework is still predominantly microprudential in nature. Although some post-2008 policy innovations nudged financial oversight in a macroprudential direction, the dominant tools financial regulators use today are just supersized versions of the microprudential approaches that have existed for decades. This shortcoming has serious economic consequences. As recurring financial disruptions—including the panic following Silicon Valley Bank's failure—have vividly demonstrated, microprudential regulation is prone to overlooking interconnections and other systemic vulnerabilities. Accordingly, this Article proposes a roadmap to reorient the regulatory framework toward the macroprudential approach that the modern financial system demands.*

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## INTRODUCTION

The Great Depression upended economics orthodoxy. Before the 1930s, economists typically studied the fiscal decisions of individuals, households, and companies—a field now referred to as microeconomics.[1] The Depression, however, birthed a new discipline: macroeconomics.[2] Inspired by the writings of John Maynard Keynes, macroeconomics shifted focus from individual actors' decision

1. *See generally* Paola Tubaro, *History of Microeconomics*, *in* 15 INTERNATIONAL ENCYCLOPEDIA OF THE SOCIAL & BEHAVIORAL SCIENCES 331 (James D. Wright ed., 2d ed. 2015) (discussing the history of microeconomics).

2. Robert E. Lucas, Jr., *Macroeconomic Priorities*, 93 AM. ECON. REV. 1, 1 (2003) ("Macroeconomics was born as a distinct field in the 1940's, as a part of the intellectual response to the Great Depression.").

making to the interactions of the entire economic system in the aggregate.[3] Macroeconomics eventually became the dominant framework and has governed economic policymaking for much of the past century.[4]

Just as the Great Depression revolutionized economics, the 2008 financial crisis transformed financial regulation by shifting emphasis from individual firms to the financial system writ large. Before the 2008 market crash, financial regulators sought to ensure the safety of individual banks and insurers to prevent them from collapsing.[5] After mortgage-backed securities and derivatives triggered the market-wide meltdown in 2008, however, policymakers and academics began to appreciate that the prevailing "microprudential" approach had ignored critical interconnections within the financial system.[6] Thus, a new strategy known as "macroprudential" regulation emerged as a complementary framework better suited to mitigating risks in modern financial markets.[7] In contrast to microprudential regulation's focus on the solvency of individual financial institutions, macroprudential regulation aims to safeguard the financial system as a whole by addressing market-wide vulnerabilities.[8]

With the subprime mortgage crisis fresh in mind, policymakers and academics eagerly embraced a macroprudential perspective.[9] In the United States, the Dodd-Frank Wall Street Reform and Consumer Protection Act (Dodd-Frank) instituted a slew of new financial stability tools, including enhanced capital requirements, stress tests, and liquidity rules for the largest banks.[10] Many international jurisdictions enacted similar measures, encouraged by global standard-setting bodies that

3. *See* Sarwat Jahan, Ahmed Saber Mahmud & Chris Papageorgiou, *What Is Keynesian Economics?*, FIN. & DEV., Sept. 2014, at 53, 53 (describing the history of Keynesian theory).

4. *See generally* N. GREGORY MANKIW, MACROECONOMICS (10th ed. 2019) (discussing the influence of macroeconomics in economic policymaking).

5. *See* Samuel G. Hanson, Anil K Kashyap & Jeremy C. Stein, *A Macroprudential Approach to Financial Regulation*, J. ECON. PERSPS., Winter 2011, at 3, 4–5 (describing traditional microprudential regulation).

6. *See, e.g.*, Daniel K. Tarullo, *Time-Varying Measures in Financial Regulation*, 83 LAW & CONTEMP. PROBS., no. 1, 2020, at 1, 1 ("One important lesson of the 2008 financial crisis was the inadequacy of a prudential regulatory system oriented dominantly toward the solvency of individual banking institutions.").

7. *See, e.g.*, Claudio Borio, *Implementing a Macroprudential Framework: Blending Boldness and Realism*, 6 CAPITALISM & SOC'Y, no. 1, 2011, at 1, 2–5 (describing macroprudential regulation). The word "macroprudential" originated in the late 1970s, but the terminology and its underlying concepts were "little used before the [2008] crisis." Piet Clement, *The Term "Macroprudential": Origins and Evolution*, BIS Q. REV., Mar. 2010, at 59, 59. Professors Anna Gelpern and Adam Levitin found fewer than twenty articles using the term in English-language law journals prior to 2008. *See* Anna Gelpern & Adam J. Levitin, *Considering Law and Macroeconomics*, 83 LAW & CONTEMP. PROBS., no. 1, 2020, at i, vii.

8. *See* Hanson et al., *supra* note 5, at 4–7 (comparing microprudential and macroprudential regulation).

9. *See* Tarullo, *supra* note 6, at 2 ("The post-crisis commitment to macroprudential regulation was both quick and widespread."); Claudio Borio, *(Too) Great Expectations?*, CENT. BANKING J., Aug. 2014, at 79, 79 ("Following the crisis, the term 'macro-prudential' went from virtual obscurity . . . to rock-star status almost overnight . . . .").

10. Pub. L. No. 111-203, 124 Stat. 1376 (2010); *see also* Michael S. Barr, *The Financial Crisis and the Path of Reform*, 29 YALE J. ON REGUL. 91, 97, 99–103 (2012) (cataloguing post-2008 financial regulatory reforms in the United States).

enthusiastically heralded macroprudential regulation as a guiding principle.[11] As former Federal Reserve Governor Daniel Tarullo proclaimed in 2015, "[W]e are all macroprudentialists now."[12]

With the post-2008 financial regulatory overhaul largely complete, it is now widely accepted that the prevailing approach—both in the United States and abroad—is predominantly macroprudential. For example, former Federal Reserve Chairman Ben Bernanke noted that "a central element" of Dodd-Frank "is the requirement that the Federal Reserve and other financial regulatory agencies adopt a so-called macroprudential approach."[13] Former Bank of England Chief Economist Andrew Haldane observed that "we have new macroprudential agencies and policies popping up all over the world."[14] Meanwhile, European Central Bank President Christine Lagarde touted that "macroprudential policy for banks has developed from an idea into a reality."[15] Numerous scholars have echoed these descriptions of the post-2008 financial regulatory framework as macroprudential.[16]

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11. Shortly after the 2008 crash, Group of Twenty (G20) leaders agreed to "reshape [their] regulatory systems so that [their] authorities are able to identify and take account of macro-prudential risks." Grp. of Twenty [G20], London Summit – Leaders' Statement ¶ 15 (Apr. 2, 2009), http://www.g20.utoronto.ca/2009/2009communique0402.pdf [https://perma.cc/YRZ9-AGHW]. By 2015, "some 50 jurisdictions, including all of the world's most developed economies, ha[d] formally adopted macroprudential finance-regulatory measures." Robert Hockett, *The Macroprudential Turn: From Institutional 'Safety and Soundness' to Systematic 'Financial Stability' in Financial Supervision*, 9 VA. L. & BUS. REV. 201, 205 (2015).

12. Daniel K. Tarullo, Member, Bd. of Governors of the Fed. Rsrv. Sys., Advancing Macroprudential Policy Objectives 2 (Jan. 30, 2015) (transcript available at https://www.federalreserve.gov/newsevents/speech/files/tarullo20150130a.pdf [https://perma.cc/7WC9-N89Q]).

13. Ben S. Bernanke, Chairman, Bd. of Governors of the Fed. Rsrv. Sys., Implementing a Macroprudential Approach to Supervision and Regulation 1 (May 5, 2011) (transcript available at https://www.federalreserve.gov/newsevents/speech/files/bernanke20110505a.pdf [https://perma.cc/5G3P-8R28]).

14. Andrew Haldane, *Macroprudential Policy in Prospect*, *in* WHAT HAVE WE LEARNED?: MACROECONOMIC POLICY AFTER THE CRISIS 65, 65 (George Akerlof et al. eds., 2014); *see Andy Haldane*, BANK ENG. (Jan. 31, 2023), https://www.bankofengland.co.uk/about/people/past/andy-haldane/biography [https://perma.cc/3TDJ-YH7Z].

15. Christine Lagarde, President, Eur. Cent. Bank, Macroprudential Policy in Europe – The Future Depends on What We Do Today (Dec. 8, 2021) (transcript available at https://www.ecb.europa.eu/press/key/date/2021/html/ecb.sp211208~e18612adce.en.html [https://perma.cc/J667-52XE]).

16. *See, e.g.*, Hockett, *supra* note 11, at 205 (noting that numerous jurisdictions have "formally adopted macroprudential finance-regulatory measures"); Saule T. Omarova, *The "Too Big to Fail" Problem*, 103 MINN. L. REV. 2495, 2524 (2019) (discussing "the Dodd-Frank Act's regime of macroprudential regulation and supervision of financial institutions"); Kathryn Judge, *Fragmentation Nodes: A Study in Financial Innovation, Complexity, and Systemic Risk*, 64 STAN. L. REV. 657, 668 (2012) ("[A]spects of the Dodd-Frank Act and other policy responses to the crisis are responsive to concerns about . . . the need for a more macroprudential approach to systemic risk regulation."); Kristin N. Johnson, *Macroprudential Regulation: A Sustainable Approach to Regulating Financial Markets*, 2013 U. ILL. L. REV. 881, 917 ("The Dodd-Frank Act introduces several mechanisms that will facilitate the introduction of macroprudential policy."); Adam J. Levitin, *In Defense of Bailouts*, 99 GEO. L.J. 435, 475 (2011) ("Dodd–Frank's general approach to systemic risk is to emphasize improved macroprudential monitoring and regulation for financial firms . . . ."); Christina Parajon Skinner, *Regulating Nonbanks: A Plan for SIFI Lite*, 105 GEO. L.J. 1379, 1423 (2017) (discussing "Dodd-Frank's vision of a comprehensive macroprudential (systemic risk) regulator"); Lindsay Sain Jones & Tim R Samples, *On the Systemic Importance of Digital Platforms*, 25 U. PA. J. BUS. L. 141, 159–60 (2023)

There is just one problem, however, with using the term "macroprudential" to characterize modern financial regulation: it is inaccurate. Despite the "macroprudential" label, the prevailing regulatory framework is still predominantly microprudential in nature. Although some post-2008 policy innovations nudged financial oversight in a macroprudential direction, the dominant tools financial regulators use today are just supersized versions of the microprudential approaches that have existed for decades. The current approach to financial regulation in the United States and abroad remains primarily microprudential, and this shortcoming has significant implications for the stability of the financial system.

Consider several examples of postcrisis regulatory innovations that are regularly—and, we argue, misleadingly—characterized as macroprudential. Experts commonly describe the international Basel III capital accord as macroprudential.[17] In reality, however, the Basel III framework simply strengthened the microprudential risk-based and leverage capital rules that have formed the basis of U.S. bank regulation since the 1980s.[18] Similarly, the postcrisis stress testing regime—in which supervisors use financial models to assess institutions' viability during a hypothetical crisis—is popularly believed to be macroprudential.[19] In practice, however, the stress test is a partial equilibrium analysis that overlooks interconnections and feedback loops among different financial institutions—a classic microprudential limitation.[20] Postcrisis liquidity rules that require banks to hold minimum amounts of high-quality, easy-to-sell assets are likewise believed by some observers to be macroprudential.[21] Yet these liquidity requirements are

(describing Dodd-Frank as "macroprudential regulation"); Behzad Gohari & Karen E. Woody, *The New Global Financial Regulatory Order: Can Macroprudential Regulation Prevent Another Global Financial Disaster?*, 40 J. CORP. L. 403, 420 (2015) ("[T]he Dodd–Frank Act served as the foundational legislation for the introduction of macroprudential policies as a regulatory tool."); Graham S. Steele, *Banking as a Social Contract*, 22 U.C. DAVIS BUS. L.J. 65, 70 (2021) (characterizing the Federal Reserve as "the lead architect of a macroprudential approach to financial stability regulation under [Dodd-Frank]").

17. *See, e.g.*, Roberta Romano, *For Diversity in the International Regulation of Financial Institutions: Critiquing and Recalibrating the Basel Architecture*, 31 YALE J. ON REGUL. 1, 20 (2014) ("Basel III . . . added both a liquidity standard and 'macroprudential' capital regulations . . . .").

18. *See* DANIEL K. TARULLO, BANKING ON BASEL: THE FUTURE OF INTERNATIONAL FINANCIAL REGULATION 36–40 (2008) (describing the United States' implementation of bank capital requirements in the 1980s). To be sure, Basel III introduced certain new tools—such as the countercyclical capital buffer (CCyB)—that reflect a macroprudential orientation. *See* Daniel K. Tarullo, *Financial Regulation: Still Unsettled a Decade After the Crisis*, J. ECON. PERSPS., Winter 2019, at 61, 74 (describing the CCyB as macroprudential). To date, however, Basel III's macroprudential aspects remain underdeveloped, and the core principles of capital regulation are still primarily microprudential. *See infra* Section III.B.1.

19. *See* Prasad Krishnamurthy, *George Stigler on His Head: The Consequences of Restrictions on Competition in (Bank) Regulation*, 35 YALE J. ON REGUL. 823, 834 n.60, 865–66 (2018) ("Dodd-Frank Act introduces a novel system of stress tests that come under the category of macroprudential regulation.").

20. *See* Dimitri G. Demekas, *Designing Effective Macroprudential Stress Tests: Progress So Far and the Way Forward* 7 (Int'l Monetary Fund, Working Paper No. 15/146, 2015), https://www.imf.org/external/pubs/ft/wp/2015/wp15146.pdf [https://perma.cc/H9RQ-GR9U] (critiquing the "partial equilibrium approach of traditional microprudential stress testing models" as "relatively primitive").

21. *See* Steven L. Schwarcz, *Systematic Regulation of Systemic Risk*, 2019 WIS. L. REV. 1, 15 (including modern liquidity rules among "today's best macroprudential regulation"); *see also infra* notes 169–70 (discussing the Basel III liquidity rules).

principally microprudential in that they prioritize the safety of individual financial institutions, potentially to the detriment of the financial system as a whole.[22] In many cases, postcrisis regulatory tools could in theory serve macroprudential purposes, but policymakers have chosen to implement them in a way that limits their macroprudential reach.

We do not intend to be overly critical of the post-2008 financial regulatory reforms, which undoubtedly improved on the precrisis regulatory framework and enhanced financial stability. Indeed, the mislabeling of the post-2008 reforms as "macroprudential" has likely stuck in the collective consciousness because the new rules are such a meaningful advancement over the purely microprudential approach used before the crisis.[23] Given the significance of the reforms, it is understandable that policymakers and scholars would frame them as more paradigm-shifting than they actually were. In fact, like other scholars, we have at times succumbed to characterizing post-2008 reforms as macroprudential.[24] Upon a holistic evaluation, however, it is clear that the post-2008 reforms did not fundamentally shift from a microprudential to macroprudential approach as is commonly believed.[25]

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22. *See* Daniel K. Tarullo, *International Cooperation in Central Banking*, 47 CORNELL INT'L L.J. 1, 13 (2014) ("International liquidity requirements . . . are also essentially microprudential in orientation, since they focus on the funding and asset positions of each firm individually, rather than the funding needs of the financial system as a whole."). As Tarullo has explained, "[I]n a stressed financial environment in which counterparties of large banks . . . are themselves in need of liquidity, the financial system as a whole may be adversely affected if the regulated firms seek to protect their positions by cutting off liquidity to counterparties as their own funding becomes tighter." *Id*. at 7 n.15.

23. As one example, the postcrisis reforms more than tripled the amount of common equity Tier 1 capital that banks generally must maintain when taking into account new buffer requirements. *See* Mark E. Van Der Weide & Jeffery Y. Zhang, *Bank Capital Requirements After the Financial Crisis*, *in* THE OXFORD HANDBOOK OF BANKING 707, 717, 721–22 (Allen N. Berger et al. eds., 3d ed. 2019) (noting that the common equity Tier 1 capital requirement increased from an "implicit 2 percent" to a minimum requirement of 4.5% plus a 2.5% capital conservation buffer).

24. *See, e.g.*, Jeremy C. Kress, Patricia A. McCoy & Daniel Schwarcz, *Regulating Entities and Activities: Complementary Approaches to Nonbank Systemic Risk*, 92 S. CAL. L. REV. 1455, 1475, 1501 (2019) (describing the Federal Reserve's oversight of nonbank systemically important financial institutions as macroprudential); Jeremy C. Kress & Matthew C. Turk, *Too Many to Fail: Against Community Bank Deregulation*, 115 NW. U. L. REV. 647, 715 (2020) (asserting that "postcrisis reforms introduced a macroprudential approach for the largest financial institutions"); Nicholas K. Tabor & Jeffery Y. Zhang, *Capital, Contagion, and Financial Crises: What Stops a Run from Spreading?*, 2020 COLUM. BUS. L. REV. 575, 633 (describing the postcrisis regulatory framework as macroprudential). We erred in describing the regulatory framework as macroprudential in part because the financial system had not yet experienced a series of events, beginning in 2020, that exposed the regulatory framework's limitations. *See infra* Section IV.A (discussing Archegos's collapse, the COVID-19 pandemic, and Silicon Valley Bank's failure).

25. Several scholars and policymakers have made a similar observation in passing without fully elaborating on this key point. *See, e.g.*, JOHN ARMOUR, DAN AWREY, PAUL DAVIES, LUCA ENRIQUES, JEFFREY N. GORDON, COLIN MAYER & JENNIFER PAYNE, PRINCIPLES OF FINANCIAL REGULATION 410 (2016) (describing the post-2008 regulatory reforms as "microprudential plus"); Saule T. Omarova, *New Tech v. New Deal: Fintech as a Systemic Phenomenon*, 36 YALE J. ON REGUL. 735, 754 n.81 (2019) ("The new macroprudential regulatory regime essentially utilizes scaled up microprudential tools."); John C. Williams, *Macroprudential Policy in a Microprudential World*, FRBSF ECON. LETTER (Fed. Rsrv. Bank of S.F., S.F., Cal.), June 1, 2015, at 4, https://www.frbsf.org/wp-content/uploads/sites/4/

The inaccurate portrayal of the post-2008 regulatory framework as macroprudential has serious consequences, as the 2023 banking crisis vividly demonstrated. Since financial oversight remains predominantly microprudential, authorities are prone to overlook interconnections and vulnerabilities within the financial system—such as the correlated uninsured deposits that Silicon Valley Bank (SVB) issued prior to its sudden demise in 2023 and the correlated exposures to the Archegos family office that triggered more than $10 billion in bank losses when the firm imploded in 2021.[26] A more robust macroprudential approach could help detect and deter such risks, but the incorrect assumption that today's framework is already macroprudential impedes additional macroprudential reforms. Even more problematically, the misguided view that the post-2008 regulatory framework was already sufficiently macroprudential enabled deregulatory-minded policymakers to undo many of the postcrisis reforms during the Trump Administration, weakening the regulatory framework beyond its already-flawed baseline.[27]

This Article establishes a roadmap for policymakers to reorient the prevailing, supersized version of microprudential regulation toward genuine macroprudential oversight. To optimize macroprudential regulation, Congress would need to enact structural reforms to address gaps in the United States' balkanized regulatory system that impede effective systemic risk oversight.[28] Even if Congress does not overhaul the United States' regulatory structure, however, the current regulatory agencies can still enhance macroprudential oversight using their existing legal authorities. For example, this Article recommends that the agencies strengthen countercyclical capital rules, fix unworkable liquidity requirements, create general equilibrium stress tests, address correlation risks, and mandate central clearing for systemically important instruments.[29] While not an exhaustive list of potential macroprudential reforms, these enhancements would collectively represent a significant step toward the macroprudential orientation that modern financial market oversight demands.[30]

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el2015-18.pdf [https://perma.cc/UNK2-ZLC4] ("The development of a more macroprudential approach in the United States . . . continues to be built on microprudential foundations.").

26. *See* Telis Demos, *What Happened with Silicon Valley Bank?*, WALL ST. J. (Mar. 14, 2023, 3:00 PM), https://www.wsj.com/articles/silicon-valley-bank-svb-financial-what-is-happening-299e9b65; Leo Lewis & Owen Walker, *Total Bank Losses from Archegos Implosion Exceed $10bn*, FIN. TIMES (Apr. 27, 2021), https://www.ft.com/content/c480d5c0-ccf7-41de-8f56-03686a4556b6.

27. *See* Graham S. Steele, *The Tailors of Wall Street*, 93 U. COLO. L. REV. 993, 1012–22 (2022) (describing financial regulatory rollbacks during the Trump Administration). For example, Trump Administration regulators weakened capital rules, relaxed leverage limits, softened stress tests, and reduced liquidity requirements, particularly—but not exclusively—for banks with between $100 billion and $250 billion in assets. *See id.* at 1014–20, 1017 n.109.

28. *See infra* Section V.A (suggesting that the United States establish a single financial stability regulator, similar to the United Kingdom and Australia).

29. *See infra* Section V.B.

30. This Article focuses on macroprudential regulation, distinct from macroprudential supervision. *See* Peter Conti-Brown & Sean Vanatta, Risk, Discretion, and Bank Supervision 5–6 (Mar. 30, 2023) (unpublished manuscript) [https://perma.cc/F9D3-V76C] (distinguishing between regulation, or bright-line rules, and supervision, or the public oversight of financial risk management through monitoring and periodic

It is essential that policymakers continue moving the financial regulatory framework in a more macroprudential direction rather than accepting the current framework as the finished product. Former Bank of England Chief Economist Andrew Haldane observed in 2014 that the "state of knowledge about macroprudential regimes today is roughly where monetary policy was in the '40s."[31] Just as macroeconomics evolved after its emergence during the Great Depression,[32] so too must macroprudential financial regulation continue to develop in the wake of the 2008 crisis. Accepting that today's regulatory framework is not completely—or even primarily—macroprudential is the first step toward ensuring that policymakers ultimately implement an appropriately macroprudential approach to protecting the financial system.

This Article proceeds as follows. Part I compares microprudential and macroprudential financial regulation, focusing on each approach's unique objectives and underlying assumptions. It shows how the traditional microprudential strategy neglected critical vulnerabilities in the lead-up to the 2008 financial crisis. Part II then describes the postcrisis legal reforms and the near-universal belief that the modernized regulatory framework is macroprudential. Part III debunks this myth. It demonstrates that although some post-2008 reforms nudged financial regulation in a macroprudential direction, the framework as a whole remains decidedly microprudential. Part IV weighs the advantages, disadvantages, and feasibility of the United States transitioning to a more macroprudential approach. Drawing on case studies of Archegos's collapse, the SVB-induced banking turmoil, and the COVID-19-related economic crisis, it highlights persistent financial stability risks that can only be addressed through better macroprudential regulation. Finally, Part V proposes a roadmap for policymakers to reorient financial regulation toward genuine macroprudential oversight. The Article concludes that, notwithstanding the consensus that the post-2008 regulatory framework is macroprudential, additional macroprudential enhancements are necessary to prevent future financial crises.

examination). The Federal Reserve tried to enhance macroprudential supervision following the 2008 crisis by, for example, creating the Large Institution Supervision Coordinating Committee to orchestrate "horizontal" examinations of the biggest financial firms. *See Large Institution Supervision Coordinating Committee*, BD. GOVERNORS FED. RSRV. SYS. (Feb. 22, 2023), https://www.federalreserve.gov/supervisionreg/large-institution-supervision.htm [https://perma.cc/MS34-8N4P]. At least in theory, this approach to supervision could help achieve macroprudential objectives, such as mitigating cross-sectional risks. *See infra* Section I.B.2 (discussing cross-sectional risks). Because of the secrecy inherent in modern bank supervision, however, it is difficult to assess the efficacy of these initiatives. *See* Peter Conti-Brown, *The Curse of Confidential Supervisory Information*, BROOKINGS (Dec. 20, 2019), https://www.brookings.edu/articles/the-curse-of-confidential-supervisory-information/ [https://perma.cc/4XDX-4FTF].

31. Haldane, *supra* note 14, at 65. Haldane joked that "if I am being charitable, that would be the 1940s rather than the 1840s." *Id.*

32. *See generally* MANKIW, *supra* note 4 (discussing the evolution of macroeconomics).

## I. THE AIMS OF MACROPRUDENTIAL REGULATION

The 2008 financial crisis ushered in a novel approach to financial market oversight, known as macroprudential regulation, that emphasizes system-wide financial stability. This new discipline breaks with decades of tradition in which policymakers focused on individual banks' safety and soundness instead of the financial system as a whole.[33] The pre-2008 approach, known as microprudential regulation, implicitly assumed that the broader financial system would remain stable as long as individual banks stayed solvent.[34] By contrast, macroprudential regulation recognizes that, in addition to monitoring individual institutions, effective financial market oversight requires attention to fluctuations in risks over time and interconnections among market participants—considerations that traditional microprudential regulation overlooks.[35] This Part examines the key distinctions between microprudential and macroprudential financial regulation. Section I.A begins by analyzing the approaches' different objectives, contrasting the microprudential focus on individual institutions with the macroprudential emphasis on system-wide stability. Section I.B then explores two specific aspects of financial instability—time-varying and cross-sectional risks—that macroprudential regulation seeks to address.

### A. COMPARING MICROPRUDENTIAL AND MACROPRUDENTIAL REGULATION

Microprudential and macroprudential regulation differ in their primary goals and underlying assumptions. In short: microprudential regulation focuses on financial *institutions*, while macroprudential regulation emphasizes the financial *system* as a whole.[36] This Section explains microprudential regulation, the shortcomings of the microprudential approach that the 2008 financial crisis exposed, and macroprudential regulation's alternative philosophy.

As its primary objective, microprudential regulation seeks to ensure that individual financial institutions remain solvent. As former Federal Reserve Governor Daniel Tarullo described it, microprudential regulation "is concerned largely with the safety and soundness of a financial institution considered individually."[37] By ensuring an individual bank's viability, microprudential regulation aims to protect the bank's depositors, other creditors, and the Federal Deposit Insurance Corporation's Deposit

33. *See* Hanson et al., *supra* note 5, at 4–7 (contrasting microprudential and macroprudential regulation).

34. *See* Luca Enriques, Alessandro Romano & Thom Wetzer, *Network-Sensitive Financial Regulation*, 45 J. CORP. L. 351, 357 (2020) (discussing assumptions underlying the microprudential approach).

35. ARMOUR ET AL., *supra* note 25, at 411–15 (describing the cross-sectional and time-varying aspects of systemic risk).

36. *See* Hanson et al., *supra* note 5, at 3.

37. Daniel K. Tarullo, Member, Bd. of Governors of the Fed. Rsrv. Sys., Corporate Governance and Prudential Regulation 6 (June 9, 2014) (transcript available at https://www.federalreserve.gov/newsevents/speech/tarullo20140609a.pdf [https://perma.cc/N6VZ-3367]); *see also* XAVIER FREIXAS, LUC LAEVEN & JOSÉ-LUIS PEYDRÓ, SYSTEMIC RISK, CRISES, AND MACROPRUDENTIAL REGULATION 208 (2015) ("Microprudential regulation is defined as all regulatory measures that reduce the probability of a bank bankruptcy . . . .").

Insurance Fund (DIF), all of which could incur losses if the bank were to fail.[38] Microprudential regulation also tries to combat moral hazard—a bank's propensity to take excessive risks because its creditors are insured.[39] To fulfill these objectives, microprudential regulation relies in part on capital adequacy requirements, which seek to ensure that a bank maintains a sufficient cushion of equity and other loss-absorbing instruments to avoid insolvency.[40]

Two critical assumptions undergird the economic models on which microprudential regulation is based. First, microprudential regulation has traditionally presumed that shocks originate *exogenously*, from outside the financial system.[41] Examples of exogenous shocks that might destabilize a bank include a recession, a natural disaster, or a global pandemic.[42] Policymakers have historically calibrated microprudential regulations to enhance a bank's resilience to such adverse exogenous events.[43] Second, microprudential regulation reflects a *partial equilibrium* in that it focuses on a single institution while holding other factors constant.[44] Thus, the microprudential approach takes into account the causes and consequences of an individual firm's potential insolvency, but it ignores spillover effects and the behavior of other market participants.[45]

At its core, microprudential regulation rests on the belief that maintaining the safety and soundness of individual institutions is sufficient to preserve overall financial stability. As Professors Luca Enriques, Alessandro Romano, and Thom Wetzer observed, microprudential regulation's "underlying assumption" is that "if regulators ensure[] the resilience of individual financial institutions, the stability of the financial system [will] follow."[46] This view was once widely held.[47]

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38. *See* Tarullo, *supra* note 37, at 6 (contending that "microprudential regulations were designed primarily to minimize losses to the DIF"); *see also* ARMOUR ET AL., *supra* note 25, at 412, 416 (discussing depositor and creditor protection as primary objectives of microprudential regulation).

39. *See* Iman Anabtawi & Steven L. Schwarcz, *Regulating* Ex Post*: How Law Can Address the Inevitability of Financial Failure*, 92 TEX. L. REV. 75, 122–25 (2013) (discussing moral hazard).

40. *See* Sarah Pei Woo, *Regulatory Bankruptcy: How Bank Regulation Causes Fire Sales*, 99 GEO. L.J. 1615, 1623–24 (2011) (discussing capital adequacy requirements as a microprudential regulatory tool).

41. *See* Claudio Borio, *Towards a Macroprudential Framework for Financial Supervision and Regulation?* 3 (Bank for Int'l Settlements, Working Paper No. 128, 2003), https://www.bis.org/publ/work128.pdf [https://perma.cc/J8YW-H6QJ] ("[T]he microprudential approach assumes that risk can be taken as exogenous.").

42. *See generally* Robert F. Engle, David F. Hendry & Jean-Francois Richard, *Exogeneity*, 51 ECONOMETRICA 277 (1983) (discussing the concept of exogeneity).

43. *See* FREIXAS ET AL., *supra* note 37, at 202 ("Microprudential regulation is based on exogenously given probability distributions for asset prices . . . .").

44. *See* Borio, *supra* note 41, at 3 (noting that microprudential regulation "is squarely in the tradition of partial equilibrium"); FREIXAS ET AL., *supra* note 37, at 201 ("Microprudential regulation considers a partial equilibrium framework where the social cost of a bank's bankruptcy is contemplated . . . but where the impact on prices and markets (including a possible market collapse) is disregarded.").

45. *See* Enriques et al., *supra* note 34, at 357 (noting that microprudential regulation "implicitly treat[s] financial institutions as if they exist[] in isolation").

46. *Id.*

47. *See id.*

Indeed, pre-2008 financial regulation typically assumed that microprudential measures were enough to safeguard the broader financial system.[48]

The 2008 financial crisis, however, exposed the inadequacy of a primarily microprudential approach. The weaknesses of pre-2008 financial regulation—and the economic damage inflicted on households, businesses, and the broader financial system—are well-documented.[49] One of the primary shortcomings of the microprudential approach was that rules intended to protect financial institutions from insolvency perversely incentivized firms to curtail lending precisely when the financial system needed it most.[50] As asset prices plummeted and banks' capital ratios declined in 2008, banks responded by engaging in fire sales and reducing lending in an effort to remain solvent.[51] These actions compounded the crisis by putting continued downward pressure on asset prices and eliminating a critical source of financing for the broader economy.[52] Thus, banks' individual efforts to comply with microprudential regulations counterintuitively weakened the broader financial system. In economics terms, pre-2008 financial regulation suffered from a fallacy of composition: microprudential rules meant to safeguard the individual components of the financial system ultimately undermined the stability of the system as a whole.[53]

In addition to exposing this fundamental fallacy, the 2008 crisis also called into question the underlying assumptions on which microprudential regulation is based. Microprudential models have traditionally assumed that shocks originate exogenously, outside the financial system.[54] Yet the 2008 crisis originated largely within the financial system through the creation and propagation of subprime

48. *See id.* at 356 ("Prior to the financial crisis of 2007-09, the core policy tools to preserve financial stability focused on safeguarding the resilience of individual financial institutions."); *see also* ARMOUR ET AL., *supra* note 25, at 416 ("Regulators' mistake prior to the crisis was not to assume that microprudential measures were *necessary* for ensuring financial stability . . . but rather to assume that pre-crisis microprudential measures were, by themselves, *sufficient* to do so.").

49. *See, e.g.*, FIN. CRISIS INQUIRY COMM'N, THE FINANCIAL CRISIS INQUIRY REPORT: FINAL REPORT OF THE NATIONAL COMMISSION ON THE CAUSES OF THE FINANCIAL AND ECONOMIC CRISIS IN THE UNITED STATES, at xvii–xviii (2011) (documenting "widespread failures in financial regulation and supervision").

50. *See* Enriques et al., *supra* note 34, at 357 ("[B]anks' main response to incoming shocks was to strengthen their own position by selling assets and hoarding capital."); *see also* Jeremy C. Kress & Matthew C. Turk, *Rethinking Countercyclical Financial Regulation*, 56 GA. L. REV. 495, 508–09 (2022) (explaining how firms responded to microprudential regulation by curtailing lending in 2008).

51. *See generally* Viral V. Acharya & Ouarda Merrouche, *Precautionary Hoarding of Liquidity and Interbank Markets: Evidence from the Subprime Crisis*, 17 REV. FIN. 107 (2012) (documenting liquidity hoarding during the 2008 crisis); Anil K Kashyap, Richard Berner & Charles A.E. Goodhart, *The Macroprudential Toolkit*, 59 IMF ECON. REV. 145, 147–50 (2011) (discussing deleveraging and fire sales). As banks pulled back on lending, new loans to large borrowers fell by 79% between mid-2007 and late 2008. *See* Victoria Ivashina & David Scharfstein, *Bank Lending During the Financial Crisis of 2008*, 97 J. FIN. ECON. 319, 320 (2010).

52. *See* Kashyap et al., *supra* note 51, at 147–50.

53. *See* Enriques et al., *supra* note 34, at 358 ("[I]n a classic fallacy of composition, rules promoting behavior that is appropriate at the level of the single bank increase the fragility of the system as a whole.").

54. *See supra* note 41 and accompanying text.

mortgages, securitization, and credit derivatives.[55] Furthermore, the 2008 crisis demonstrated that the financial system does not resemble a partial equilibrium model, in which institutions exist in a vacuum, unaffected by other firms' actions.[56] Rather, the 2008 crisis revealed interconnections among the largest financial institutions and feedback loops as certain firms' high-profile collapses sparked contagion throughout the financial system.[57]

Recognizing these shortcomings, macroprudential regulation emphasizes the resilience of the entire financial system rather than the stability of individual firms. As Professor Robert Hockett described it, the "hallmark" of macroprudential regulation "is its focus not simply on the safety and soundness of individual financial institutions, as is characteristic of the traditional 'microprudential' perspective, but also on certain structural features of financial systems that can imperil such systems as wholes."[58] Commentators have analogized the distinction between microprudential and macroprudential financial regulation to the difference between medicine and public health: "Medicine is concerned with the saving of individual lives, public health care with protecting populations and communities as a whole."[59] Macroprudential financial regulation is similar to public healthcare in that it aims to ensure the stability of the system rather than its individual components.[60]

To fulfill this objective, macroprudential models adopt different assumptions than microprudential models. For example, rather than limiting their scope to exogenous shocks, macroprudential models account for risks that originate *endogenously*, from within the financial system itself.[61] Thus, macroprudential regulation attempts to address risks that arise from market participants' behavior, such as securitizing subprime mortgages or issuing credit default swaps.[62] Similarly, macroprudential models recognize that the financial system operates in a *general*

55. *See* FIN. CRISIS INQUIRY COMM'N, *supra* note 49, at xxiii–xxv (documenting the causes of the crisis).

56. *See supra* note 44 and accompanying text (discussing partial equilibrium models).

57. *See* Janet L. Yellen, Vice Chair, Bd. of Governors of the Fed. Rsrv. Sys., Interconnectedness and Systemic Risk: Lessons from the Financial Crisis and Policy Implications 2, 20 (Jan. 4, 2013) (transcript available at https://www.federalreserve.gov/newsevents/speech/files/Yellen20130104a.pdf [https://perma.cc/WWS5-WXZ9]) (observing that "[c]omplex links among financial market participants and institutions are a hallmark of the modern global financial system").

58. Hockett, *supra* note 11, at 204.

59. ARMOUR ET AL., *supra* note 25, at 409; *see also* Miriam F. Weismann, Jason H. Peterson & Christopher A. Buscaglia, *The New Macroprudential Reform Paradigm: Can It Work?*, 16 U. PA. J. BUS. L. 1029, 1033 (2014) (analogizing systemic risk to "an illness that becomes uncontrollably contagious"); Barak D. Richman & Steven L. Schwarcz, *Macromedical Regulation*, 82 OHIO ST. L.J. 727, 730 (2021) (comparing weaknesses in U.S. public health regulation exposed by the COVID-19 pandemic to shortcomings in U.S. financial regulation exposed by the 2008 financial crisis).

60. *See* ARMOUR ET AL., *supra* note 25, at 409.

61. *See* Borio, *supra* note 41, at 3 ("The macroprudential perspective assumes that risk is in part *endogenous* with respect to the behavior of the financial system . . . .").

62. *See generally* Gabriele Galati & Richhild Moessner, *Macroprudential Policy – A Literature Review*, 27 J. ECON. SURVS. 846, 848, 855 (2013) (discussing endogenous risks).

*equilibrium*,[63] and they therefore try to account for negative externalities triggered through interconnectedness, contagion, fire sales, and herd behavior.[64]

Critically, the distinction between the microprudential and macroprudential approaches is not the *intensity* or *amount* of regulation. Indeed, macroprudential regulation may be strong or weak, just as microprudential regulation may vary in stringency. The essential differences between the two philosophies are their overall goals and underlying assumptions. As Professor Avinash Persaud remarked of the 2008 crisis, "The solution to the crisis is not more regulation . . . . Instead, it is better regulation—in particular, regulation with a greater macro-prudential orientation."[65] Thus, the macroprudential approach does not necessarily mean *more* regulation; it simply entails a *different type* of oversight.

### B. MACROPRUDENTIAL RISKS

Macroprudential regulation aims to address two distinct types of risk. First, macroprudential regulation responds to time-varying risks, or imbalances that build up within the financial sector throughout the business cycle.[66] Second, the macroprudential approach targets cross-sectional risks, or vulnerabilities that arise from interconnections or correlations among different financial institutions.[67] The 2008 financial crisis revealed that both time-varying and cross-sectional risks can trigger financial instability.[68] Yet the microprudential approach neglects these risks because they are general equilibrium in nature and oftentimes arise endogenously.[69] Macroprudential regulation, by contrast, is designed to combat both risks.[70] This Section describes time-varying and

63. *See* Hanson et al., *supra* note 5, at 3 (noting that macroprudential regulation "recognizes the importance of general equilibrium effects").

64. *See* FREIXAS ET AL., *supra* note 37, at 16–17 (explaining that macroprudential models account for spillover effects).

65. AVINASH PERSAUD, CRISIS RESPONSE NOTE NO. 6, MACRO-PRUDENTIAL REGULATION: FIXING FUNDAMENTAL MARKET (AND REGULATORY) FAILURES 1, 1 (2009), https://openknowledge.worldbank.org/server/api/core/bitstreams/4f6ef4ac-74b0-5221-8da7-3fb02eeec6ea/content [https://perma.cc/S9YY-TUBV].

66. *See* ARMOUR ET AL., *supra* note 25, at 410 (noting that that macroprudential regulation's "time-series" perspective "is concerned with the build-up of risk in the financial system as a whole over time").

67. *See* Galati & Moessner, *supra* note 62, at 852 (noting that macroprudential regulation's "cross-sectional" perspective "focuses on the distribution of risk in the financial system at a point in time, and, in particular, the common exposures that arise owing to balance sheet interlinkages, similar exposures and associated behavioral responses").

68. *See supra* notes 50–52 and accompanying text (discussing time-varying risks in the context of the 2008 crisis); *supra* note 57 and accompanying text (discussing cross-sectional risks in the context of the 2008 crisis); *see also* ARMOUR ET AL., *supra* note 25, at 411–12 (defining time-varying and cross-sectional risks).

69. *Compare supra* notes 41–42 and accompanying text (discussing exogeneity), *with supra* note 61 and accompanying text (discussing endogeneity); *compare supra* notes 44–45 and accompanying text (discussing partial equilibria), *with supra* notes 63–64 and accompanying text (discussing general equilibria).

70. *See* Tarullo, *supra* note 6, at 3 ("Macroprudential policies can address both kinds of risk through policies aimed at building the *resiliency* of key financial actors to economic and financial downturns and through policies that *lean against the wind* by trying to prevent the build-up of risk in the first place.").

cross-sectional risks and explains how macroprudential regulation attempts to mitigate them.[71]

1. Time-Varying Risks

Time-varying risks arise because financial markets regularly experience boom-and-bust cycles.[72] During an economic expansion, financial institutions borrow cheaply, relax their underwriting standards, invest in riskier assets, and thereby amplify the boom.[73] Inevitably, however, the business cycle peaks.[74] When it does, financial institutions retrench by shedding assets and curtailing lending, thus exacerbating the downturn.[75] Time-varying risks reflect the financial system's inherent *procyclicality*: the tendency of financial institutions to take excessive risks during expansionary periods and behave too cautiously during contractions.[76]

Perversely, traditional microprudential regulation can intensify time-varying risks. Consider bank capital requirements, a paradigmatic microprudential tool.[77] During an expansionary period, a bank's capital ratios increase as asset prices rise, thereby allowing the bank to assume more risk.[78] When asset prices decline during a downturn, however, the bank's capital ratios fall, incentivizing the firm to deleverage, or shed assets, to maintain compliance with capital adequacy requirements.[79] Other microprudential tools, including loan loss provisioning and

71. Other scholars have described macroprudential, or systemic, risks using different taxonomies. For example, Professor Howell Jackson identifies four channels of systemic risk transmission: (1) "the loss of essential and non-substitutable financial functions," (2) "knock-on effects from direct failures," (3) "contagion through runs in short-term credit," and (4) "disruptions through complex interconnections." Howell E. Jackson, *Introduction: Thinking Hard About Systemic Risk*, *in* SYSTEMIC RISK IN THE FINANCIAL SECTOR: TEN YEARS AFTER THE GREAT CRASH 1, 4–6 (Douglas W. Arner et al. eds., 2019) (alterations omitted).

72. *See* Hyman Minsky, *The Financial Instability Hypothesis: An Interpretation of Keynes and an Alternative to "Standard" Theory*, NEB. J. ECON. & BUS., Winter 1977, at 5, 9–15, *reprinted in* CAN "IT" HAPPEN AGAIN?: ESSAYS ON INSTABILITY AND FINANCE 59, 63–68 (Routledge Classics 2016) (1982) (discussing cyclical financial instability).

73. *See* Borio, *supra* note 41, at 6 (noting that expansionary periods are generally characterized by "booming economic conditions, benign risk assessments, a weakening of external financing constraints, . . . and buoyant asset prices").

74. *See* CHARLES P. KINDLEBERGER & ROBERT Z. ALIBER, MANIAS, PANICS, AND CRASHES: A HISTORY OF FINANCIAL CRISES 32 (5th ed. 2005) ("The specific signal that precipitates the crisis may be the failure of a bank or of a firm, the revelation of a swindle . . . or a sharp fall in the price of a security or a commodity.").

75. *See* CARMEN M. REINHART & KENNETH S. ROGOFF, THIS TIME IS DIFFERENT: EIGHT CENTURIES OF FINANCIAL FOLLY 144–47 (2009) (discussing the impact of banking crises on economic activity).

76. *See* Claudio Borio, Craig Furfine & Philip Lowe, *Procyclicality of the Financial System and Financial Stability: Issues and Policy Options*, *in* BANK FOR INT'L SETTLEMENTS, BIS PAPERS NO. 1: MARRYING THE MACRO- AND MICROPRUDENTIAL DIMENSIONS OF FINANCIAL STABILITY 1, 1 (2001), https://www.bis.org/publ/bppdf/bispap01.pdf [https://perma.cc/9ARD-7LTY] (noting financial institutions' "major role in extending [a] boom and increasing the severity and length of [a] downturn").

77. *See supra* note 40 and accompanying text (characterizing bank capital requirements as a microprudential measure).

78. *See* Kress & Turk, *supra* note 50, at 505–06, 508 (discussing the procyclicality of bank capital requirements).

79. *See id.* at 507–08.

mark-to-market accounting rules, can have similar procyclical effects.[80] Thus, traditional microprudential regulation may encourage the buildup of excessive risks during economic booms and extreme deleveraging during busts.[81]

To combat time-varying risks, macroprudential regulation uses *countercyclical* measures to smooth out imbalances throughout the financial cycle. Countercyclical tools become stricter during expansionary periods and more lenient during downturns to modulate the financial system's inherent boom-and-bust tendencies.[82] Countercyclically tightening restrictions during good times may prevent the financial system from overheating and ensure that firms build ample financial cushions to withstand an inevitable downturn.[83] Loosening rules during contractions, on the other hand, may help stabilize the financial system and even spark a recovery.[84]

In this way, macroprudential regulation resembles and complements monetary policy, which "leans against the wind" of the economic cycle.[85] Former Federal Reserve Chair William McChesney Martin Jr. famously remarked that the central bank's role in setting monetary policy is similar to a "chaperone who has ordered the punch bowl removed just when the party was really warming up."[86] Just as monetary policy seeks to prevent the economy from overheating, macroprudential regulation aims to prevent excessive risks from building up in the financial system.[87] And on the opposite end of the cycle, monetary policy may cushion the blow from recessions, while macroprudential regulation attempts to limit the fallout from financial panics.[88]

In sum, macroprudential financial regulation addresses time-varying risks through countercyclical policy tools. Traditional microprudential regulation does

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80. *See* ERIK F. GERDING, LAW, BUBBLES, AND FINANCIAL REGULATION 313–17 (2014) (discussing procyclical financial regulation, including loan loss provisioning, capital requirements, fire sales, and mark-to-market accounting rules). Loan loss provisioning requires banks to set aside reserves for losses on their loan portfolios. *See id.* at 313. Mark-to-market accounting requires banks to adjust the value of certain types of financial instruments to reflect fluctuations in the market prices of those assets. *See id.* at 316.

81. *See* Kress & Turk, *supra* note 50, at 508 (concluding that procyclicality is a "vexing unintended consequence of modern financial regulation").

82. *See id.* at 510 ("To smooth fluctuations in the economic cycle, countercyclical theory suggests that regulatory restrictions should tighten during economic booms and relax during economic contractions.").

83. *See id.* at 510–11.

84. *See id.* at 511.

85. *See* Patricia A. McCoy, *Countercyclical Regulation and Its Challenges*, 47 ARIZ. ST. L.J. 1181, 1194 (2015) (comparing macroprudential financial regulation and monetary policy using the "lean against the wind" metaphor).

86. William McChesney Martin, Jr., Chairman, Bd. of Governors of the Fed. Rsrv. Sys., Address Before the New York Group of the Investment Bankers Association of America 12 (Oct. 19, 1955) (transcript available at https://fraser.stlouisfed.org/files/docs/historical/martin/martin55_1019.pdf [https://perma.cc/F7S9-QDWE]).

87. *See* Lev Menand, *Too Big to Supervise: The Rise of Financial Conglomerates and the Decline of Discretionary Oversight in Banking*, 103 CORNELL L. REV. 1527, 1575–76 (2018) (discussing similarities between macroprudential policy and monetary policy).

88. *See id.*

not mitigate—and may, in fact, exacerbate—the boom-and-bust cycle.[89] Accordingly, as Professor Robert Hockett observed, countercyclical measures "are in a sense what is *most* distinctive about macroprudential financial supervision and regulation. They are the principal value that this perspective adds to financial regulation."[90]

2. Cross-Sectional Risks

The second type of risks that macroprudential regulation seeks to address is cross-sectional. Recall that microprudential regulation treats an institution as if it existed in a vacuum.[91] In reality, however, financial institutions exist in a highly complex, interconnected system.[92] In such a system, a financial institution's strategy, behavior, and financial condition often influence—and are influenced by—other firms.[93] Macroprudential regulation recognizes and responds to these interdependencies.[94] Specifically, a macroprudential regulator considers two types of cross-sectional risks: those stemming from direct interconnections between firms and those arising from indirect correlations between firms' business models.

*a. Interconnectedness*

Interconnectedness refers to linkages among financial institutions formed by loans, derivatives, and other financial instruments.[95] As Professor Hal Scott has written, these interdependencies create "the concern that the failure of one financial institution will provoke a chain reaction of failures by other financial institutions with direct credit exposures to the failed institutions."[96] In other words, interconnectedness creates the risk of a domino effect: when one institution collapses, its direct counterparties may suffer losses, causing those firms to collapse as well.

American International Group's (AIG) experience during the 2008 financial crisis is a paradigmatic example of interconnectedness. AIG, an insurance conglomerate, sold credit default swaps to numerous financial institutions, promising to pay them if mortgage assets declined in value.[97] When the housing bubble burst, AIG became contractually liable to its counterparties for billions of dollars,

89. *See supra* notes 77–81 and accompanying text.

90. Hockett, *supra* note 11, at 214.

91. *See supra* notes 44–45 and accompanying text (discussing microprudential regulation's partial equilibrium assumptions).

92. *See* HAL S. SCOTT, CONNECTEDNESS AND CONTAGION: PROTECTING THE FINANCIAL SYSTEM FROM PANICS 4 (2016) ("Modern financial markets are a highly complex system of financial institutions with a high degree of interdependence and interconnections.").

93. *See id.*

94. *See* Williams, *supra* note 25, at 4 ("The macroprudential approach extends the regulatory lens to include the interconnectedness of institutions and markets; correlations in strategies and risks across the financial system; risks of contagion across institutions during panics; and financial markets' performance under stress.").

95. *See* SCOTT, *supra* note 92, at 3–4 (discussing the concept of interconnectedness).

96. *Id.* at 3.

97. *See* William K. Sjostrom, Jr., *The AIG Bailout*, 66 WASH. & LEE L. REV. 943, 944, 952–53, 956 (2009) (discussing AIG's credit default swap business).

casting AIG's solvency into doubt.[98] In early September 2008, AIG owed $10 billion to just six firms: Goldman Sachs, Societe Generale, Merrill Lynch, UBS, DZ Bank, and Rabobank.[99] Policymakers feared that if AIG collapsed and could not pay its counterparties, these firms might fail as well.[100] It was AIG's interconnectedness—and the potential that its insolvency could trigger a domino effect—that prompted policymakers to rescue it with a bailout package that eventually exceeded $182 billion.[101]

While traditional microprudential regulation typically ignores linkages within the financial system, addressing interconnectedness is one of macroprudential regulation's primary objectives. As Professor Robert Hockett explained, macroprudential regulation "attend[s] specifically to cross-institutional and cross-sectoral linkages and interactions across the financial system."[102] As discussed further below, macroprudential tools such as single-counterparty credit limits and central clearing of over-the-counter derivatives aim to mitigate interconnectedness-related risks.[103]

*b. Correlation*

Correlation refers to similarities among financial institutions with respect to their investments, liability structures, collateral holdings, or other characteristics.[104] Correlations among financial institutions can exacerbate systemic risks.[105] Indeed, if the market perceives two financial institutions as similar—whether in terms of their investment strategies or funding risks—and one of those institutions falters, investors may flee from the second, even if those institutions are not directly exposed to one another.[106]

The aftermath of Lehman Brothers' collapse in the fall of 2008 is a canonical example of correlation risks. As Lehman Brothers faltered, market participants were well aware of the investment bank's large exposures to commercial real estate assets and its heavy reliance on short-term wholesale funding.[107] When Lehman Brothers declared bankruptcy on September 15, 2008, creditors

98. *See id.* at 959–61 (discussing AIG's credit default swap losses). AIG experienced simultaneous stress in its securities lending business, which contributed to its collapse. *See* Daniel Schwarcz, *A Critical Take on Group Regulation of Insurers in the United States*, 5 U.C. IRVINE L. REV. 537, 553–54 (2015).

99. Robert McDonald & Anna Paulson, *AIG in Hindsight*, J. ECON. PERSPS., Spring 2015, at 81, 95.

100. *See* FIN. CRISIS INQUIRY COMM'N, *supra* note 49, at 347 (discussing the government's decision to bailout AIG).

101. *See* William K. Sjostrom, Jr., *Afterword to the AIG Bailout*, 72 WASH. & LEE L. REV. 795, 795–96 (2015).

102. Hockett, *supra* note 11, at 209.

103. *See infra* Section III.C.

104. *See* SCOTT, *supra* note 92, at 15–16 (discussing the concept of correlation).

105. *See* Tabor & Zhang, *supra* note 24, at 627–28 (discussing correlation channels).

106. *See id.* at 628 ("[I]f the market sees two banks as closely linked, then naturally, when the value of one falls, the value of the other will fall . . . regardless of whether they actually owe money to each other . . . .").

107. *See* LAURENCE M. BALL, THE FED AND LEHMAN BROTHERS: SETTING THE RECORD STRAIGHT ON A FINANCIAL DISASTER 30–31, 35 (2018) (discussing Lehman Brothers' investments and liabilities).

immediately pulled back from other financial institutions—such as investment banks Merrill Lynch, Morgan Stanley, and Goldman Sachs—that were perceived to have similar business models.[108] Market participants did not run from these firms because the companies had large exposures to Lehman.[109] Instead, market participants ran from these firms because they resembled Lehman, and investors feared one of them might be next to collapse.[110] These correlations help explain why the Federal Reserve, Treasury Department, and Congress orchestrated widespread assistance programs to stabilize other large financial institutions after Lehman's collapse.[111]

Microprudential regulation disregards correlations among financial institutions because it focuses on individual firms in isolation.[112] The macroprudential view, by contrast, seeks to address common vulnerabilities across financial markets and mitigate the potential cross-sectional impact of an endogenous shock.[113] As discussed below, tools such as stress tests can be helpful to achieve this macroprudential goal, if designed appropriately.[114]

In sum, microprudential and macroprudential regulation represent two distinct approaches to financial market oversight. The traditional, microprudential approach implicitly assumed that the financial system would remain stable as long as individual financial institutions stayed solvent.[115] The 2008 crisis, however, demonstrated the need for a modernized philosophy that addresses not only individual institutions' solvency but also time-varying and cross-sectional risks.[116] In response to the crisis, therefore, policymakers vowed to implement a new macroprudential framework to mitigate threats to financial stability, as the next Part explores.

## II. THE POST-2008 REGULATORY FRAMEWORK IS PERCEIVED AS MACROPRUDENTIAL

After the 2008 financial crisis exposed significant weaknesses in the traditional microprudential regulatory framework, macroprudential policy quickly emerged as the consensus solution. Policymakers and scholars began invoking macroprudential regulation "in [an] almost talismanic fashion," insisting that a macroprudential

108. *See* FIN. CRISIS INQUIRY COMM'N, *supra* note 49, at 339, 353 (discussing the pressure Lehman's bankruptcy placed on other investment banks).

109. *See generally Factbox-Lehman's 30 Largest Unsecured Creditors' Claims*, REUTERS (Sept. 15, 2008, 12:59 PM), https://www.reuters.com/article/lehman-creditors/factbox-lehmans-30-largest-unsecured-creditors-claims-idINLF73920080915 (listing Lehman's thirty largest unsecured creditors, which did not include Merrill Lynch, Morgan Stanley, or Goldman Sachs).

110. *See* FIN. CRISIS INQUIRY COMM'N, *supra* note 49, at 353–55 (discussing creditor runs on the remaining investment banks following Lehman's bankruptcy).

111. *See, e.g.*, BALL, *supra* note 107, at 178–79 (discussing assistance measures for Goldman Sachs and Morgan Stanley); FIN. CRISIS INQUIRY COMM'N, *supra* note 49, at 371–76 (discussing the Troubled Asset Relief Program).

112. *See* Enriques et al., *supra* note 34, at 357.

113. *See* Galati & Moessner, *supra* note 62, at 852 (discussing macroprudential regulation's cross-sectional perspective).

114. *See infra* Sections III.A.1, V.B.2.a.

115. *See* Enriques et al., *supra* note 34, at 356–57.

116. *See supra* notes 54–57 and accompanying text.

approach would address systemic risks that the prevailing microprudential framework neglected.[117] Both in the United States and abroad, policymakers began crafting what they intended to be a new macroprudential regulatory framework to promote financial stability.[118] More than a decade later, most commentators agree that the modernized financial regulatory framework now embodies macroprudential principles.[119] This Part describes the post-2008 regulatory reforms and the conventional wisdom that the new framework is macroprudential.

In response to the crisis, U.S. policymakers enacted the Dodd-Frank Wall Street Reform and Consumer Protection Act (Dodd-Frank) and related regulatory measures to revive financial market oversight.[120] Often referred to as the most sweeping financial reform since the Great Depression, Dodd-Frank overhauled key aspects of the U.S. regulatory framework.[121] Among other things, it introduced annual stress tests for the largest bank holding companies, established a new process for the orderly resolution of a failed systemically important firm, mandated centralized clearing for certain derivative contracts, and created the Financial Stability Oversight Council (FSOC) to monitor and respond to risks throughout the financial system.[122] The U.S. banking agencies also implemented the international Basel III Accord, which strengthened bank capital requirements and imposed both heightened capital buffers and new liquidity requirements on systemically important firms.[123]

In enacting these reforms, policymakers proclaimed their intent to establish a macroprudential regulatory framework in the United States. Congressman Barney Frank, one of the namesakes and primary sponsors of Dodd-Frank, characterized the law as macroprudential and noted that "[it] means . . . that we . . . don't just regulate institution by institution, but we focus on . . . the economy as a whole."[124] In addition, all three Federal Reserve Chairs since the crisis—Ben

117. Tarullo, *supra* note 18, at 74; *see also* FREIXAS ET AL., *supra* note 37, at vii ("Macroprudential is the latest buzzword in economics."); Clement, *supra* note 7, at 59 ("The term 'macroprudential' has become a true buzzword in the wake of the recent financial crisis . . . ."); Gohari & Woody, *supra* note 16, at 404 (describing macroprudential regulation as "the next 'messiah' of the financial markets").

118. *See infra* notes 121–23 and accompanying text (discussing domestic reforms); *infra* notes 131–35 and accompanying text (discussing international reforms).

119. *See infra* notes 124–30 and accompanying text.

120. Pub. L. No. 111-203, 124 Stat. 1376 (2010); Barr, *supra* note 10, at 97, 99–108 (detailing U.S. regulatory measures enacted following the 2008 crisis).

121. *See, e.g.*, Ben Protess, *Deconstructing Dodd-Frank*, N.Y. TIMES: DEALBOOK (Dec. 11, 2012, 1:55 PM), https://archive.nytimes.com/dealbook.nytimes.com/2012/12/11/deconstructing-dodd-frank/ (deeming Dodd-Frank "the most significant regulatory overhaul since the Great Depression").

122. *See* Barr, *supra* note 10, at 99–100, 103–04 (discussing Dodd-Frank's main financial stability provisions).

123. *See* Regulatory Capital Rules: Implementation of Basel III, 78 Fed. Reg. 62018, 62020, 62029, 62031–33, 62043 (Oct. 11, 2013) (to be codified at 12 C.F.R. pts. 208, 217, 225) (implementing Basel III's enhanced capital requirements); Liquidity Coverage Ratio: Liquidity Risk Measurement Standards, 79 Fed. Reg. 61440, 61443, 61448, 61450 (Oct. 10, 2014) (to be codified at 12 C.F.R. pts. 50, 249, 329) (implementing Basel III's liquidity coverage ratio).

124. *Barney Frank: Fed No Longer Has Dominant Role*, CNBC (Feb. 3, 2014, 10:30 AM), https://www.cnbc.com/video/2014/02/03/barney-frank-fed-no-longer-has-dominant-role.html?play=1 [https://

Bernanke, Janet Yellen, and Jerome Powell—have described the post-2008 reforms that they spearheaded as macroprudential.[125]

Echoing policymakers' views, scholars have widely accepted that the United States' post-2008 regulatory framework is macroprudential. The legal literature is replete with descriptions of Dodd-Frank as macroprudential.[126] For example, Professor Kathryn Judge has noted that "aspects of the Dodd-Frank Act and other policy responses to the crisis are responsive to concerns about . . . the need for a more macroprudential approach to systemic risk regulation."[127] Similarly, Professor Kristin Johnson, now a member of the Commodity Futures Trading Commission,[128] wrote that "[t]he Dodd-Frank Act introduces several mechanisms that will facilitate the introduction of macroprudential policy."[129] Finance scholars likewise embrace the macroprudential label for post-2008 reforms.[130]

Many international jurisdictions have adopted postcrisis policies similar to those enacted in the United States, encouraged by global standard-setting bodies that expressly embraced macroprudential regulation as a guiding principle. Shortly after the crisis, the leaders of the Group of Twenty (G20) vowed to "reshape our regulatory systems so that our authorities are able to identify and take account of macroprudential risks."[131] The Bank for International Settlements later framed the Basel III capital accord as a "macroprudential overlay" to the traditional microprudential regulatory framework.[132] The Basel Committee on Banking Supervision (BCBS) and Financial Stability Board urged member countries to adopt stress tests,

perma.cc/HW88-WERN] (commenting that "macroprudential [regulation] . . . [is] a very important concept").

125. *See* Bernanke, *supra* note 13, at 1 ("[A] central element of [Dodd-Frank] is the requirement that the Federal Reserve and other financial regulatory agencies adopt a so-called macroprudential approach . . . ."); Janet L. Yellen, Vice Chair, Bd. of Governors of the Fed. Rsrv. Sys., Macroprudential Supervision and Monetary Policy in the Post-Crisis World 13 (Oct. 11, 2010) (transcript available at https://www.federalreserve.gov/newsevents/speech/files/yellen20101011a.pdf [https://perma.cc/77GQ-XPM5]) ("[U]nder Federal Reserve leadership, initiatives to implement macroprudential supervision are well under way in the United States."); Jerome H. Powell, Chair, Bd. of Governors of the Fed. Rsrv. Sys., Chair Powell's Press Conference 5 (Jan. 27, 2021) (transcript available at https://www.federalreserve.gov/mediacenter/files/FOMCpresconf20210127.pdf [https://perma.cc/AV2Y-BY65]) ("[W]e rely on . . . macroprudential policy tools, particularly the stress tests and also the elevated levels of liquidity and capital and . . . also resolution planning that we—that we impose on the largest financial institutions."); *People: Federal Reserve Chair*, FED. RSRV. HIST., https://www.federalreservehistory.org/people/federal-reserve-chair [https://perma.cc/A7N7-B2MX] (last visited Jan. 31, 2024).

126. *See supra* note 16 (collecting citations).

127. Judge, *supra* note 16, at 668.

128. *Commissioner Kristin N. Johnson*, COMMODITY FUTURES TRADING COMM'N, https://www.cftc.gov/About/Commissioners/KristinNJohnson/index.htm [https://perma.cc/629B-RZM2] (last visited Jan. 31, 2024).

129. Johnson, *supra* note 16, at 917.

130. *See, e.g.*, Viral V. Acharya & Matthew Richardson, *Implications of the Dodd-Frank Act*, 4 ANN. REV. FIN. ECON. 1, 21 (2012) ("The Dodd-Frank Act now emphasizes macroprudential regulation as an important component of the financial regulatory system."); David Aikman, Jonathan Bridges, Anil Kashyap & Caspar Siegert, *Would Macroprudential Regulation Have Prevented the Last Crisis?*, J. ECON. PERSPS., Winter 2019, at 107, 108 (discussing "[t]oday's macroprudential frameworks").

131. Statement, Leaders of the Group of Twenty, *supra* note 11, ¶ 15.

132. BANK FOR INT'L SETTLEMENTS, OVERVIEW OF BASEL III AND RELATED POST-CRISIS REFORMS – EXECUTIVE SUMMARY 1 (2017), https://www.bis.org/fsi/fsisummaries/b3_rpcr.pdf [https://perma.cc/24FQ-53B6].

enhanced resolution mechanisms, and central clearing, among other financial stability-focused reforms.[133] By 2018, an International Monetary Fund (IMF) survey revealed that more than 140 countries reported implementing policies characterized as macroprudential.[134] As former Bank of England Chief Economist Andrew Haldane observed, "[W]e have new macroprudential . . . policies popping up all over the world."[135]

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In sum, the 2008 financial crisis ushered in a new regulatory framework that is widely believed to be macroprudential. Despite this commonly held belief, however, using the term "macroprudential" to describe modern financial regulation is misleading. In fact, the dominant tools financial regulators use today are not macroprudential, but simply stronger versions of the microprudential tools that predate the 2008 crisis, as the next Part demonstrates.

## III. THE POST-2008 REGULATORY FRAMEWORK IS PRIMARILY MICROPRUDENTIAL

Despite fanfare heralding a new approach to financial regulation, the post-2008 regulatory reforms are not as macroprudential as is commonly believed. Dodd-Frank and Basel III overhauled the United States' financial regulatory framework, but the new approach they introduced is mostly a supersized version of the microprudential framework that has existed for decades. In theory, some postcrisis regulatory tools could achieve macroprudential objectives, but policymakers chose to implement them in a way that limits their macroprudential reach.[136] Although Dodd-Frank and Basel III strengthened the *intensity* of financial regulation, they did not fundamentally change the underlying regulatory *strategy*.

In practice, distinguishing between microprudential and macroprudential regulatory tools can be challenging.[137] Indeed, a regulatory policy may fulfill both microprudential and macroprudential objectives to varying degrees.[138] The gray

133. *See* BASEL COMM. ON BANKING SUPERVISION, STRESS TESTING PRINCIPLES 1 (2018), https://www.bis.org/bcbs/publ/d450.pdf [https://perma.cc/523D-W2JN] (urging the adoption of stress testing); FIN. STABILITY BD., KEY ATTRIBUTES OF EFFECTIVE RESOLUTION REGIMES FOR FINANCIAL INSTITUTIONS 1, 6–10, 17 (2014), https://www.fsb.org/wp-content/uploads/r_141015.pdf [https://perma.cc/YG27-J5NX] (recommending implementation of enhanced resolution mechanisms for systemically important firms); FIN. STABILITY BD., IMPLEMENTING OTC DERIVATIVES MARKET REFORMS, at iii, 23–29 (2010), https://www.fsb.org/wp-content/uploads/r_101025.pdf [https://perma.cc/5BXP-PXWY] (recommending policies to implement the G20's commitment that "[a]ll standardised OTC derivative contracts should be . . . cleared through central counterparties").

134. *See* ERLEND NIER, CHIKAKO BABA, SALIM M. DARBAR & YI (JANICE) XUE, INT'L MONETARY FUND, THE IMF'S ANNUAL MACROPRUDENTIAL POLICY SURVEY—OBJECTIVES, DESIGN, AND COUNTRY RESPONSES 3, 6 (2018), https://www.imf.org/en/Publications/Policy-Papers/Issues/2018/04/30/pp043018-imf-annual-macroprudential-policy-survey [https://perma.cc/KH9B-B23G].

135. Haldane, *supra* note 14, at 65.

136. *See infra* Section III.B.

137. *See, e.g.*, FREIXAS ET AL., *supra* note 37, at 264 ("[A] clear delineation of microprudential and macroprudential instruments is often difficult, as the same instruments may serve multiple objectives depending on how they are used.").

138. *See id.*; Hockett, *supra* note 11, at 225 (asserting that certain microprudential tools may be "convertible into . . . macroprudential tool[s] when applied system-wide").

area separating the two regulatory philosophies has likely perpetuated misunderstandings about the post-2008 regulatory framework. A close analysis of Dodd-Frank and Basel III, however, reveals that the conventional wisdom often mistakes stronger microprudential regulation for genuine macroprudential reform.

This Part contends that, notwithstanding the "macroprudential" branding, the post-2008 financial regulatory framework remains primarily microprudential. Section III.A demonstrates that while certain Dodd-Frank and Basel III reforms are believed to be macroprudential, they are in fact just stronger versions of traditional microprudential tools. Section III.B then identifies several post-2008 innovations that have macroprudential elements but nonetheless fall short of a genuine macroprudential approach. Finally, Section III.C examines two reforms that stand out from the rest of the post-2008 regulatory framework because they are predominantly macroprudential.

### A. REFORMS THAT ARE PRIMARILY MICROPRUDENTIAL

Central elements of Dodd-Frank and Basel III are widely believed to be macroprudential but are actually scaled-up versions of long-standing microprudential tools. This Section examines three such well-known reforms: (1) stress testing, (2) liquidity requirements, and (3) nonbank regulation.

#### 1. Stress Testing

In the aftermath of the 2008 collapse, policymakers adopted stress testing as "a cornerstone of the post-crisis legal architecture."[139] In the United States, Dodd-Frank requires the Federal Reserve to perform an annual stress test on bank holding companies (BHCs) with $250 billion or more in assets.[140] To administer the test, the Federal Reserve designs a model representing a hypothetical, severely adverse economic scenario; collects relevant data about BHCs' balance sheets and planned capital distributions; and projects each BHC's regulatory capital ratios if the hypothetical adverse conditions were to materialize.[141] The upshot of the stress test is that a BHC must maintain an additional capital cushion above its minimum requirement—a "stress capital buffer" (SCB)—at least as large as the decline in its common equity Tier 1 capital ratio under the test.[142] Thus, the bigger a BHC's projected losses in the stress test are, the more capital it must

139. Matthew C. Turk, *Stress Testing the Banking Agencies*, 105 IOWA L. REV. 1701, 1703 (2020).

140. Dodd-Frank Wall Street Reform and Consumer Protection Act, Pub. L. No. 111-203, § 165(i), 124 Stat. 1376, 1430 (2010) (codified as amended at 12 U.S.C. § 5365(i)). In addition, the Federal Reserve must perform an annual stress test on designated nonbank systemically important financial institutions (SIFIs), and it may perform such a test on any BHC with more than $100 billion in assets if the Federal Reserve determines that doing so would be appropriate to promote the BHC's safety and soundness or prevent or mitigate risks to financial stability. *See* 12 U.S.C. § 5365(a)(1), (2)(C).

141. *See* 12 C.F.R. § 252.44 (2022) (describing the Federal Reserve's stress testing procedures); *see also* Mehrsa Baradaran, *Regulation by Hypothetical*, 67 VAND. L. REV. 1247, 1290–91 (2014) (discussing the Federal Reserve's stress testing methodology).

142. *See* 12 C.F.R. § 217.11(c)(1)(iii) (2022) (requiring covered BHCs to maintain the SCB); *id.* § 225.8(f)(2) (2022) (explaining the calculation of a BHC's SCB). The Federal Reserve includes four quarters of anticipated common stock dividends in a BHC's SCB. *See id.* § 225.8(f)(2)(i)(C)(1) (2022). Common equity Tier 1 is the best, most loss-absorbing form of capital. *See* MICHAEL S. BARR, HOWELL E.

maintain.[143] On a global level, the BCBS has endorsed stress testing as an essential supervisory tool, and many international jurisdictions have adopted stress testing regimes.[144]

Stress testing is widely regarded as one of the primary macroprudential features of the post-2008 regulatory framework. Embodying this consensus, Professor Prasad Krishnamurthy asserted that Dodd-Frank "introduces a novel system of stress tests that come under the category of macroprudential regulation."[145] Professor Hilary Allen commented that the "'macroprudential toolkit' . . . certainly includes . . . stress tests."[146] Similarly, former U.S. Comptroller of the Currency Eugene Ludwig remarked that "in conducting its stress tests, the Federal Reserve has an eye toward macroprudential responsibilities."[147] Former Federal Reserve Governor Daniel Tarullo—one of the primary architects of the central bank's stress testing framework—agreed that the "stress testing program is one form of . . . macroprudential resiliency measure."[148]

Upon closer inspection, however, the Federal Reserve's stress tests do not live up to their macroprudential billing. To project how the financial system might behave during a crisis, a macroprudential stress test would use a general equilibrium model that recognizes the potential for feedback loops, spillovers, and contagion effects.[149] The Federal Reserve's stress test, however, does not take into account these second-order consequences.[150] Instead, the Federal Reserve relies on a partial equilibrium model that analyzes each BHC in isolation, without

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JACKSON & MARGARET E. TAHYAR, FINANCIAL REGULATION: LAW AND POLICY 332 (Saul Levmore et al. eds., 3d ed. 2021). It includes common stock and retained earnings. *See id.*

143. Since the SCB is a "buffer," a BHC is not *required* to maintain sufficient capital to satisfy its SCB. *See* BARR ET AL., *supra* note 142, at 333–34 (distinguishing between capital buffers and minimum requirements). However, as a BHC depletes its SCB, it becomes subject to increasingly stringent limitations on dividends, share buybacks, and discretionary bonus payments. *See* 12 C.F.R. §§ 217.11(a)(4), 217.2 (2022).

144. *See* Turk, *supra* note 139, at 1713 (discussing stress testing internationally).

145. Krishnamurthy, *supra* note 19, at 834 n.60.

146. Hilary J. Allen, *Driverless Finance*, 10 HARV. BUS. L. REV. 157, 193 (2020); *see also* Gohari & Woody, *supra* note 16, at 432 ("Stress testing financial institutions is an important macroprudential regulatory tool.").

147. Eugene A. Ludwig, *Assessment of Dodd-Frank Financial Regulatory Reform: Strengths, Challenges, and Opportunities for a Stronger Regulatory System*, 29 YALE J. ON REGUL. 181, 186 n.20 (2012).

148. Daniel K. Tarullo, Member, Bd. of Governors of the Fed. Rsrv. Sys., Macroprudential Regulation 8 (Sept. 20, 2013) (transcript available at https://www.federalreserve.gov/newsevents/speech/files/tarullo20130920a.pdf [https://perma.cc/F9YB-YQXZ]). Tarullo acknowledged that stress testing "provides a good example of how sound microprudential regulation of the largest banking firms can be difficult to distinguish from regulation with a macroprudential orientation." *Id.* at 8–9.

149. *See* Anthony Bousquet, Jérôme Henry & Dawid Żochowski, *A Comprehensive Approach to Macroprudential Stress Testing*, *in* HANDBOOK OF FINANCIAL STRESS TESTING 557, 558 (J. Doyne Farmer et al. eds., 2022) (noting that macroprudential stress tests would "model dynamics, feedbacks, and spillovers or contagion effects").

150. *See* Enriques et al., *supra* note 34, at 370 ("U.S. regulatory stress tests still (largely) rely on atomistic models that barely take network properties into account, if at all."); Jill Cetina, Mark Paddrik & Sriram Rajan, *Stressed to the Core: Counterparty Concentrations and Systemic Losses in CDS Markets*, 35 J. FIN. STABILITY 38, 39 (2018) ("Network methods have not been applied so far in supervisory stress tests in the United States.").

regard for how other interconnected market participants might respond to a hypothetical shock.[151] Moreover, the Federal Reserve's stress testing scenarios are based primarily on exogenous shocks to the banking system in the form of economy-wide recessions.[152] Genuine macroprudential stress tests, by contrast, would incorporate endogenous shocks—such as short-term funding risks—that the Federal Reserve's framework expressly ignores.[153] The models underlying the Federal Reserve's stress tests, therefore, are far from macroprudential.

In fact, as currently implemented, stress testing appears to be a relatively standard microprudential tool. As noted above, the primary upshot of the Federal Reserve's stress test is the calibration of individual firms' capital requirements.[154] Capital is a quintessential microprudential device, one that predated the global financial crisis by decades.[155] By requiring firms with larger projected losses to maintain higher SCBs, the Federal Reserve aims to ensure that individual BHCs maintain adequate capital during a period of economic stress—a classic microprudential objective.[156] Thus, not only are the stress tests' economic models based on microprudential assumptions, but the stress tests' regulatory consequences are primarily microprudential as well.[157]

The United States' stress tests are macroprudential in two narrow respects. First, the stress tests require some large BHCs to maintain more capital than smaller firms, thereby reducing the probability of a systemic collapse.[158] Second, the stress tests provide an opportunity for supervisors to identify

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151. *See* Enriques et al., *supra* note 34, at 370 (characterizing the United States' stress tests as "purely atomistic exercises, essentially modeling each bank as if it operated in isolation").

152. *See* Policy Statement on the Scenario Design Framework for Stress Testing, 12 C.F.R. pt. 252 app. A § 4.2.1(a) (2023) ("The Board intends to use a recession approach to develop the severely adverse scenario. In the recession approach, the Board will specify the future paths of variables to reflect conditions that characterize post-war U.S. recessions . . . .").

153. *See* William F. Bassett & David E. Rappoport, *Enhancing Stress Tests by Adding Macroprudential Elements*, *in* HANDBOOK OF FINANCIAL STRESS TESTING, *supra* note 149, at 455, 456, 461 (discussing funding shocks in macroprudential stress tests); *see also* 12 C.F.R. pt. 252 app. A § 1(e) (noting that the Federal Reserve's stress tests do not focus on liquidity risk).

154. *See supra* note 142 and accompanying text (discussing the SCB).

155. *See supra* note 40 and accompanying text (discussing capital adequacy requirements as a microprudential tool); BARR ET AL., *supra* note 142, at 279–80, 290–92 (discussing the history of bank capital regulation in the United States).

156. *See supra* notes 37–40 and accompanying text (discussing the goal of microprudential regulation).

157. The United States' implementation of stress testing is an example of the dynamic Professors Dan Awrey and Kathryn Judge have noted in which enthusiasm for macroprudential reforms often gives way to less ambitious, incremental policy changes. Dan Awrey & Kathryn Judge, *Why Financial Regulation Keeps Falling Short*, 61 B.C. L. REV. 2295, 2345 (2020) ("[T]he notion of macroprudential oversight has evolved, in many circles, from encouraging critical and creative thinking about the workings of the financial system as a whole to focusing on a narrower set of specific policies, often reducing borrower leverage.").

158. *See, e.g.*, Schwarcz, *supra* note 21, at 6 (asserting that enhanced microprudential regulation of large financial firms "is often categorized as macroprudential because its secondary effect is to reduce systemic risk; the logic is that if no [systemic firm] fails, no such firm's failure would trigger a systemic collapse").

shared vulnerabilities or correlated exposures across the banking system.[159] These macroprudential elements are limited, however. Indeed, a majority of the large U.S. BHCs that participated in the 2022 stress test received the bare-minimum 2.5% SCB, which is no higher than the 2.5% capital conservation buffer to which smaller BHCs are subject.[160] Moreover, although the stress tests could enable supervisors to identify cross-sectional correlations, the tests have actually *increased* correlations among large BHCs by incentivizing firms to shift their portfolios toward assets that are treated favorably by the Federal Reserve's models.[161] Thus, the stress tests could perversely undermine macroprudential objectives by promoting herd behavior.[162]

2. Liquidity Requirements

Like stress testing, Basel III's liquidity rules are a centerpiece of the post-2008 regulatory efforts to promote financial stability. The Basel III liquidity rules require certain banks to align the liquidity of their asset portfolios with their funding risks.[163] In practice, these new liquidity requirements are primarily microprudential because they emphasize individual firms' safety and soundness over broader systemic risk considerations.[164]

Before the 2008 crisis, policymakers did not directly regulate banks' liquidity risks.[165] Absent regulatory limits, many banking organizations invested heavily in illiquid assets while relying on short-term funding.[166] When short-term funding

159. *See* Tarullo, *supra* note 148, at 9 ("[B]ecause the firms are stressed simultaneously, supervisors are able to identify and take account of correlated exposures and other common risks.").

160. *See* BD. OF GOVERNORS OF THE FED. RSRV. SYS., LARGE BANK CAPITAL REQUIREMENTS 3 (2022), https://www.federalreserve.gov/publications/files/large-bank-capital-requirements-20220804.pdf [https://perma.cc/8QUP-459L] (reporting that 12 of the 23 U.S. BHCs that participated in the stress test would be subject to the minimum 2.5% SCB); *see also* 12 C.F.R. § 217.11(a)(2)(vi)(B) (2022) (providing that BHCs that do not participate in the Federal Reserve's stress test are subject to a 2.5% capital conservation buffer).

161. *See* Priyank Gandhi & Amiyatosh Purnanandam, United They Fall: Bank Risk After the Financial Crisis 29 (Aug. 2023) (unpublished manuscript), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4091626 [https://perma.cc/QB2D-9UN8] (finding that stress-tested BHCs became "more correlated with each other" after the enactment of Dodd-Frank, relative to non-stress-tested BHCs); FALK BRÄUNING & JOSÉ L. FILLAT, CURRENT POLICY PERSPECTIVES NO. 19–1, STRESS TESTING EFFECTS ON PORTFOLIO SIMILARITIES AMONG LARGE US BANKS 1 (2019), https://www.bostonfed.org/publications/current-policy-perspectives/2019/stress-testing-effects-on-portfolio-similarities-among-large-us-banks.aspx [https://perma.cc/LZ5M-8VNB] (finding that the largest U.S. banks "have become more similar since . . . stress testing was implemented in 2011").

162. *See* Gandhi & Purnanandam, *supra* note 161, at 47 (concluding that "banks change their behavior to perform well on the same set of future scenario[s], which in turn makes the risk of collective failure high").

163. *See infra* notes 168–70 and accompanying text.

164. *See infra* notes 175–77 and accompanying text.

165. Vladimir Yankov, *The Liquidity Coverage Ratio and Corporate Liquidity Management*, BD. GOVERNORS FED. RSRV. SYS. (Feb. 26, 2020), https://www.federalreserve.gov/econres/notes/feds-notes/the-liquidity-coverage-ratio-and-corporate-liquidity-management-20200226.htm [https://perma.cc/9RC2-C689] ("Prior to the 2007-2008 financial crisis, bank regulation did not have explicit quantitative liquidity requirements on banks.").

166. *See* Liquidity Coverage Ratio: Liquidity Risk Measurement, Standards, and Monitoring, 78 Fed. Reg. 71818, 71820 (Nov. 29, 2013) (to be codified at 12 C.F.R. pts. 50, 249, 329) (discussing shortcomings in banks' liquidity risk management in the lead-up to the 2008 crisis).

markets seized up in 2008, the liquidity strains that ensued were perhaps the single biggest contributor to the crisis.[167]

In the aftermath of the collapse, the BCBS adopted two new liquidity rules in Basel III to ensure that banking organizations hold a minimum amount of liquid assets and maintain stable sources of funding.[168] First, the liquidity coverage ratio (LCR) requires a banking organization to hold enough high-quality liquid assets (HQLAs) to withstand thirty days of net cash outflows during a period of significant stress.[169] Second, the net stable funding ratio (NSFR) requires a banking organization to maintain a minimum amount of stable funding—such as equity, long-term debt, or retail deposits—relative to the liquidity risks of its assets over a one-year time horizon.[170]

Policymakers in the United States and abroad implemented the Basel III liquidity rules with the express purpose of preventing systemic liquidity crises in the future. IMF researchers noted that jurisdictions adopted the new liquidity measures "with the aim of promoting financial sector stability rather than . . . for microprudential purposes."[171] Similarly, former Federal Reserve Governor Daniel Tarullo asserted that "regulators likely want [the LCR] to fulfill a macroprudential purpose."[172] The European Central Bank specifically included the LCR and NSFR as part of its "macroprudential policy framework."[173] As a leading financial regulation textbook concluded, many policymakers and scholars "view liquidity

167. *See id.* (discussing liquidity strains during the crisis).

168. *See generally* BASEL COMM. ON BANKING SUPERVISION, BASEL III: THE LIQUIDITY COVERAGE RATIO AND LIQUIDITY RISK MONITORING TOOLS (2013) [hereinafter LIQUIDITY COVERAGE RATIO], https://www.bis.org/publ/bcbs238.pdf [https://perma.cc/UM32-MKEU] (describing the liquidity coverage ratio (LCR)); BASEL COMM. ON BANKING SUPERVISION, BASEL III: THE NET STABLE FUNDING RATIO (2014) [hereinafter NET STABLE FUNDING RATIO], https://www.bis.org/bcbs/publ/d295.pdf [https://perma.cc/WRP4-TAJN] (describing the net stable funding ratio (NSFR)).

169. *See* BASEL COMM. ON BANKING SUPERVISION, LIQUIDITY COVERAGE RATIO 10 (2024), https://www.bis.org/basel_framework/standard/LCR.htm?export=pdf [https://perma.cc/442B-9574]. HQLAs generally include cash, central bank reserves, government debt, and—subject to a haircut—certain agency securities, corporate debt, residential mortgage backed securities, and equity securities. *See id.* at 26–29, 32–34. The BCBS provides assumptions for calculating a bank's net cash outflows during a period of significant stress. *See id.* at 43–73.

170. *See* BASEL COMM. ON BANKING SUPERVISION, NET STABLE FUNDING RATIO 5, 7–11 (2024), https://www.bis.org/basel_framework/standard/NSF.htm?export=pdf [https://perma.cc/WFL7-NWZJ].

171. Daniel C. Hardy & Philipp Hochreiter, *A Simple Macroprudential Liquidity Buffer* 6 (Int'l Monetary Fund, Working Paper No. 14/235, 2014), https://www.imf.org/external/pubs/ft/wp/2014/wp14235.pdf [https://perma.cc/2AUM-SH9E].

172. Tarullo, *supra* note 6, at 14. Tarullo has recognized that the Basel III liquidity rules are primarily microprudential in design. *See* Tarullo, *supra* note 148, at 22 (acknowledging that the LCR "has a principally microprudential focus"); Tarullo, *supra* note 22, at 7 (stating that the Basel III liquidity requirements "are more microprudential than macroprudential in their design"); Tarullo, *supra* note 12, at 7 (noting that the LCR is "principally microprudential in design"). However, Tarullo concedes that the LCR "still reflects macroprudential concerns." *Id.* (noting that the LCR and NSFR have "a macroprudential influence").

173. *See* EUR. CENT. BANK, MACROPRUDENTIAL BULLETIN NO. 1, at 4, 6, 44 (2016), https://www.ecb.europa.eu/pub/pdf/other/ecbmpbu201603.en.pdf [https://perma.cc/4GUV-ES66] (listing liquidity-based measures as one of three categories of macroprudential policy instruments); *see also* Stijn Claessens, Swati R. Ghosh & Roxana Mihet, *Macro Prudential Policies to Mitigate Financial Vulnerabilities in Emerging Markets*, *in* DEALING WITH THE CHALLENGES OF MACRO FINANCIAL

requirements as essential components of the post-Financial Crisis reforms to support financial stability."[174]

Despite ostensible macroprudential objectives, however, the Basel III liquidity rules are in fact standard microprudential tools. At their core, the LCR and NSFR seek to ensure that an individual financial institution maintains sufficient liquidity to satisfy its obligations.[175] In doing so, the rules prioritize the resilience of an individual firm in isolation rather than financial markets in the aggregate. The LCR and NSFR do not contain countercyclical measures to combat time-varying liquidity risks, nor do they account for correlations among firms' funding strategies.[176] In this context, the LCR and NSFR appear to be traditional microprudential instruments.[177] Of course, the Basel III liquidity rules, like other microprudential tools, could enhance macroprudential stability if designed appropriately.[178] As currently implemented, though, there is nothing distinctly macroprudential about either the LCR or NSFR.

Not only are the Basel III liquidity rules primarily microprudential, but they may actually undermine macroprudential objectives. Commentators have long worried that the LCR could exacerbate procyclicality by encouraging banking organizations to horde liquidity during times of stress.[179] Critics of the LCR's microprudential orientation allege that regulatory and market pressures could encourage firms to stockpile HQLAs during crises in order to appear strong rather than using those assets to maintain smooth financial market functioning.[180] As these skeptics predicted, this is exactly what happened at the onset of the COVID-19 pandemic in early 2020.[181] Despite policymakers urging banks to use

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LINKAGES IN EMERGING MARKETS 155, 162, 165 (Otaviano Canuto & Swati R. Ghosh eds., 2013) (characterizing the LCR and NSFR as part of the macroprudential toolkit).

174. BARR ET AL., *supra* note 142, at 258.

175. *See* LIQUIDITY COVERAGE RATIO, *supra* note 168, at 1 (asserting that the LCR "promote[s] [the] short-term resilience of a bank's liquidity risk profile"); NET STABLE FUNDING RATIO, *supra* note 168, at 1 (stating that the NSFR "requires banks to maintain a stable funding profile").

176. *See supra* Section I.B (discussing macroprudential risks).

177. *See* Jan Willem van den End & Mark Kruidhof, *Modelling the Liquidity Ratio as Macroprudential Instrument*, 14 J. BANKING REGUL. 91, 91 (2013) (asserting that the LCR and NSFR "are microprudential by nature"); Tomohiro Ota, Zijun Liu, Gerardo Ferrara, Sam Langfield & Inaki Aldasoro, *Macroprudential Liquidity Requirements*, CTR. FOR ECON. POL'Y RSCH. (Dec. 4, 2019), https://cepr.org/voxeu/columns/macroprudential-liquidity-requirements [https://perma.cc/JHW3-8K49] (describing the LCR as a "microprudential standard"); *see also supra* note 172 (summarizing Tarullo's recognition that the LCR and NSFR are primarily microprudential in design).

178. *See supra* notes 46–48 and accompanying text (discussing the view that the resilience of individual financial institutions promotes financial stability).

179. *See* Tarullo, *supra* note 18, at 75 ("[F]rom the very origin of the [LCR] a decade ago, there has been concern that the regulation could cause banks to horde their liquidity during stress periods."); *see also* Andrew W. Hartlage, Note, *The Basel III Liquidity Coverage Ratio and Financial Stability*, 111 MICH. L. REV. 453, 455 (2012) (predicting that the LCR may "undermine the stability of the financial system rather than reduce systemic risk").

180. *See* Tarullo, *supra* note 22, at 7 n.15 ("[I]n a stressed financial environment . . . the financial system as a whole may be adversely affected if the regulated firms seek to protect their positions by cutting off liquidity to counterparties as their own funding becomes tighter.").

181. *See* Victoria Saporta, Exec. Dir. of Prudential Pol'y, Bank of Eng., Capital and (for a Change) Liquidity Buffers (July 14, 2022) (transcript available at https://www.bankofengland.co.uk/speech/

their HQLAs to support financial markets—even if it meant temporarily dropping below the amount required by the LCR—firms instead increased their stockpiles of liquid assets while retreating from intermediation.[182] Banking organizations' retrenchment, in turn, necessitated central banks to step in to support the financial system with emergency liquidity programs.[183] In this way, the Basel III liquidity rules are "a good example of how a purely microprudential regulatory perspective may be at odds with a macroprudential perspective."[184]

3. Nonbank Regulation

A third supposed macroprudential reform sought to address another key catalyst of the 2008 crisis: nonbank financial institutions. Before 2008, insurers, broker–dealers, and other nonbanks were not subject to consolidated safety-and-soundness regulation.[185] The lack of appropriate oversight became apparent when Bear Stearns, Lehman Brothers, and AIG collapsed, sending shockwaves through the financial system.[186] Thus, one of Dodd-Frank's main macroprudential objectives was to mitigate systemic risks arising from nonbank financial companies.[187] As this Section explains, however, Dodd-Frank uses principally microprudential tools to address nonbank systemic risk.

Dodd-Frank's primary mechanism for mitigating nonbank systemic risk was the establishment of the FSOC, a council composed of the heads of the major U.S. financial regulatory agencies.[188] Congress gave the FSOC two powers with which to combat nonbank systemic risks. First, lawmakers empowered the FSOC to designate as systemically important financial institutions (SIFIs) individual nonbank firms that could pose systemic risk.[189] By law, any company that the FSOC designates as a nonbank SIFI is automatically subject to enhanced regulation by the Federal Reserve.[190] This is the FSOC's "entity-based" authority.[191]

2022/july/victoria-saporta-speech-at-the-bank-of-england-capital-and-for-a-change-liquidity-buffers [https://perma.cc/FF9P-2PFR]) ("[D]uring the early stages of Covid-19, we saw evidence that suggested banks were overly reluctant to use their HQLAs . . . .").

182. *See id.* (describing defensive actions taken by banks to bolster their LCR ratios during the COVID-19 pandemic).

183. *See id.* ("[T]he reluctance of banks to absorb part of the stress through the use of liquid assets implies that central banks have to intervene in greater size and more quickly than in the counterfactual.").

184. Tarullo, *supra* note 6, at 16.

185. Daniel Schwarcz & David Zaring, *Regulation by Threat: Dodd-Frank and the Nonbank Problem*, 84 U. CHI. L. REV. 1813, 1823–25 (2017) (noting that securities and insurance regulation have traditionally focused on investor and policyholder protection instead of systemic risk).

186. *See id.* at 1823, 1825 ("[T]he financial crisis shattered the notion that nonbank firms do not pose systemic risks.").

187. *See id.* at 1834 (discussing Dodd-Frank's emphasis on nonbank systemic risk).

188. 12 U.S.C. §§ 5321(a), 5322(a)(1)(A). For details about the FSOC's composition and its structure, see Hilary J. Allen, *Putting the "Financial Stability" in Financial Stability Oversight Council*, 76 OHIO ST. L.J. 1087, 1113–19 (2015).

189. *See* 12 U.S.C. § 5323(a)(1). The statute does not use the phrase "systemically important financial institutions," but this terminology has become standard in practice. *See* Kress et al., *supra* note 24, at 1458.

190. *See* 12 U.S.C. § 5323(a)(1).

191. *See* Kress et al., *supra* note 24, at 1458–59 (discussing the FSOC's entity-based authority).

Second, Congress empowered the FSOC to recommend more stringent regulation of any financial activity conducted by nonbanks or BHCs if the activity could create systemic risk.[192] This is the FSOC's "activities-based" authority.[193] Equipped with these two statutory powers, the FSOC is widely viewed as a centerpiece of Dodd-Frank's macroprudential approach.[194]

Despite the FSOC's reputation as a nonbank systemic risk regulator, its legal authorities are not especially macroprudential. Consider the FSOC's entity-based authority. When the FSOC designates a nonbank financial company as a SIFI, the firm becomes subject to capital, liquidity, and risk management requirements by the Federal Reserve.[195] These tools are quintessentially microprudential, as they are primarily concerned with preserving the safety and soundness of the individual nonbank SIFI.[196] Although the FSOC's entity-based authority may mitigate cross-sectional, macroprudential risks by extending the application of safety-and-soundness regulation beyond the banking sector to selected nonbank financial institutions,[197] the regulatory consequences that accompany a nonbank SIFI designation are distinctly microprudential.[198]

Nor does the FSOC's activities-based authority confer macroprudential powers. In fact, the FSOC's activities-based authority grants essentially no power at all. Under Dodd-Frank, the FSOC may only *recommend* that the primary financial regulatory agencies enhance the regulation of a certain financial activity.[199] The FSOC has no authority to *require* the primary financial regulatory agencies to implement activities-based regulations or to implement such rules directly.[200]

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192. *See* 12 U.S.C. § 5330(a).

193. *See* Kress et al., *supra* note 24, at 1459–60 (discussing the FSOC's activities-based authority).

194. *See* Paolo Saguato, *Rethinking the Financial Stability Oversight Council*, 16 VA. L. & BUS. REV. 505, 505 (2022) (asserting that the FSOC "was envisioned as a macroprudential authority to stabilize the financial system"); Graham S. Steele, *Confronting the "Climate Lehman Moment": The Case for Macroprudential Climate Regulation*, 30 CORNELL J.L. & PUB. POL'Y 109, 142 (2020) ("The first source of macroprudential regulation in the Dodd-Frank Act is the Financial Stability Oversight Council . . . ."); Gohari & Woody, *supra* note 16, at 420 ("The Dodd–Frank Act created the [FSOC] with the mandate to design and implement macroprudential regulation in the United States."); Recent Adjudication, *Basis for the Financial Stability Oversight Council's Rescission of Its Determination Regarding GE Capital Global Holdings, LLC (2016)*, 130 HARV. L. REV. 1289, 1289 (2017) ("In order to better organize macroprudential regulatory oversight, Dodd-Frank established the [FSOC], an apex committee tasked with monitoring the systemic risk of large, nonbank financial firms."); Adam J. Levitin & Susan M. Wachter, *Second Liens and the Leverage Option*, 68 VAND. L. REV. 1243, 1293 (2015) (describing the FSOC as a "macroprudential regulatory body").

195. *See* 12 U.S.C. § 5365(b)(1)(A).

196. *See supra* notes 37–40 and accompanying text (describing microprudential regulation).

197. *See supra* Section I.B.2 (discussing cross-sectional risks).

198. Dodd-Frank subjects nonbank SIFIs to one rule that is decidedly macroprudential: single-counterparty credit limits (SCCL). *See* 12 U.S.C. § 5365(e)(2). For discussion of the SCCL rule, see *infra* Section III.C.1.

199. 12 U.S.C. § 5330(a) ("The Council may provide for more stringent regulation of a financial activity by *issuing recommendations* to the primary financial regulatory agencies to apply new or heightened standards and safeguards . . . ." (emphasis added)).

200. *See* Kress et al., *supra* note 24, at 1463 ("FSOC does not have any legal authority to implement activities-based reforms directly. Instead, it can only make nonbinding recommendations that other agencies adopt such rules.").

Indeed, the only time the FSOC used its activities-based authority, the Securities and Exchange Commission (SEC) resisted the FSOC's recommendation to strengthen money market mutual fund regulation, ultimately adopting reforms that were considerably weaker than the FSOC's suggestion.[201] In this way, the FSOC's activities-based role is that of a "glorified think tank."[202]

In sum, Dodd-Frank's approach to nonbank regulation is not as macroprudential as is popularly believed. As former Federal Reserve Governor Donald Kohn correctly concluded, the "FSOC itself has very limited tools to deal with structural or countercyclical macroprudential risks."[203] Like other aspects of Dodd-Frank, therefore, the FSOC's reputation as a macroprudential innovation is largely unwarranted.

### B. REFORMS THAT ARE ALMOST MACROPRUDENTIAL, BUT NOT QUITE

Other provisions of Dodd-Frank and Basel III nudge the financial regulatory framework in a macroprudential direction but stop short of fully embracing a macroprudential perspective. This Section examines two sets of reforms that are almost, but not quite, macroprudential: (1) the global systemically important bank (GSIB) surcharge and countercyclical capital buffer (CCyB); and (2) mortgage safeguards.

#### 1. GSIB Surcharge and CCyB

The 2008 crisis exposed two main problems with the prevailing bank capital framework. First, the crisis demonstrated that banks—the largest banks, in particular—did not have sufficient capital cushions.[204] Second, the crisis confirmed longstanding concerns about microprudential capital requirements' procyclicality, as banks curtailed lending when their capital levels neared regulatory minimums.[205]

To address these shortcomings, the BCBS adopted two reforms that have come to be known as Basel III's "macroprudential overlay."[206] First, the BCBS implemented a capital surcharge for GSIBs.[207] The so-called GSIB surcharge is an additional capital requirement for banks that are deemed systemically important

201. *See* Allen, *supra* note 188, at 1118–19.

202. Kress et al., *supra* note 24, at 1463.

203. Donald Kohn, *Institutions for Macroprudential Regulation: The UK and the U.S.*, BROOKINGS (Apr. 17, 2014), https://www.brookings.edu/on-the-record/institutions-for-macroprudential-regulation-the-uk-and-the-u-s/ [https://perma.cc/J4V3-25VZ]. Similarly, former Federal Reserve Governor Daniel Tarullo concluded that the FSOC "has no real macroprudential powers." Tarullo, *supra* note 18, at 74.

204. *See* BARR ET AL., *supra* note 142, at 321 (discussing capital shortfalls during the crisis).

205. *See supra* notes 76–81 and accompanying text (discussing microprudential regulation's procyclicality); *see also* Kress & Turk, *supra* note 50, at 508–09 (discussing procyclicality during the 2008 crisis).

206. *See, e.g.*, Sebastian Krug, Matthias Lengnick & Hans-Werner Wohltmann, *The Impact of Basel III on Financial (In)stability: An Agent-Based Credit Network Approach*, 15 QUANTITATIVE FIN. 1917, 1923 (2015) (discussing Basel III's "macroprudential overlay").

207. *See* BASEL COMM. ON BANKING SUPERVISION, GLOBAL SYSTEMICALLY IMPORTANT BANKS: REVISED ASSESSMENT METHODOLOGY AND THE HIGHER LOSS ABSORBENCY REQUIREMENT 3 (2018), https://www.bis.org/bcbs/publ/d445.pdf [https://perma.cc/2XUA-ZNAN].

based on measures of their size, interconnectedness, complexity, cross-jurisdictional activity, and substitutability.[208] Under Basel III, the GSIB surcharge ranges from 1% to 3.5% of common equity Tier 1 capital, with higher surcharges applying to banks of greater systemic importance.[209] Second, the BCBS instituted the CCyB, an extra buffer of up to 2.5% of common equity Tier 1 capital that national authorities may require banks to maintain as macroeconomic and financial stability conditions warrant.[210]

In theory, these reforms help shift the traditional microprudential capital framework in a macroprudential direction. Consider the GSIB surcharge. As former Federal Reserve Governor Daniel Tarullo explained, "A macroprudential capital requirement should take account of the fact that there would be very large negative externalities associated with the disorderly failure of any systemically important financial institution . . . distinct from the costs incurred by the firm, its stakeholders, and the federal deposit insurance fund."[211] As Tarullo asserts, the GSIB surcharge is "clearly macroprudential" because its principal aim is to reduce the likelihood of a systemic collapse.[212] Moreover, as Professors Luca Enriques, Alessandro Romano, and Thom Wetzer have noted, the GSIB surcharge squarely addresses macroprudential cross-sectional risks since "a higher interconnectedness score results in a more stringent capital requirement."[213]

Like the GSIB surcharge, the CCyB is—at least in principle—a macroprudential enhancement to the capital framework. Addressing time-varying risks is one of macroprudential regulation's primary goals.[214] The CCyB seeks to mitigate these risks by allowing national authorities to increase required capital levels during economic expansions and thereby enhance the banking system's resilience when the economy eventually slows.[215] In addition, by requiring banks to maintain additional capital during expansionary periods, the CCyB aims to prevent the growth of credit bubbles and stop the economy from overheating.[216] In light of these objectives, "[t]he Basel Committee and U.S. officials explicitly characterize the CCyB as time-varying and macroprudential."[217]

Despite its nickname, however, Basel III's "macroprudential overlay" does not move the capital framework as far in a macroprudential direction as may be warranted. The GSIB surcharge, for example, has been implemented in a way that limits its macroprudential reach. When the Federal Reserve calibrated the

208. *See id.* at 3–6.

209. *See id.* at 7, 10–11.

210. *See* BASEL COMM. ON BANKING SUPERVISION, BASEL III: A GLOBAL REGULATORY FRAMEWORK FOR MORE RESILIENT BANKS AND BANKING SYSTEMS 57–58 (2010), https://www.bis.org/publ/bcbs189_dec2010.pdf [https://perma.cc/D2YW-GNAG].

211. Tarullo, *supra* note 148, at 12.

212. *Id.* at 12–14.

213. Enriques et al., *supra* note 34, at 369 (describing the GSIB surcharge as "an example of a genuinely network-sensitive regulation").

214. *See supra* Section I.B.1.

215. *See* Kress & Turk, *supra* note 50, at 514.

216. *See id.*

217. Tarullo, *supra* note 6, at 7.

formula used to calculate surcharges for the U.S. GSIBs, it made several simplifying assumptions that depress the magnitude of those surcharges. For example, the Federal Reserve assumed a linear relationship between firms' systemic importance scores and the societal impact of their failure, despite acknowledging that systemic harms likely grow at an increasing rate.[218] As the Federal Reserve admitted, this assumption "result[s] in surcharges lower than those that would result if the relationship . . . were assumed to be non-linear."[219] Moreover, the Federal Reserve capped the model's substitutability component, producing lower systemic risk scores for JPMorgan, Citi, Bank of New York Mellon, and State Street, which are major providers of nonsubstitutable services such as payments, custody, and underwriting.[220] Notably, the Federal Reserve made other adjustments to the Basel III framework that increased U.S. GSIB surcharges above those of comparable, foreign GSIBs.[221] Absent the Federal Reserve's assumptions, however, U.S. GSIB surcharges would be even higher and would be more conceptually accurate from a macroprudential perspective.[222]

The CCyB is even more limited than the GSIB surcharge in its macroprudential reach. That is because the CCyB is likely to be underutilized—if it is used at all. Recall that the CCyB relies on regulators' discretion to activate or increase the buffer when economic conditions warrant.[223] Fearing backlash for slowed economic growth, Federal Reserve policymakers may try to avoid the "difficult and unpopular position" of activating the CCyB during an economic boom.[224]

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218. *See* BD. OF GOVERNORS OF THE FED. RSRV. SYS., CALIBRATING THE GSIB SURCHARGE 4 (2015), https://www.federalreserve.gov/aboutthefed/boardmeetings/gsib-methodology-paper-20150720.pdf [https://perma.cc/HX2A-M6G3] ("[The Federal Reserve] assumes that if firm A's score is twice as high as firm B's score, then the systemic harms that would flow from firm A's failure would be twice as great as those that would flow from firm B's failure."); *see also id.* ("In fact, there is reason to believe that firm A's failure would do more than twice as much damage as firm B's.").

219. *Id.*

220. *See* Regulatory Capital Rules: Implementation of Risk-Based Capital Surcharges for Global Systemically Important Bank Holding Companies, 80 Fed. Reg. 49082, 49096 (Aug. 14, 2015) (to be codified at 12 C.F.R. pts. 208, 217) (discussing the substitutability component); *see also* Alessandro Aimone, *Substitutability Cap Spares JP Morgan Higher Capital Add-On*, RISK.NET (Nov. 23, 2021), https://www.risk.net/risk-quantum/7900941/substitutability-cap-spares-jp-morgan-higher-capital-surcharge (reporting that JPMorgan, Citi, Bank of New York Mellon, and State Street hit the substitutability cap in their GSIB surcharge calculations).

221. *See* Zach Fox & Usman Pirzada, *G-SIB Surcharge Has Banks Thinking About Systemic Risk Scores*, S&P GLOB. (July 24, 2018), https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/g-sib-surcharge-has-banks-thinking-about-systemic-risk-scores-45319603 [https://perma.cc/AL7X-4NEX?type=standard] (discussing "gold-plating" of the GSIB surcharge by U.S. regulators).

222. Beyond just the U.S. GSIB surcharge framework, the international Basel III GSIB surcharge itself may be under-calibrated to account for macroprudential risks. One study by Federal Reserve economists concluded that the Basel III capital surcharge framework "underestimates the probability of bank failure, wrongly disregards short-term funding, and excludes too many banks." Wayne Passmore & Alexander H. von Hafften, *Are Basel's Capital Surcharges for Global Systemically Important Banks Too Small?*, INT'L J. CENT. BANKING, Mar. 2019, at 107, 107 (estimating that appropriately calibrated GSIB surcharges be 3 to 8.25 percentage points higher).

223. *See supra* note 210 and accompanying text.

224. Neville Arjani, *Procyclicality and Bank Capital*, FIN. SYS. REV., June 2009, at 33, 36.

That is especially true since "the stability-enhancing benefits of countercyclical policies will be realized at some indeterminate time in the future."[225] This combination of incentives creates "a predisposition not to activate" the CCyB.[226] In fact, since adopting the CCyB in 2013, the Federal Reserve has never increased the buffer above zero percent, despite the historically long economic expansion of the 2010s.[227] Thus, although the CCyB in theory adds a macroprudential tool to the bank capital framework, it is not well-suited to addressing time-varying risks in practice.

2. Mortgage Reforms

The 2008 financial crisis was, at its core, a housing crisis.[228] During the early 2000s, mortgage lenders began making increasingly risky loans to borrowers of dubious creditworthiness.[229] Lenders cared little about borrowers' repayment prospects because they immediately sold the loans to be repackaged into mortgage-backed securities (MBSs).[230] Investors, meanwhile, did not police the quality of mortgages underlying MBSs, comforted by the instruments' strong credit ratings and the long-standing assumption that housing prices would continually appreciate.[231] This comfort, of course, proved to be misplaced. The housing market soured in 2007, saddling MBS investors with extraordinary losses and setting off the cataclysmic chain of events that precipitated the Great Recession.[232]

After the crisis, Dodd-Frank introduced several new safeguards to prevent a recurrence of the housing collapse. Two reforms are particularly notable for their potential macroprudential effects. First, policymakers implemented an "ability-to-repay" rule that requires a mortgage lender, before extending credit, to make a "reasonable and good faith determination based on verified and documented information that . . . the consumer has a reasonable ability to repay the loan."[233] A mortgage lender who fails to comply with the ability-to-repay rule may incur monetary penalties, and borrowers may use a lender's noncompliance as a defense in a

225. Kress & Turk, *supra* note 50, at 554.

226. *Id.*

227. *See id.* at 517–18 ("[T]he CCyB remained in disuse, even as the late 2010s economic expansion reached historic levels.").

228. *See, e.g.*, ADAM J. LEVITIN & SUSAN M. WACHTER, THE GREAT AMERICAN HOUSING BUBBLE: WHAT WENT WRONG AND HOW WE CAN PROTECT OURSELVES IN THE FUTURE 110–30 (2020) (explaining the crisis's origins in the housing sector).

229. *See* KATHLEEN C. ENGEL & PATRICIA A. MCCOY, THE SUBPRIME VIRUS: RECKLESS CREDIT, REGULATORY FAILURE, AND NEXT STEPS 33–38 (2011) (discussing the emergence of the subprime residential mortgage market).

230. *See id.* at 43–65 (discussing MBS securitization).

231. *See id.* at 58; Steven L. Schwarcz, *Keynote Address: Understanding the Subprime Financial Crisis*, 60 S.C. L. REV. 549, 550, 552 (2009).

232. *See* ENGEL & MCCOY, *supra* note 229, at 69–121 (connecting the housing market collapse to the broader crisis).

233. Dodd-Frank Wall Street Reform and Consumer Protection Act, Pub. L. No. 111-203, § 1411, 124 Stat. 1376, 2142 (2010) (codified as amended at 15 U.S.C. § 1639c(a)(1)).

future foreclosure action.[234] Second, Congress adopted a "risk retention" rule that requires securitization issuers to retain at least 5% of the credit risk of a residential MBS.[235]

These mortgage reforms are macroprudential in orientation because they seek to constrain the buildup of excessive credit and thereby mitigate time-varying risks associated with asset bubbles. By forcing mortgage originators to evaluate borrowers' creditworthiness, the ability-to-repay rule tries to stop imprudent loans from entering the securitization pipeline and later inflicting losses on MBS investors.[236] Similarly, the risk retention rule attempts to blunt securitization issuers' incentives to issue low-quality products by requiring issuers to keep some "skin in the game."[237] At least in theory, had these safeguards been in place during the 2000s, both the housing boom and corresponding bust would have been less extreme.[238] Accordingly, commentators regularly label Dodd-Frank's mortgage reforms as macroprudential.[239]

Although the ability-to-repay and risk retention rules undeniably move mortgage regulation in a macroprudential direction, there is reason to question whether these reforms—on their own—will have their intended macroprudential effect.

234. *See* LEVITIN & WACHTER, *supra* note 228, at 206–07 (discussing penalties for noncompliance with the ability-to-repay rule). Mortgage lenders may take advantage of a statutory safe harbor from the ability-to-repay rule, known as the qualified mortgage (QM) standard. When a mortgage lender makes a QM loan—defined as a loan of no more than 30 years, with limited fees, no exotic features, and a 43 percent or lower debt-to-income ratio—the lender is presumed to have complied with the ability-to-repay requirement. *See id.* at 207; Qualified Mortgage Definition Under the Truth in Lending Act (Regulation Z): General QM Loan Definition, 85 Fed. Reg. 86308, 86308–09 (Dec. 29, 2020) (to be codified at 12 C.F.R. pt. 1026) (detailing the definition of a QM loan).

235. Dodd-Frank Wall Street Reform and Consumer Protection Act § 941(b), 124 Stat. at 1891–92 (codified as amended at 15 U.S.C. § 78o–11). The risk retention rule contains an exception for qualified residential mortgages (QRMs). *See* 15 U.S.C. § 78o-11(e)(4). A securitization issuer need not retain any credit risk in a residential MBS that is made up entirely of QRMs. *See id.* § 78o-11(e)(4)(A), (e)(5). By rule, regulators have defined QRMs synonymously with QMs. *See* Patricia A. McCoy & Susan M. Wachter, *The Macroprudential Implications of the Qualified Mortgage Debate*, 83 LAW & CONTEMP. PROBS., no. 1, 2020, at 21, 29 (discussing the QRM rule); *see also supra* note 234 (discussing the QM standard).

236. *See* Patricia A. McCoy & Susan M. Wachter, *Why the Ability-to-Repay Rule Is Vital to Financial Stability*, 108 GEO. L.J. 649, 680–81 (2020).

237. *See* Adam J. Levitin, Andrey D. Pavlov & Susan M. Wachter, *The Dodd-Frank Act and Housing Finance: Can It Restore Private Risk Capital to the Securitization Market?*, 29 YALE J. ON REGUL. 155, 158–59 (2012).

238. *See, e.g.*, BUREAU OF CONSUMER FIN. PROT., ABILITY-TO-REPAY AND QUALIFIED MORTGAGE RULE ASSESSMENT REPORT 86–87 (2019), https://files.consumerfinance.gov/f/documents/cfpb_ability-to-repay-qualified-mortgage_assessment-report.pdf [https://perma.cc/7783-9D9S] (concluding that the ability-to-repay rule "would likely have prevented at least some of the early foreclosed loans [issued between 2005 and 2007] . . . from being originated in the first place" and "potentially [would have] eliminat[ed] a majority of early foreclosed loans if the [r]ule had been in place at the time").

239. *See, e.g.*, Richman & Schwarcz, *supra* note 59, at 738 ("Macroprudential regulation addressed home-mortgage loans not only by imposing risk-retention requirements . . . but also by setting conditions to help ensure that mortgage-loan borrowers are able to repay their loans.").

Consider critiques raised by Professors Ryan Bubb and Prasad Krishnamurthy.[240] Bubb and Krishnamurthy contend that the "sine qua non of a bubble is market-wide overoptimism about future house prices."[241] Accordingly, Bubb and Krishnamurthy argue that the ability-to-repay requirement will not prevent future housing bubbles because lenders, overcome by excessive optimism during boom markets, will underestimate their potential liability under the rule.[242] Nor will the risk retention rule constrain housing bubbles, in Bubb's and Krishnamurthy's estimation, because securitization issuers will irrationally discount the possibility that MBS issuances will incur losses.[243] Therefore, Bubb and Krishnamurthy insist that Dodd-Frank's mortgage reforms "will do little to protect the economy from a bubble."[244]

The shortcomings of Dodd-Frank's mortgage reforms are especially stark when compared to a genuinely macroprudential alternative. Loan-to-value (LTV) limits are a quintessential macroprudential tool for preventing housing bubbles.[245] An LTV limit requires borrowers to overcollateralize their mortgage loan—typically by making a down payment—so that the value of the collateral exceeds the amount of the loan by a certain ratio.[246] LTV limits, therefore, curb excessive credit growth by restricting leverage in the housing market.[247] Unlike Dodd-Frank's ability-to-repay and risk retention rules, LTV limits do not rely on market participants' incentives, which may be skewed by overoptimism as Bubb and Krishnamurthy contend.[248] Instead, LTV limits hardwire constraints on credit growth based on borrowers' available collateral.[249] An LTV limit would therefore be more likely than Dodd-Frank's mortgage reforms to achieve macroprudential objectives.

LTV limits are widely used as a macroprudential tool in other jurisdictions,[250] but U.S. regulators lack legal authority to impose a maximum LTV ratio on all

240. *See* Ryan Bubb & Prasad Krishnamurthy, *Regulating Against Bubbles: How Mortgage Regulation Can Keep Main Street and Wall Street Safe—From Themselves*, 163 U. PA. L. REV. 1539, 1540, 1580, 1601 (2015).

241. *Id.* at 1540.

242. *Id.* at 1601 ("In a bubble, originators will underestimate the possibility that house prices will fall and therefore will underweigh the prospect of liability under the ability-to-repay rule. . . . Lenders caught up in a bubble are likely to engage in asset-based lending, the ability-to-repay rule notwithstanding.").

243. *Id.* at 1580 ("[I]n a bubble, overoptimism about future house prices leads securitizers to discount substantially the possibility of mortgage default. . . . In the most extreme case, if parties put zero weight on the prospect of mortgage default, then risk retention provides *no* incentive benefits.").

244. *Id.* at 1540.

245. *See, e.g.*, Enriques et al., *supra* note 34, at 360–61 ("An example of a macroprudential policy is the requirement placed upon mortgage lenders to maintain a certain loan-to-value ratio . . . to prevent excessive credit-fueled growth in real estate from generating destabilizing asset booms.").

246. *See* Steven L. Schwarcz, *Macroprudential Regulation of Mortgage Lending*, 69 SMU L. REV. 595, 600–01 (2016).

247. *See* Bubb & Krishnamurthy, *supra* note 240, at 1612.

248. *See supra* notes 241–44 and accompanying text.

249. *See* Bubb & Krishnamurthy, *supra* note 240, at 1612 (asserting that an LTV limit "would allow savings growth to constrain house price growth").

250. *See* McCoy, *supra* note 85, at 1210 ("Outside of the United States, a growing number of jurisdictions . . . have adopted maximum [LTV] ratios as part of their countercyclical arsenals.");

mortgages.[251] Even if Dodd-Frank had authorized regulators to engage in macroprudential LTV regulation, societal costs—in the form of reduced credit availability—could outweigh the associated financial stability benefits.[252] In light of these constraints, Dodd-Frank's ability-to-repay and risk retention rules are reasonable, next-best alternatives to a more comprehensive approach that includes LTV limits.[253] From a macroprudential perspective, however, Dodd-Frank's mortgage reforms are likely to be less effective at preventing future housing bubbles than if the law had also instituted mandatory LTV limits.

### C. REFORMS THAT ARE MACROPRUDENTIAL

Although the post-2008 regulatory framework remains primarily microprudential, Dodd-Frank and Basel III did introduce a few reforms that are distinctly macroprudential. This Section analyzes the two post-2008 reforms that most clearly exemplify a macroprudential approach: (1) single-counterparty credit limits (SCCLs) and (2) centralized clearing of over-the-counter (OTC) derivatives. Examining these macroprudential reforms is instructive because they highlight the ways in which other post-2008 reforms fail to live up to their macroprudential billing.

#### 1. Single-Counterparty Credit Limits

The Dodd-Frank Act's SCCL rule is one of the few post-2008 reforms that is macroprudential in both motivation and implementation. The SCCL rule mitigates cross-sectional risks by capping a systemically important firm's exposure to an individual counterparty.[254] In this way, the SCCL rule fulfills macroprudential goals by alleviating interconnections among large financial institutions.

The 2008 crisis exposed problematic interconnections among financial firms that traditional, microprudential lending limits failed to address. As discussed above, linkages among the world's biggest financial companies created the prospect of a domino effect if one such firm were to collapse, exemplified most clearly by AIG's near-insolvency and subsequent bailout.[255] Prior to the crisis, however, decades-old bank lending limits failed to adequately curb these

Levitin & Wachter, *supra* note 194, at 1270 n.78 ("A number of countries have . . . adopted or at least authorized national-level LTV regulation as a macroprudential tool.").

251. Levitin & Wachter, *supra* note 194, at 1270 n.78 ("There is no authority for U.S. regulators to engage in macroprudential LTV regulation."); Tarullo, *supra* note 18, at 74 ("[N]o US government agency has authority to impose a maximum [LTV] ratio on all mortgages—one of the macroprudential tools most often used in other countries.").

252. *See* Schwarcz, *supra* note 246, at 602–03 (discussing LTV limits' "regressive" impact on homeownership); *see also* McCoy & Wachter, *supra* note 235, at 31–32 (noting that the United States has "firmly rejected mandatory LTV limits for residential mortgages due to access to credit concerns" (footnote omitted)).

253. *See* McCoy & Wachter, *supra* note 236, at 696 (asserting that LTV limits "should be part of a comprehensive approach that includes the [ability-to-repay] rule").

254. *See* Single-Counterparty Credit Limits for Bank Holding Companies and Foreign Banking Organizations, 83 Fed. Reg. 38460, 38460–61 (Aug. 6, 2018) (to be codified at 12 C.F.R. pt. 252) (discussing the SCCL rule's objectives).

255. *See supra* notes 97–101 and accompanying text.

interconnections.[256] The traditional lending limits—originally adopted in 1906—prevented a bank from lending more than 15% of its capital to any one person or more than 25% if the loan was fully secured.[257] As the 2008 crisis revealed, however, these lending limits applied only to chartered banks and not their highly interconnected holding companies.[258] Moreover, the lending limits excluded derivatives and certain securities financing transactions that, by 2008, accounted for much of the credit exposures linking the largest financial firms.[259]

With Dodd-Frank's SCCL rule, policymakers sought to reduce interconnectedness by strengthening counterparty exposure limits. As directed by Dodd-Frank, the Federal Reserve adopted a regulation prohibiting a BHC with $250 billion or more in assets from having net credit exposure to any company that exceeds 25% of its Tier 1 capital.[260] The Federal Reserve adopted even tighter limits for larger firms. Specifically, the SCCL rule barred a U.S. GSIB from having net credit exposure to any other GSIB that exceeds 15% of its Tier 1 capital.[261] Consistent with Dodd-Frank, the Federal Reserve defined credit exposure to include not only traditional loans and lines of credit, but also derivatives and securities financing transactions.[262] According to one estimate, these reforms were projected to reduce intrafinancial system linkages by approximately $100 billion.[263]

The SCCL rule is a quintessentially macroprudential policy. The rule seeks to address macroprudential cross-sectional risks that arise from interconnectedness within the financial system.[264] In addition, the SCCL rule is based on macroprudential assumptions. The rule recognizes that risks to financial institutions may arise endogenously, from other participants within the financial system.[265] Likewise, the SCCL rule recognizes that the financial system reflects a general equilibrium and that a systemically important financial firm's actions can affect,

256. *See* Single-Counterparty Credit Limits for Bank Holding Companies and Foreign Banking Organizations, 83 Fed. Reg. at 38460 (noting that the precrisis credit exposure rules "limited only a portion of the interconnectedness among large financial companies").

257. 12 U.S.C. § 84(a), (c)(8)(A).

258. *See* Single-Counterparty Credit Limits for Bank Holding Companies and Foreign Banking Organizations, 83 Fed. Reg. at 38460 (discussing the traditional lending limits' shortcomings).

259. *See id.*; Sheri M. Markose, *Systemic Risk from Global Financial Derivatives: A Network Analysis of Contagion and Its Mitigation with Super-Spreader Tax* 4–5 (Int'l Monetary Fund, Working Paper No. 12/282, 2012), https://www.imf.org/external/pubs/ft/wp/2012/wp12282.pdf [https://perma.cc/9CJJ-ZVUV].

260. *See* Single-Counterparty Credit Limits for Bank Holding Companies and Foreign Banking Organizations, 83 Fed. Reg. at 38463.

261. *See id.*

262. *See id.* at 38461.

263. *See* Press Release, Bd. of Governors of the Fed. Rsrv. Sys., Opening Statement on the Proposed Rule Establishing Single-Counterparty Credit Limits for Large Banking Organizations by Governor Daniel K. Tarullo (Oct. 12, 2016), https://www.federalreserve.gov/newsevents/pressreleases/tarullo-opening-statement-20160304.htm [https://perma.cc/Z4A8-CX8R] ("Staff estimates that almost all of the roughly $100 billion in current exposures among domestic firms that would exceed these limits is attributable to exposures among G-SIBs.").

264. *See* Hockett, *supra* note 11, at 209 (noting that macroprudential regulation "attend[s] specifically to cross-institutional and cross-sectoral linkages and interactions across the financial system").

265. *See supra* notes 61–62 and accompanying text (discussing endogenous risks).

and be affected by, other firms' behaviors.[266] As the Federal Reserve acknowledged in its SCCL rule, "Financial distress at a banking organization may materially raise the likelihood of distress at other firms, given the network of bilateral credit exposures between large, systemically important firms throughout the financial system."[267] In contrast to stress testing, liquidity rules, and capital buffers, the SCCL rule explicitly recognizes—and attempts to mitigate—the potential for such spillovers and feedback loops between firms.[268] As a result, the SCCL rule stands out among other post-2008 regulatory reforms as genuinely macroprudential.

2. Central Clearing

Dodd-Frank's central clearing mandate for OTC derivatives is also strikingly macroprudential. This mandate requires market participants to submit derivative trades to a centralized clearinghouse that guarantees both counterparties' contractual obligations.[269] Like the SCCL rule, the central clearing requirement is aimed at reducing cross-sectional risks and limiting interconnectedness. In fact, the central clearing mandate is even more macroprudential than the SCCL rule in that it extends beyond the regulated banking sector to nonbank financial institutions.

Credit default swaps and other OTC derivatives were perhaps the most notorious instruments associated with the 2008 financial crisis.[270] Unlike exchange-traded derivatives such as futures and options contracts, OTC derivatives have traditionally been traded bilaterally between counterparties.[271] The OTC derivatives market—which ballooned to $680 trillion notional by 2008—became a breeding ground for systemic risk in the lead-up to and during the crisis.[272] OTC derivative trading created opaque webs of interlocking counterparties concentrated among the world's biggest financial institutions.[273] When some of the largest derivatives dealers collapsed, their distress threatened to spread to their trading partners, necessitating government intervention.[274]

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266. *See supra* notes 63–64 and accompanying text (discussing general equilibria).

267. Single-Counterparty Credit Limits for Bank Holding Companies and Foreign Banking Organizations, 83 Fed. Reg. at 38460.

268. *See supra* Sections III.A.1–2, B.1 (discussing other Dodd-Frank and Basel III reforms).

269. *See infra* notes 275–77 and accompanying text.

270. *See* Paolo Saguato, *The Unfinished Business of Regulating Clearinghouses*, 2020 COLUM. BUS. L. REV. 449, 497. Warren Buffett famously described derivatives as "financial weapons of mass destruction." Letter from Warren E. Buffett, Chairman of the Bd., Berkshire Hathaway Inc., to the Shareholders of Berkshire Hathaway Inc. 15 (Feb. 21, 2003), https://www.berkshirehathaway.com/letters/2002pdf.pdf [https://perma.cc/83FU-B6EZ].

271. *See* Colleen M. Baker, *Regulating the Invisible: The Case of Over-the-Counter Derivatives*, 85 NOTRE DAME L. REV. 1287, 1297–98 (2010).

272. Jacob Gyntelberg, Patrick McGuire & Goetz von Peter, *Highlights of International Banking and Financial Market Activity*, BIS Q. REV., June 2009, at 19, 29 fig.8; *Statistical Annex*, BIS Q. REV., June 2009, at A1, A103 tbl.19. For background on the role of OTC derivatives in the 2008 crisis, see Lynn A. Stout, *Derivatives and the Legal Origin of the 2008 Credit Crisis*, 1 HARV. BUS. L. REV. 1, 22–29 (2011).

273. *See* BARR ET AL., *supra* note 142, at 1262–63 (discussing the role of derivatives in the 2008 crisis).

274. *See, e.g.*, *supra* notes 97–101 and accompanying text (discussing AIG's collapse).

To mitigate systemic risks in derivatives markets, Dodd-Frank mandated that certain OTC derivatives be centrally cleared. When a derivative is centrally cleared, a central counterparty (CCP) acts as an intermediary.[275] The CCP interposes itself between the parties to the transaction, replacing the original, bilateral contract with two separate contracts: one each between the original parties and the CCP.[276] Thus, "the CCP acts as a substituted counterparty so that the two original parties have no direct credit exposure to one another."[277] Dodd-Frank directed the SEC and Commodity Futures Trading Commission (CFTC) to designate standardized swaps for mandatory central clearing.[278] Pursuant to this authority, regulators now require certain interest rate and credit default swaps to be centrally cleared.[279] In part due to these requirements, approximately 78% of all interest rate swaps and 62% of credit default swaps were centrally cleared in 2021, compared to 15% of swaps that were centrally cleared in 2007.[280]

Central clearing of OTC derivatives is believed to mitigate systemic risks in several ways. For example, CCPs facilitate the collection of initial and variation margins to ensure that each counterparty fulfills its obligations on a derivative contract.[281] In addition, central clearing simplifies multilateral netting by allowing market participants to efficiently offset overlapping contracts and thereby reduce their aggregate exposures.[282] Perhaps most importantly, CCPs mutualize losses among their clearing members and thereby protect individual members

275. For background on derivatives clearing, see Colleen M. Baker, *Incomplete Clearinghouse Mandates*, 56 AM. BUS. L.J. 507, 523–27 (2019); Felix B. Chang, *The Systemic Risk Paradox: Banks and Clearinghouses Under Regulation*, 2014 COLUM. BUS. L. REV. 747, 770–75; Erik F. Gerding, *Credit Derivatives, Leverage, and Financial Regulation's Missing Macroeconomic Dimension*, 8 BERKELEY BUS. L.J. 29, 64 (2011); Jeremy C. Kress, *Credit Default Swaps, Clearinghouses, and Systemic Risk: Why Centralized Counterparties Must Have Access to Central Bank Liquidity*, 48 HARV. J. ON LEGIS. 49, 61–65 (2011); Mark J. Roe, *Clearinghouse Overconfidence*, 101 CALIF. L. REV. 1641, 1657–62 (2013); Paolo Saguato, *The Ownership of Clearinghouses: When "Skin in the Game" Is Not Enough, the Remutualization of Clearinghouses*, 34 YALE J. ON REGUL. 601, 614–23 (2017); Steven L. Schwarcz, *Central Clearing of Financial Contracts: Theory and Regulatory Implications*, 167 U. PA. L. REV. 1327, 1343–46 (2019); Richard Squire, *Clearinghouses as Liquidity Partitioning*, 99 CORNELL L. REV. 857, 862–71 (2014); and Yesha Yadav, *The Problematic Case of Clearinghouses in Complex Markets*, 101 GEO. L.J. 387, 408–13 (2013).

276. As is commonly said, the CCP becomes "the buyer to every seller, and the seller to every buyer." Dan Awrey, *The Mechanisms of Derivatives Market Efficiency*, 91 N.Y.U. L. REV. 1104, 1167 (2016).

277. Kress, *supra* note 275, at 62 fig.3.

278. Dodd-Frank Wall Street Reform and Consumer Protection Act, Pub. L. No. 111-203, §§ 723, 763, 124 Stat. 1376, 1675–82, 1762–69, 1774 (2010) (codified at 7 U.S.C. § 2; 15 U.S.C. § 78c–3 to –4).

279. *See* 17 C.F.R. § 50.4 (2022).

280. *See* BANK FOR INT'L SETTLEMENTS, STATISTICAL RELEASE: OTC DERIVATIVES STATISTICS AT END-DECEMBER 2021, at 1 (2022), https://www.bis.org/publ/otc_hy2205.pdf [https://perma.cc/4RMD-V2JU] (reporting data for year-end 2021); Timothy Massad, Chairman, Commodity Futures Trading Comm'n, Keynote Remarks Before the Risk USA Conference (Oct. 22, 2015) (transcript available at https://www.cftc.gov/PressRoom/SpeechesTestimony/opamassad-31 [https://perma.cc/RXF5-EQWY]) (reporting data for 2007).

281. *See* BARR ET AL., *supra* note 142, at 1273–74.

282. *See* Kress, *supra* note 275, at 66–69.

from potentially catastrophic counterparty losses.[283] Each of these features is thought to make central clearing safer than bilateral OTC derivative markets.[284] Thus, as Professor Paolo Saguato concluded, central clearing of OTC derivatives "contributes to the macroprudential mission of mitigating systemic risk and reducing complexity in the financial system."[285]

As the preceding discussion suggests, central clearing of OTC derivatives is distinctly macroprudential. More than any other post-2008 policy reform, mandatory central clearing recognizes that financial institutions operate in a highly interconnected system, in which one firm's distress could inflict severe losses on its bilateral counterparties.[286] Central clearing attempts to mitigate these cross-sectional risks by minimizing interconnections, reducing complexity, and simplifying risk management in the OTC derivatives market.[287] Unlike stress testing, liquidity rules, and other predominantly microprudential reforms, Dodd-Frank's OTC derivatives clearing mandate is not primarily concerned with ensuring that individual financial institutions remain solvent.[288] Instead, mandatory central clearing seeks to ensure that the financial system, as a whole, continues to function even if some components of the system fail.[289] In this way, mandatory central clearing of OTC derivatives is a genuine macroprudential intervention.

* * *

Thus, with just a few isolated exceptions, the reforms introduced by Dodd-Frank and Basel III were primarily microprudential in nature. In reaching this conclusion, we do not intend to disparage these reforms. To the contrary, Dodd-Frank and Basel III made significant and much-needed improvements in the prevailing regulatory framework. These enhancements, however, were mostly targeted at strengthening the safety and soundness of individual financial institutions, not the resilience of the financial system more broadly. Accordingly, the post-2008 regulatory framework's reputation for being macroprudential is largely unwarranted.

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283. *See id*. at 65–66.

284. Some commentators caution that CCPs may concentrate, rather than mitigate, systemic risk. *See, e.g*., Schwarcz, *supra* note 275, at 1354–55; Roe, *supra* note 275, at 1692–93; Kress, *supra* note 275, at 72–73. Policymakers attempt to address the potential concentration of systemic risk in CCPs by subjecting CCPs to stringent risk-management and financial resource requirements. *See* Saguato, *supra* note 270, at 499–500; *see also* Adam J. Levitin, *Response: The Tenuous Case for Derivatives Clearinghouses*, 101 GEO. L.J. 445, 445 (2013) ("[T]he case for clearinghouses remains tenuous and ultimately dependent upon the still-to-be-determined particulars of their regulation.").

285. Saguato, *supra* note 270, at 467.

286. *See* Paul M. McBride, *The Dodd-Frank Act and OTC Derivatives: The Impact of Mandatory Central Clearing on the Global OTC Derivatives Market*, 44 INT'L LAW. 1077, 1096 (2010) (discussing central clearing's "potential to simplify the interconnectedness of the OTC derivatives market").

287. *See* Press Release, Commodity Futures Trading Comm'n, CFTC Announces that Mandatory Clearing Begins Today (Mar. 11, 2013), https://www.cftc.gov/PressRoom/PressReleases/6529-13 [https://perma.cc/V8SU-LR7S] ("Central clearing lowers the risk of the highly interconnected financial system." (quoting CFTC Chairman Gary Gensler)).

288. *See supra* Sections III.A–B (discussing other Dodd-Frank and Basel III reforms).

289. *See supra* notes 281–85 and accompanying text (discussing benefits of central clearing).

## IV. A NORMATIVE ASSESSMENT OF MACROPRUDENTIAL REGULATION

Erroneously labeling the post-2008 regulatory framework as "macroprudential" has serious consequences for the financial system and broader economy. Due to its primarily microprudential orientation, the prevailing regulatory framework continues to overlook cross-sectional vulnerabilities and perpetuate procyclicality.[290] Because policymakers incorrectly assume that today's approach is already macroprudential, they have not seriously weighed the benefits of implementing a more macroprudential approach against the practical and legal challenges such a framework would encounter.

This Part assesses the costs of neglecting macroprudential regulation and evaluates whether the United States can—and should—transition to a more macroprudential approach. Drawing on case studies of Archegos's collapse, the COVID-19 pandemic, and Silicon Valley Bank's (SVB) failure, Section IV.A contends that the post-2008 regulatory framework still neglects cross-sectional and time-varying risks that may damage the financial system and global economy. Section IV.B then examines three potential obstacles that policymakers might encounter if they were to attempt to strengthen macroprudential regulation: excessive complexity, timing uncertainties, and possible legal impediments. Finally, Section IV.C weighs additional macroprudential regulation against the alternative of stronger microprudential oversight and concludes that U.S. policymakers should pursue a financial regulatory framework that is increasingly—but not exclusively—macroprudential.

### A. THE COSTS OF INADEQUATE MACROPRUDENTIAL REGULATION

As Part III demonstrated, the primary way in which Dodd-Frank and Basel III attempted to mitigate systemic risks was by ratcheting up microprudential oversight. Despite improvements in microprudential regulation, however, the financial system has continued to experience recurring disruptions in the decade since the post-2008 regulatory reforms were implemented.[291] Three recent events exemplify the shortcomings of today's predominantly microprudential approach: the Archegos family office collapse, the market turmoil triggered by the COVID-19 pandemic, and the fallout from SVB's dramatic failure. Case studies of these events demonstrate that, because of its microprudential focus, the prevailing regulatory framework still neglects cross-sectional and time-varying risks that could impair the financial system and macroeconomy.

290. *See infra* Section IV.A.

291. *See, e.g.*, Justin Baer, *The Day Coronavirus Nearly Broke the Financial Markets*, WALL ST. J. (May 20, 2020, 9:44 AM), https://www.wsj.com/articles/the-day-coronavirus-nearly-broke-the-financial-markets-11589982288 (describing a "liquidity crisis that threatened the viability of America's companies and municipalities").

1. Neglecting Cross-Sectional Risks: Archegos

The spectacular implosion of the Archegos family office in the spring of 2021 sent shockwaves through the global financial system.[292] Archegos's insolvency cost a handful of the world's largest banking organizations more than $10 billion and sparked speculation about a systemically important bank's solvency.[293] Archegos's distress and the ensuing fallout highlight the costs of a regulatory system that continues to overlook direct and indirect connections throughout the financial sector.

Before its collapse, Archegos was a family office—similar to a hedge fund—that amassed sizeable exposures to several U.S. and Chinese companies.[294] Archegos, however, did not directly own these firms' shares.[295] Instead, Archegos entered into total return swaps with some of the world's largest banks, including Credit Suisse, Goldman Sachs, Morgan Stanley, and UBS.[296] Under the terms of a total return swap, Archegos's counterparty promised to pay Archegos when the referenced stock appreciated.[297] In return, Archegos promised to pay the bank if the referenced stock lost value.[298] Archegos's trading partners typically hedged their risk in these transactions by purchasing shares in the companies referenced by the swaps.[299]

Placing bets using total return swaps was advantageous for Archegos because it allowed the fund to accumulate leveraged positions without disclosing its stakes in the target companies.[300] To the rest of the market, it appeared as if Archegos's counterparties were the registered holders of the underlying stocks.[301] As a result, no one—including regulators and Archegos's counterparties—understood the full extent of the fund's exposures.[302] Nor did anyone realize that

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292. *See* Gregory Zuckerman, Juliet Chung & Maureen Farrell, *Inside Archegos's Epic Meltdown*, WALL ST. J. (Apr. 1, 2021, 8:32 PM), https://www.wsj.com/articles/inside-archegoss-epic-meltdown-11617323530.

293. *See* Lewis & Walker, *supra* note 26; *see also* Margot Patrick, *Concerns About Credit Suisse Mount After Debt Slide*, WALL ST. J. (Oct. 3, 2022, 3:20 PM), https://www.wsj.com/articles/concerns-about-credit-suisse-mount-after-debt-slide-11664824849 (discussing concerns about Credit Suisse's financial health, triggered in part by its $5 billion in losses linked to Archegos).

294. *See* Zuckerman et al., *supra* note 292.

295. Tabby Kinder & Leo Lewis, *How Bill Hwang Got Back into Banks' Good Books—Then Blew Them Up*, FIN. TIMES (Mar. 29, 2021), https://www.ft.com/content/b7e0f57b-3751-42b8-8a17-eb7749f4dbc8.

296. *See id.*

297. *See* Robert Armstrong, *Archegos Debacle Reveals Hidden Risk of Banks' Lucrative Swaps Business*, FIN. TIMES (Apr. 1, 2021), https://www.ft.com/content/fb364689-9b04-47cb-aba9-5eb15d1cea85.

298. *See id.*

299. *See id.*

300. *See id.*

301. *See* Erik Schatzker, Sridhar Natarajan & Katherine Burton, *Bill Hwang Had $20 Billion, Then Lost It All in Two Days*, BLOOMBERG (Apr. 27, 2022, 10:19 AM), https://www.bloomberg.com/news/features/2021-04-08/how-bill-hwang-of-archegos-capital-lost-20-billion-in-two-days.

302. *See id.*; Zuckerman et al., *supra* note 292 ("Archegos's lenders say they were unaware of the extent of trades [Archegos] was making with other banks . . . ."); Armstrong, *supra* note 297 (noting that total return swaps are not traded on an exchange or reported to the SEC); Alexis Goldstein, *These*

Archegos's counterparties were holding their sizeable equity stakes as hedges against Archegos's swaps.[303]

Market volatility in the spring of 2021 revealed the risks inherent in this arrangement. The company on which Archegos had placed its biggest bet, ViacomCBS, announced that it needed to raise new capital, causing the stock to drop by more than 25%.[304] Archegos incurred heavy losses, and its counterparties demanded that the fund post additional margin.[305] With its investments depreciating rapidly, Archegos ran out of cash, and many of the banks resorted to selling the shares that they used to hedge Archegos's swaps.[306] The banks' simultaneous fire sales further depressed market prices, inflicting substantial losses on the counterparties that had yet to sell their shares.[307] By the time all of Archegos's counterparties unwound their swaps, the banks had suffered more than $10 billion in losses, led by Credit Suisse's $5.4 billion hit that triggered speculation about its solvency.[308]

The fallout from Archegos's collapse exposed the drawbacks of a primarily microprudential regulatory framework that overlooks cross-sectional correlations. Viewed in isolation, Credit Suisse, Goldman Sachs, Morgan Stanley, and UBS each appeared to adequately hedge their Archegos swaps by purchasing shares in the underlying stocks.[309] When considered in the aggregate, however, these banks were insufficiently protected because they all relied on the same hedges.[310] Unbeknownst to the banks—and to regulators—the hedges were susceptible to steep losses if any counterparty liquidated its position.[311] The prevailing regulatory framework, however, failed to account for these risky correlations among Archegos's counterparties.[312]

Fortunately, Archegos's collapse did not spiral into a full-blown financial crisis, and even Credit Suisse temporarily survived its Archegos-related losses after

*Invisible Whales Could Sink the Economy*, N.Y. TIMES (May 18, 2021), https://www.nytimes.com/2021/05/18/opinion/archegos-bill-hwang-gary-gensler.html (explaining how Dodd-Frank's exemption of family funds like Archegos kept its exposures hidden from regulators).

303. *Cf.* Leslie Picker & Wilfred Frost, *Morgan Stanley and Goldman Sachs' Roles in Volatility of ViacomCBS Raise Questions*, CNBC (Apr. 1, 2021, 7:42 PM), https://www.cnbc.com/2021/04/01/viacomcbs-stock-sales-amid-archegos-debacle-raise-questions-for-banks.html [https://perma.cc/4PLN-36R2] (discussing Archegos's counterparties' hedges).

304. *See* Zuckerman et al., *supra* note 292.

305. *See id.*

306. *See id.*

307. *See id.*; Picker & Frost, *supra* note 303.

308. *See* Lewis & Walker, *supra* note 26; Patrick, *supra* note 293.

309. *See generally* Kate Kelly, Matt Phillips, Andrew Ross Sorkin & Alexandra Stevenson, *Banks Face Billions in Losses as a Bet on ViacomCBS and Other Stocks Goes Awry*, N.Y. TIMES (Mar. 29, 2021), https://www.nytimes.com/2021/03/29/business/archegos-hwang-viacomcbs-discovery.html (discussing the banks' hedges); Schatzker et al., *supra* note 301.

310. Schatzker et al., *supra* note 301.

311. *See id.*

312. *See, e.g.*, Alexander Osipovich & David Benoit, *Archegos Blowup Puts Spotlight on Gaps in Swap Regulation*, WALL ST. J. (Apr. 1, 2021, 8:31 AM), https://www.wsj.com/articles/archegos-blowup-puts-spotlight-on-gaps-in-swap-regulation-11617280278 (discussing shortcomings in the regulation of total return swaps).

raising almost $2 billion of new capital.[313] Nonetheless, the Archegos episode serves as a cautionary tale for what might happen if financial regulation remains insufficiently attentive to cross-sectional risks.

2. Neglecting Time-Varying Risks: COVID-19

In addition to overlooking cross-sectional risks, the post-2008 regulatory framework still fails to address time-varying risks, as market disruptions associated with the COVID-19 pandemic vividly demonstrated. Because the regulatory framework remains primarily microprudential, it perpetuated procyclicality when the pandemic hit, incentivizing firms to withdraw from critical markets and necessitating extraordinary government intervention to stabilize the financial system.

Two elements of the post-2008 regulatory framework proved to be particularly procyclical during the COVID-19 pandemic. First, consider the supplementary leverage ratio (SLR). A centerpiece of the Basel III Accord, the SLR is a straightforward capital rule that requires banking organizations to maintain a minimum amount of capital relative to their total assets.[314] In this way, the SLR complements—and serves as a backstop for—more complicated risk-based capital requirements.[315] In the United States, BHCs with more than $250 billion in assets must maintain an SLR of at least 3%, while BHCs deemed to be systemically important must satisfy an enhanced SLR of at least 5% to avoid restrictions on dividends and discretionary bonus payments.[316]

Despite its good intentions, the SLR created unintended consequences for the U.S. Treasury market—"the biggest, deepest, and most essential bond market on the planet"—when the COVID-19 pandemic hit in March 2020.[317] As the pandemic roiled the global economy, investors rushed to sell Treasury securities.[318] Ordinarily, when the supply of Treasuries outstrips demand, large BHCs' broker–dealer affiliates step in to absorb the surplus.[319] In this case, however, BHCs

313. *See* Owen Walker, *Credit Suisse to Raise $1.9bn of Capital as It Reels from Archegos Losses*, FIN. TIMES (Apr. 22, 2021), https://www.ft.com/content/c7a958d0-3fc0-456a-9f01-3077b772e41b. Credit Suisse ultimately collapsed amidst wider banking turmoil during March 2023, leading to an emergency merger with UBS. *See* Joe Wallace & Eliot Brown, *Credit Suisse, the Risk-Taking Swiss Banking Giant, Succumbs to Crisis*, WALL ST. J. (Mar. 19, 2023, 7:00 PM), https://www.wsj.com/articles/credit-suisse-the-risk-taking-swiss-banking-giant-succumbs-to-crisis-5a9a1b2e?mod=livecoverage_web.

314. *See* Van Der Weide & Zhang, *supra* note 23, at 726–27.

315. *See* Kress & Turk, *supra* note 24, at 687 (describing the leverage ratio and risk-based capital requirements as "a belt-and-suspenders approach to ensure bank safety and soundness").

316. 12 C.F.R. §§ 217.10(a)(1)(v), 217.11(a)(2)(v), (c) (2022); 12 C.F.R. § 252.5(d)(i)(A)(1).

317. Colby Smith & Robin Wigglesworth, *US Treasuries: The Lessons from March's Market Meltdown*, FIN. TIMES (July 29, 2020), https://www.ft.com/content/ea6f3104-eeec-466a-a082-76ae78d430fd.

318. *See* Jeffrey Cheng, David Wessel & Joshua Younger, *How Did COVID-19 Disrupt the Market for U.S. Treasury Debt?*, BROOKINGS (May 1, 2020), https://www.brookings.edu/blog/up-front/2020/05/01/how-did-covid-19-disrupt-the-market-for-u-s-treasury-debt/ [https://perma.cc/M6AB-7HNS].

319. *See* JOHANNES BRECKENFELDER & VICTORIA IVASHINA, RESEARCH BULLETIN NO. 89, BANK LEVERAGE CONSTRAINTS AND BOND MARKET ILLIQUIDITY DURING THE COVID-19 CRISIS 1 (2021),

refused to serve as market makers.[320] Because the SLR requires BHCs to maintain capital against all assets regardless of risk, BHCs feared that acquiring a massive influx of low-risk Treasuries could cause them to breach their minimum leverage ratio requirements.[321] As a result, BHCs effectively stopped buying Treasuries and declined to lend against Treasury collateral, grinding money markets to a halt.[322] To avert a systemic disaster, the Federal Reserve stepped in to purchase unprecedented sums of Treasuries.[323] In this way, the microprudential-oriented SLR undermined broader financial stability objectives by disrupting a critically important market during the COVID-19 pandemic.

The second element of the post-2008 regulatory framework that exacerbated procyclicality during the pandemic was the liquidity coverage ratio (LCR). As discussed in Part III, the LCR protects banks from acute liquidity strains by requiring each firm to hold enough liquid assets to withstand thirty days of net cash outflows during a period of significant stress.[324] At the onset of the COVID-19 pandemic, however, the LCR had the perverse effect of intensifying financial market stress.[325] Rather than using their stockpiles of liquid assets to support normal financial market functioning, banking organizations instead hoarded liquid assets to ensure they could continue to satisfy the LCR.[326] Like the SLR, the LCR's procyclical consequences prompted central banks to support the financial system with emergency liquidity to stave off a more cataclysmic economic collapse.[327]

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https://www.ecb.europa.eu/pub/economic-research/resbull/2021/html/ecb.rb211124~d9e3f578d2.en.pdf [https://perma.cc/EM5G-CZJP] ("Typically, dealer banks absorb . . . pressure from fire sales . . . .").

320. *See* Yesha Yadav, *The Failed Regulation of U.S. Treasury Markets*, 121 COLUM. L. REV. 1173, 1232, 1234–36 (2021) (discussing Treasury market stress during March 2020).

321. *See* Zhiguo He, Stefan Nagel & Zhaogang Song, *Treasury Inconvenience Yields During the COVID-19 Crisis*, 143 J. FIN. ECON. 57, 59–60 (2022) (discussing the SLR as a balance sheet constraint during March 2020).

322. *See* Michael Fleming & Francisco Ruela, *Treasury Market Liquidity During the COVID-19 Crisis*, FED. RSRV. BANK N.Y.: LIBERTY ST. ECON. (Apr. 17, 2020), https://libertystreeteconomics.newyorkfed.org/2020/04/treasury-market-liquidity-during-the-covid-19-crisis/ [https://perma.cc/U9CG-7B6S] (noting that Treasury market bid–ask spreads increased and order book depth declined during March 2020 to levels unseen since the 2008 crisis).

323. *See* He et al., *supra* note 321, at 58 ("[T]he Federal Reserve . . . first offered essentially unconstrained short-term financing to primary dealers and then quickly began to purchase Treasuries directly in amounts even larger than those during the 2007–2009 crisis."). The Federal Reserve and other banking agencies also temporarily exempted Treasuries and reserves from the SLR to encourage banking organizations to purchase and hold Treasuries. *See* Regulatory Capital Rule: Temporary Exclusion of U.S. Treasury Securities and Deposits at Federal Reserve Banks from the Supplementary Leverage Ratio for Depository Institutions, 85 Fed. Reg. 32980, 32982 (June 1, 2020) (to be codified at 12 C.F.R. pts. 3, 6, 208, 217, 324).

324. *See supra* note 169 and accompanying text.

325. *See supra* notes 179–84 and accompanying text.

326. *See* Elizabeth Duncan, Akos Horvath, Diana Iercosan, Bert Loudis, Alice Maddrey, Francis Martinez, Timothy Mooney, Ben Ranish, Ke Wang, Missaka Warusawitharana & Carlo Wix, *COVID-19 as a Stress Test: Assessing the Bank Regulatory Framework*, 61 J. FIN. STABILITY, no. 101016, 2022, at 1, 6 ("[T]he average sample firm increased its buffer above the LCR requirement by about 10 percentage points at the onset of the COVID-19 pandemic.").

327. *See* Saporta, *supra* note 181.

### 3. Neglecting Both Cross-Sectional and Time-Varying Risks: Silicon Valley Bank

SVB's dramatic demise and the ensuing economic fallout are vivid reminders of the danger of ignoring both cross-sectional and time-varying risks. SVB became the second-largest bank failure in U.S. history when the Federal Deposit Insurance Corporation (FDIC) shuttered the bank in March 2023, sparking a panic and prompting the Federal Reserve to provide emergency support to prop up similarly situated banks.[328] Prior to SVB's collapse, authorities missed warning signs relating to cross-sectional correlation risk and time-varying interest rate risk that could have been mitigated with better macroprudential oversight.[329]

SVB's failure escalated to a market-wide panic in part because supervisors failed to identify cross-sectional correlations among SVB and other regional banks. In contrast to the Archegos case—wherein authorities overlooked investment banks' correlated assets—SVB's supervisors missed correlations among large regional banks' risky liabilities.[330] SVB funded itself overwhelmingly with corporate deposits in excess of the $250,000 federal deposit insurance threshold.[331] According to the Federal Reserve, approximately 94% of SVB's deposits were uninsured.[332] These uninsured deposits proved problematic when SVB's clients—mostly Silicon Valley technology start-ups—became concerned about losses in the bank's securities portfolio and withdrew their funds *en masse*.[333] Even more problematically, however, investors and depositors at *other* banks with a high proportion of uninsured deposits witnessed what was happening at SVB and rushed to withdraw funds from *their* banks, too.[334] As a result, the Federal Reserve stepped in to backstop all banks, lest the run on SVB spiral into a series of economically damaging insolvencies.[335] These emergency measures

328. *See* Nick Timiraos & Andrew Ackerman, *Regulators Face Urgent Task to Stem Spread from Silicon Valley Bank*, WALL ST. J. (Mar. 12, 2023, 4:09 PM), https://www.wsj.com/articles/silicon-valley-bank-fallout-poses-new-risks-for-markets-fed-81d1617a; Ramishah Maruf, *Takeaways from America's Second-Largest Bank Failure*, CNN BUS. (Mar. 11, 2023, 6:42 AM), https://www.cnn.com/2023/03/11/business/svb-collapse-roundup-takeaways/index.html [https://perma.cc/U6LS-QDYK].

329. *See generally* Colby Smith & Stefania Palma, *Regulators Face Questions over Missed Warning Signs at Silicon Valley Bank*, FIN. TIMES (Mar. 13, 2023), https://www.ft.com/content/9321c35b-183b-4df2-8fb1-d50fdb73e849 (discussing red flags at SVB and similar banks that supervisors overlooked).

330. *See id.*

331. *See* Caitlin Gilbert, Alyssa Fowers, Jacob Bogage & Daniel Wolfe, *These Companies Had Billions of Dollars at Risk in Silicon Valley Bank*, WASH. POST (Mar. 15, 2023, 9:09 PM), https://www.washingtonpost.com/business/2023/03/15/svb-billions-uninsured-assets-companies/.

332. *See* BD. OF GOVERNORS OF THE FED. RSRV. SYS., REVIEW OF THE FEDERAL RESERVE'S SUPERVISION AND REGULATION OF SILICON VALLEY BANK 21 (2023), https://www.federalreserve.gov/publications/files/svb-review-20230428.pdf [https://perma.cc/Q9EN-XEXH].

333. *See id.* at 19, 22–25.

334. *See* Eric Wallerstein, Matt Grossman & Gregory Zuckerman, *Wall Street Braces for the Next Silicon Valley Bank*, WALL ST. J. (Mar. 12, 2023, 7:17 PM), https://www.wsj.com/articles/wall-street-braces-for-the-next-silicon-valley-bank-956b8f03.

335. *See* Nick Timiraos, Andrew Ackerman & Andrew Duehren, *SVB, Signature Bank Depositors to Get All Their Money as Fed Moves to Stem Crisis*, WALL ST. J. (Mar. 13, 2023, 5:53 PM), https://www.wsj.com/articles/federal-reserve-rolls-out-emergency-measures-to-prevent-banking-crisis-ba4d7f98

were necessary because bank supervisors had overlooked a glaring, correlated vulnerability: large regional banks' heavy reliance on risky uninsured deposits that were prone to simultaneous withdrawals during a time of stress.[336] Better macroprudential oversight could have caught and addressed these correlated, cross-sectional risks before SVB's collapse.

While cross-sectional funding correlations were the immediate cause of the market-wide panic in 2023, a form of time-varying risk—specifically, interest rate risk—also played a pivotal role. Here, too, authorities failed to anticipate macroprudential consequences. Like many banks, SVB carried billions of dollars of U.S. Treasury securities on its balance sheet in the wake of the COVID-19 pandemic.[337] The fiscal support measures policymakers enacted during the pandemic had flooded the banking system with money, much of which banks invested in Treasuries to earn safe, stable returns.[338] What these banks and their supervisors failed to appreciate was that if interest rates rose—as they did in 2022 when the Federal Reserve initiated aggressive rate hikes to combat inflation—banks' Treasury securities would lose value and erode their equity cushions.[339] Depositor runs at SVB began when technology companies that banked at SVB learned that SVB was sitting on $15 billion in unrealized losses in its securities portfolio.[340] SVB was not alone: the FDIC estimated that unrealized losses for all banks totaled more than $620 billion at year-end 2022 due to interest rate risks.[341] The sudden awareness of how interest rate risks impaired banks' securities portfolios exacerbated the market-wide panic after SVB's collapse.[342] With stronger macroprudential oversight, however, authorities could have better prepared

(describing Federal Reserve emergency-lending facility to make funds available to all banks facing withdrawals).

336. *See* David Hayes, *SVB, Signature Racked Up Some High Rates of Uninsured Deposits*, S&P GLOB. (Mar. 14, 2023), https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/svb-signature-racked-up-some-high-rates-of-uninsured-deposits-74747639 [https://perma.cc/4YQB-2NNG] (listing top U.S. banks by proportion of uninsured deposits).

337. *See* Brian Chappatta, *SVB's 44-Hour Collapse Was Rooted in Treasury Bets During Pandemic*, BLOOMBERG (Mar. 11, 2023, 5:37 AM), https://www.bloomberg.com/news/articles/2023-03-10/svb-spectacularly-fails-after-unthinkable-heresy-becomes-reality.

338. *See id.*

339. *See* Lily Jamali, *What Is "Duration Risk"? (And How Did It Get Silicon Valley Bank into Trouble?)*, MARKETPLACE (Mar. 16, 2023), https://www.marketplace.org/2023/03/16/duration-risk-got-silicon-valley-bank-into-trouble/ [https://perma.cc/8GX6-CFTS].

340. *See* BD. OF GOVERNORS OF THE FED. RSRV. SYS., *supra* note 332, at 24; Tabby Kinder, Dan McCrum & Joshua Franklin, *Silicon Valley Bank Profit Squeeze in Tech Downturn Attracts Short Sellers*, FIN. TIMES (Feb. 22, 2023), https://www.ft.com/content/0387e331-61b4-4848-9e50-04775b4c3fa7.

341. Martin Gruenberg, Chairman, Fed. Deposit Ins. Corp., Remarks on the Fourth Quarter 2022 Quarterly Banking Profile (Feb. 28, 2023) (transcript available at https://www.fdic.gov/news/speeches/2023/spfeb2823.html [https://perma.cc/RN4P-EQK8]).

342. *See* Christine Zhang, David Enrich, Karl Russell & Ella Koeze, *Why People Are Worried About Banks*, N.Y. TIMES (Mar. 18, 2023), https://www.nytimes.com/interactive/2023/03/18/business/why-people-are-worried-about-banks.html.

the banking system for the stresses it might endure in a rising interest rate environment.[343]

Thus, despite improvements in the wake of the 2008 crisis, the prevailing regulatory framework is still susceptible to both cross-sectional and time-varying risks, as the Archegos, COVID-19, and SVB episodes demonstrated. These lingering vulnerabilities suggest that, notwithstanding Dodd-Frank and Basel III, enhanced macroprudential regulation may be necessary to preserve financial stability.

### B. BARRIERS TO BETTER MACROPRUDENTIAL REGULATION

Any attempt to adopt a more macroprudential regulatory framework is almost certain to encounter several implementation challenges. In contrast to microprudential tools, macroprudential regulation faces unique obstacles relating to complexity and data gaps, timing uncertainties, and regulators' legal authority. These potential impediments may help explain why the United States and other jurisdictions have not yet implemented more comprehensive macroprudential frameworks. This Section assesses the most prominent barriers to enhanced macroprudential regulation. Although none of these challenges is likely to prove fatal, they all merit careful consideration if policymakers try to adopt a more macroprudential approach.

#### 1. Complexity and Data Gaps

First, macroprudential regulation must confront challenges relating to complexity and data gaps. Although the post-2008 reforms were primarily microprudential, they nonetheless increased regulatory complexity and intensified the demand for detailed financial data.[344] Moving beyond the prevailing approach toward a more macroprudential framework would undoubtedly introduce additional regulatory complexity and require even more granular data.

Today's microprudential-oriented regulatory framework entails considerable complexity and imposes nontrivial burdens on financial institutions and regulators alike. Consider, for example, the GSIB surcharge, which requires BHCs to produce—and regulators to distill—large quantities of data to determine each firm's capital surcharge.[345] Similarly, the Federal Reserve's stress testing regime involves complex models and projections, and it requires BHCs and the regulatory agencies to devote significant resources to the annual endeavor.[346] Critics

343. *See, e.g.*, Azamat Abdymomunov & Jeffrey Gerlach, *Stress Testing Interest Rate Risk Exposure*, 49 J. BANKING & FIN. 287, 287–89, 300 (2014) (developing a framework to stress test banks' interest rate risks).

344. *See, e.g.*, Andrew G Haldane, Exec. Dir., Bank of Eng., The Dog and the Frisbee 5, 7–10 (Aug. 31, 2012) (transcript available at https://www.bis.org/review/r120905a.pdf [https://perma.cc/5E5Z-24YW]) (assessing complexity in the post-2008 regulatory framework).

345. *See supra* Section III.B.1 (discussing the GSIB surcharge); *see also* Sean Campbell, *Fixing What's Broken: The GSIB Surcharge—Near- and Long-Term Problems*, FIN. SERVS. F. (Feb. 22, 2021), https://fsforum.com/news/fixing-whats-broken-the-gsib-surcharge-near-and-long-term-problems [https://perma.cc/RQ93-K6NE?type=image] (describing the GSIB surcharge as "a complicated function of an array of balance sheet variables").

346. *See supra* Section III.A.1 (describing the stress tests); *see also* Beverly Hirtle, Exec. Vice President & Dir. of Rsch., Fed. Rsrv. Bank of N.Y., The Past and Future of Supervisory Stress Testing Design (Oct. 9, 2018) (transcript available at https://www.newyorkfed.org/newsevents/speeches/2018/

allege that even these microprudential-oriented tools are excessively convoluted.[347] In the words of former Bank of England Chief Economist Andrew Haldane, "Regulation of modern finance is complex, almost certainly too complex."[348]

Introducing new macroprudential tools would inject additional complexity into the regulatory framework. General equilibrium models that recognize the potential for recursive feedback loops and spillover effects are necessarily more complicated than partial equilibrium models that consider individual financial institutions in isolation.[349] Similarly, time-varying rules create more complexity than static, through-the-cycle regulatory requirements.[350] A regulatory framework based on macroprudential principles, therefore, could further complicate the already labyrinthine rules governing the financial sector. At the extreme, this complexity could exceed the limits of human understanding of the financial system. To help alleviate the complexity inherent in a macroprudential regulatory framework, policymakers could, among other things, consolidate the labyrinthine regulatory agencies that are supposed to administer macroprudential policy, as discussed in Part V.[351]

In addition to increasing complexity, effective macroprudential regulation likely demands better data than is currently available. As Professor Hilary Allen writes, "Gaps in data availability and analysis . . . hampered governmental authorities as they tried to grapple with the events of 2008 . . . ."[352] Despite modest progress in data collection and analysis by the newly created Office of Financial Research (OFR), many data gaps still persist.[353] Because macroprudential regulation seeks to address cross-sectional and time-varying risks, it necessitates reliable information about current and projected financial conditions, interlinkages within the financial system, and correlations among market participants.[354] This data, however, may not be readily available, especially from outside the regulated

hir181009 [https://perma.cc/W2BS-MJE3]) (describing the stress tests as "resource- and time-intensive").

347. *See* Haldane, *supra* note 344, at 19.

348. *Id.* at 19.

349. *See, e.g.*, Hirtle, *supra* note 346 ("A stress testing regime that . . . includ[ed] the potential for liquidity pressures, bank runs, and firesale risk, would be considerably more complex to implement . . . .").

350. *See* Tarullo, *supra* note 6, at 6 ("The analytic complexities of time-varying macroprudential policy make the formulation of rules especially difficult.").

351. *See infra* Section V.A (proposing the creation of a single macroprudential regulator).

352. Hilary J. Allen, *Resurrecting the OFR*, 47 J. CORP. L. 1, 2 (2021).

353. *See id.* at 9–10 (discussing OFR's early successes); Jose Maria Serena & Bruno Tissot, *Data Needs and Statistics Compilation for Macroprudential Analysis*, *in* IRVING FISHER COMM. ON CENT. BANK STAT., BANK FOR INT'L SETTLEMENTS, IFC BULLETIN NO. 46, DATA NEEDS AND STATISTICS COMPILATION FOR MACROPRUDENTIAL ANALYSIS 1, 1 (2017), https://www.bis.org/ifc/publ/ifcb46.pdf [https://perma.cc/HHL3-LURU] (asserting that "[d]ata issues have . . . substantially hindered the operationalisation of [macroprudential policy] frameworks").

354. *See* GREG FELDBERG, BROOKINGS, FIXING FINANCIAL DATA TO ASSESS SYSTEMIC RISK 6–9 (2020), https://www.brookings.edu/wp-content/uploads/2020/12/ES-12.4.20-Feldberg.pdf [https://perma.cc/EKA5-WCAD] (discussing the importance of data in financial stability regulation); *see also* McCoy, *supra* note 85, at 1219–22 (discussing data challenges for countercyclical regulation).

banking sector.[355] Without accurate, timely, and usable data, efforts to operationalize macroprudential regulation are unlikely to succeed.

Although incomplete data poses a challenge, regulators committed to a macroprudential orientation could likely overcome this hurdle. Congress created the OFR in the Dodd-Frank Act specifically to collect and standardize data needed for financial oversight.[356] Congress even gave the OFR subpoena power to collect the data it needs.[357] Under the Obama Administration, the OFR tried to leverage existing data from other regulators but was less ambitious than its architects would have liked.[358] The Trump Administration then attempted to hamstring the OFR by reducing its funding and eliminating staff.[359] The Biden Administration has sought to restore the OFR's budget and reinvigorate its mission.[360] If appropriately funded and staffed, the OFR can be a powerful tool to fill in data gaps that would otherwise constrain macroprudential regulation.

2. Timing Countercyclical Policy

A second challenge for macroprudential regulation involves the accurate timing of countercyclical policy interventions. As discussed in Part I, one of macroprudential regulation's primary objectives is combatting boom-and-bust cycles by mitigating time-varying risks.[361] To achieve this result, policymakers must activate and deactivate countercyclical tools at the appropriate times.[362] For several reasons, however, correctly timing countercyclical policies may prove difficult, and the costs of incorrectly timing countercyclical interventions could be significant.

Timing countercyclical policy is challenging because it is not always clear when an intervention is necessary. To modulate economic booms, policymakers must accurately identify when excessive risks have built up within the financial system so they know when to strengthen countercyclical tools.[363] Similarly, to limit the severity of downturns, regulators need to correctly spot the early signs of a crisis as a signal to relax countercyclical policies.[364] These judgments, however, are inherently subjective and may be confounded by numerous conflicting

355. *See* Kathryn Judge, *Information Gaps and Shadow Banking*, 103 VA. L. REV. 411, 444 (2017) (identifying "structural reasons to expect significant information gaps in the shadow banking system").

356. *See* Allen, *supra* note 352, at 6.

357. 12 U.S.C. § 5343(f)(1).

358. *See* Allen, *supra* note 352, at 8–10.

359. *See id*. at 10–11.

360. *See* OFF. OF FIN. RSCH., ANNUAL REPORT TO CONGRESS 2022, at 10–11, 115 (2022), https://www.financialresearch.gov/annual-reports/files/OFR-Annual-Report-2022.pdf [https://perma.cc/W7FF-GNK8] (documenting resurgence in OFR funding).

361. *See supra* Section I.B.1.

362. *See* Kress & Turk, *supra* note 50, at 554 (discussing timing considerations in countercyclical financial regulation).

363. *See* McCoy, *supra* note 85, at 1225 (discussing the difficulty of pinpointing periods of excessive risk).

364. *See* Brett H. McDonnell, *Designing Countercyclical Capital Buffers*, 18 N.C. BANKING INST. 123, 128–29 (2013) ("[R]egulators may miss the early signs of a crisis, and thus not weaken [countercyclical] rule[s] as early as one would hope.").

data points.[365] In fact, the Federal Reserve has cited uncertainty about timing as the reason it has renounced countercyclical financial regulation, despite a statutory mandate to make bank capital requirements countercyclical.[366] As Federal Reserve Chair Jerome Powell explained in 2021, "We don't use time-varying tests and tools as some other countries do . . . because we don't really think we'd be successful in every case in picking the exact right time to intervene in markets."[367]

The difficulty of timing countercyclical policy is noteworthy because wrongly timed countercyclical interventions could prove costly. As Professor Brett McDonnell has described, if policymakers fail to activate countercyclical tools during a speculative boom, they may miss an opportunity to ward off a crisis.[368] By contrast, if policymakers erroneously implement countercyclical safeguards during a "perceived, but not actual, speculative boom," their premature intervention could "slow[] down lending and economic growth unnecessarily."[369] During an economic downturn, on the other hand, "waiting too long to relax . . . capital requirements may cause a credit crunch and depress economic activity."[370] In sum, timing uncertainty presents a challenge for countercyclical policy, and policymakers' inability or unwillingness to implement countercyclical tools in a timely fashion could inflict serious societal costs. We discuss specific strategies for overcoming these timing challenges in Section V.B.1.

3. Legal Challenges

Finally, efforts to implement macroprudential tools could face potential legal challenges. For example, critics of macroprudential regulation may raise administrative or even constitutional law objections.[371] Although these challenges would

365. *See* Tarullo, *supra* note 6, at 10 ("The absence of any firm basis for judging whether systemic risk has been appropriately corralled may complicate time-varying decisions . . . ."). Furthermore, even if policymakers could correctly pinpoint periods of excessive risk in the financial system, they may be reluctant to implement discretionary countercyclical tools in a timely fashion because they "may fear immediate backlash for slowed growth or decreased credit availability." Kress & Turk, *supra* note 50, at 554.

366. 12 U.S.C. § 1844(b) (directing the federal banking agencies to make bank capital "requirements countercyclical, so that the amount of capital required . . . increases in times of economic expansion and decreases in times of economic contraction").

367. Powell, *supra* note 125, at 5.

368. *See* McDonnell, *supra* note 364, at 127 (discussing "boom type I" errors).

369. *Id*. (describing "boom type II" errors).

370. Michał Kowalik, *Countercyclical Capital Regulation: Should Bank Regulators Use Rules or Discretion?*, FED. RSRV. BANK KAN. CITY ECON. REV., Apr. 2011, at 59, 66; *see also* McDonnell, *supra* note 364, at 128–29 (describing "crisis type I" errors).

371. *See* Emily Glazer & Ryan Tracy, *Bank Groups Weigh Legal Challenge to Fed Stress Test*, WALL ST. J. (Sept. 1, 2016, 1:31 PM), https://www.wsj.com/articles/bank-groups-weigh-legal-challenge-to-fed-stress-tests-1472751110 (discussing potential administrative law objections to macroprudential policies); Eric J. Spitler, *Supreme Court Climate Change Decision Raises 'Major Questions' for Financial Regulation*, AM. BANKER (July 15, 2022, 11:27 AM), https://www.americanbanker.com/opinion/supreme-court-climate-change-decision-raises-major-questions-for-financial-regulation (discussing potential constitutional law objections to macroprudential regulation).

be unlikely to succeed under established legal principles, regulators ought to be cognizant of them to avoid potential pitfalls.

Regulators should expect the financial sector and its allies to lodge administrative law objections against new macroprudential policies. Indeed, the banking sector has already explored a lawsuit challenging the Federal Reserve's microprudential-oriented stress tests on administrative law grounds.[372] Banks contend that the stress tests violate the Administrative Procedure Act because the Federal Reserve does not subject its assumptions and models to notice and comment.[373] To date, the banks have not filed a case, and stress test proponents have convincingly rebutted the banks' claims.[374] However, to the extent that introducing more macroprudential principles—such as general equilibrium models—into stress testing would require banks to maintain more capital, banks would likely revive their legal objections to the Federal Reserve's stress testing regime.[375]

Other administrative law challenges to macroprudential regulation could be grounded in cost–benefit analysis. The banking sector has previously cited inadequate cost–benefit analysis as a central argument against the implementation of countercyclical tools.[376] As many scholars have observed, financial regulations are uniquely susceptible to cost–benefit challenges because quantifying the benefits of a crisis averted is nearly impossible, while cost projections are highly sensitive to discount rate assumptions.[377] Transitioning to a more macroprudential framework—especially one that relies on countercyclical tools—would exacerbate these analytical difficulties.[378] Accordingly, even if regulators perform

372. *See* Glazer & Tracy, *supra* note 371. The banking sector renewed this objection in 2023. *See* Press Release, Sean Oblack, Bank Pol'y Inst., BPI and ABA Seek Transparency Around Fed Supervisory Models and Stress Scenarios (July 25, 2023), https://bpi.com/bpi-and-aba-seek-transparency-around-fed-supervisory-models-and-stress-scenarios/ [https://perma.cc/6DRS-ZMND].

373. *See* COMM. ON CAP. MKTS. REGUL., THE ADMINISTRATIVE PROCEDURE ACT AND FEDERAL RESERVE STRESS TESTS: ENHANCING TRANSPARENCY 11, 17, 21 (2016), https://capmktsreg.org/wp-content/uploads/2022/11/The-Administrative-Procedure-Act-and-Federal-Reserve-Stress-Tests-Enhancing-Transparency-1.pdf [https://perma.cc/G5XS-ES6X].

374. *See* Daniel K. Tarullo, *Bank Supervision and Administrative Law*, 2022 COLUM. BUS. L. REV. 279, 316, 318, 333–39 (arguing that federal banking statutes "entirely preclude the administrative law arguments against stress testing practices").

375. *See supra* note 149 and accompanying text (discussing macroprudential stress tests using general equilibrium models).

376. *See* Letter from Gregory A. Baer, President, The Clearing House Assoc. L.L.C., to Robert V. Frierson, Sec'y, Bd. of Governors of the Fed. Rsrv. Sys. 17 (Mar. 21, 2016), https://www.federalreserve.gov/secrs/2016/april/20160401/r-1529/r-1529_032116_130242_645806703457_1.pdf [https://perma.cc/G39A-SWDJ] (contending that the Federal Reserve's policy statement on the CCyB "fails to identify or allow for consideration of its costs").

377. *See, e.g.*, John C. Coates IV, *Cost-Benefit Analysis of Financial Regulation: Case Studies and Implications*, 124 YALE L.J. 882, 961, 963–64, 966 (2015); Jeffrey N. Gordon, *The Empty Call for Benefit-Cost Analysis in Financial Regulation*, 43 J. LEGAL STUD. S351, S373–75 (2014) (questioning the applicability of cost–benefit analysis to financial regulations).

378. *See* McCoy, *supra* note 85, at 1228 ("[C]ountercyclical intervention presents a special case of the general evidentiary quandary that proof of benefits is harder to come by than proof of costs.").

good-faith cost–benefit analyses, macroprudential policy interventions may still be vulnerable to ex post second-guessing by a reviewing court.[379]

In addition to administrative law objections, macroprudential regulation could face constitutional law challenges. In 2022, the Supreme Court struck down an Environmental Protection Agency (EPA) carbon emissions rule as unconstitutional because the agency was unable to "point to 'clear congressional authorization'" for a decision of vast "economic and political significance."[380] The *West Virginia v. EPA* ruling sparked immediate speculation as to whether the so-called major questions doctrine might constrain financial regulators.[381] Banking industry representatives soon floated the idea of challenging financial regulations on major questions grounds.[382] As some scholars have contended, it would be unwise and legally unsupportable for courts to interfere with financial regulation on the basis of the major questions doctrine.[383] However, many macroprudential financial regulations bear at least superficial similarity to the EPA's carbon emissions rule in that they have profound economic significance and could impose "billions of dollars in compliance costs."[384] Thus, until lower courts better define the contours of the major questions doctrine, macroprudential financial regulation could encounter constitutional challenges.

### C. THE CASE FOR BETTER MACROPRUDENTIAL REGULATION

Despite these potential obstacles, it is essential that policymakers continue moving the financial regulatory framework in a more macroprudential direction rather than accepting the current framework as the finished product. The modern financial sector demands a macroprudential response to cross-sectional and time-varying risks that are not adequately addressed through the prevailing, primarily microprudential approach. Although efforts to enhance macroprudential regulation will undoubtedly encounter challenges, a more macroprudential orientation is necessary to combat vulnerabilities that the current regulatory framework neglects.

Some academics and policymakers favor stronger microprudential regulation to address lingering risks in the financial system. In their view, improving the

379. *See id.* (arguing that if courts "impose a strict, quantitative cost-benefit test" on countercyclical interventions, "regulators may not have enough solid proof of harm to satisfy the courts").

380. West Virginia v. EPA, 597 U.S. 697, 721–23 (2022) (quoting Util. Air Regul. Grp. v. EPA, 573 U.S. 302, 324 (2014)); *see also* Daniel T. Deacon & Leah M. Litman, *The New Major Questions Doctrine*, 109 VA. L. REV. 1009, 1031–34 (2023) (discussing *West Virginia v. EPA*).

381. *See, e.g.*, Spitler, *supra* note 371 ("The court's decision . . . has broad implications for other regulatory agencies, including the financial regulators.").

382. *See* Jeremy Newell, Senior Fellow, Bank Pol'y Inst., 2022 Annual Conference: The Evolving Regulatory Landscape for Commercial Banks 15–17 (Sept. 6, 2022) (transcript available at https://bpi.com/wp-content/uploads/2022/09/2022-ANNUAL-CONFERENCE-THE-EVOLVING-REGULATORY-LANDSCAPE-FOR-COMMERCIAL-BANKS-.pdf [https://perma.cc/QK66-58CX]) (suggesting that the financial sector could challenge regulations under the major questions doctrine).

383. *See* Graham S. Steele, *Major Questions' Quiet Crisis*, 31 GEO. MASON L. REV. 265, 270 (2024) ("[T]he [major questions] doctrine is unworkable as a matter of administrative law and imprudent as a matter of banking law.").

384. *West Virginia v. EPA*, 597 U.S. at 714.

resilience of individual financial institutions is the most reliable strategy for mitigating systemic threats.[385] Professors Anat Admati and Martin Hellwig, for instance, have proposed increasing through-the-cycle bank capital requirements to as high as 30% of total assets.[386] Advocates of stronger microprudential rules warn that macroprudential tools could unnecessarily muddle the regulatory framework, introducing additional complexity in a financial system that is already excessively convoluted.[387] As former Bank of England Chief Economist Andrew Haldane cautioned, "As you do not fight fire with fire, you do not fight complexity with complexity. Because complexity generates uncertainty . . . it requires a regulatory response grounded in simplicity, not complexity."[388]

Although stronger microprudential regulation may be warranted,[389] microprudential tools alone are unlikely to address—and may, in fact, exacerbate—cross-sectional and time-varying risks. Because of their narrow focus on individual institutions, even optimally calibrated microprudential rules are ill-suited to address the types of interconnections and correlations that generated massive, system-wide losses when Archegos collapsed.[390] Moreover, strengthening microprudential rules—without concomitant enhancements to macroprudential policy—could intensify the procyclical behavior the financial system experienced in 2008 and 2020.[391]

To combat financial stability risks, therefore, policymakers should shift the regulatory framework in a macroprudential direction. Indeed, an emphasis on system-wide—rather than institution-specific—resilience is necessary to mitigate the cross-sectional and time-varying risks that continue to plague the financial sector.[392] Although the post-2008 reforms are reputed to be macroprudential, this Article has shown that the current regulatory framework fails to fulfill macroprudential objectives.[393] Accordingly, future reforms should focus on achieving the macroprudential goals that the post-2008 reforms promised. Of course, there will

385. *See* Anat R. Admati, *Rethinking Financial Regulation: How Confusion Has Prevented Progress*, *in* PROGRESS AND CONFUSION: THE STATE OF MACROECONOMIC POLICY 61, 65 (Olivier Blanchard et al. eds., 2016) ("All the contagion mechanisms that create systemic risk . . . would be alleviated if institutions were more resilient to shocks and able to absorb more losses without becoming distressed.").

386. ANAT ADMATI & MARTIN HELLWIG, THE BANKERS' NEW CLOTHES: WHAT'S WRONG WITH BANKING AND WHAT TO DO ABOUT IT 179 (2013) ("Requiring that banks' equity be at least on the order of 20–30 percent of their total assets would make the financial system substantially safer and healthier.").

387. *See, e.g.*, Haldane, *supra* note 344, at 19.

388. *Id.*

389. *See* Simon Firestone, Amy Lorenc & Ben Ranish, *An Empirical Economic Assessment of the Costs and Benefits of Bank Capital in the US* 47–48 (Fed. Rsrv. Bd. Fin. & Econ. Discussion Series, Working Paper No. 2017-034, 2017), https://www.federalreserve.gov/econres/feds/files/2017034pap.pdf [https://perma.cc/K52Y-BZ9L] (concluding that the socially optimal level of bank capital is between 13% and 25%, higher than the then-current average capital ratio of 12.5% for U.S. banks).

390. *See supra* Section IV.A.1 (discussing the Archegos collapse).

391. *See supra* note 205 and accompanying text (discussing procyclical behavior in 2008); *supra* Section IV.A.2 (discussing procyclical behavior in 2020).

392. *See supra* Section IV.A (noting cross-sectional and time-varying risks that remain unaddressed).

393. *See supra* Part III.

be challenges in transitioning to a more macroprudential framework.[394] These obstacles are worth confronting, however, to ensure that the financial regulatory framework is capable of addressing risks inherent in today's financial system.

This is not to say that financial regulation ought to be exclusively macroprudential. To the contrary, effective microprudential regulation must remain a core foundation of the regulatory framework. As IMF economists have emphasized, microprudential and macroprudential regulation "complement and reinforce each other in pursuit of their respective goals."[395] Retaining strong microprudential rules is therefore necessary to protect depositors and other creditors and to reduce the likelihood of costly bailouts.[396] At the same time, however, policymakers need to enhance macroprudential oversight to better protect the financial system as a whole. The optimal financial regulatory framework is not exclusively macroprudential, but it is more macroprudential than the system in place today.

## V. MAKING MACROPRUDENTIAL REGULATION A REALITY

This Article has demonstrated that the post-2008 regulatory framework remains primarily microprudential despite financial stability risks that necessitate a more macroprudential approach. Accordingly, this Part provides a roadmap for policymakers to reorient financial regulation toward macroprudential oversight. As Section V.A explains, a significant legislative overhaul of the current regulatory system would be necessary to optimize macroprudential regulation in the United States. Such legislative reforms are unlikely in the near term.[397] Even in the absence of sweeping structural changes, however, regulators have numerous tools with which to move the regulatory framework in a more macroprudential direction. Thus, Section V.B outlines how the regulatory agencies can enhance macroprudential oversight using their existing statutory authorities.

As this Part shows, reorienting the regulatory framework toward macroprudential oversight does not necessarily mean *more* regulation. To the contrary, a macroprudential perspective sometimes entails *less* regulation. For example, consolidating systemic risk oversight in a single financial stability regulator, as Section V.A proposes, could enable policymakers to eliminate overlapping and duplicative rules. Likewise, some of the discrete macroprudential reforms outlined in Section V.B, such as modifications to liquidity rules, could alleviate regulatory burdens during times of stress. As such, the macroprudential approach

394. *See supra* Section IV.B (discussing potential barriers to macroprudential regulation).

395. JACEK OSIŃSKI, KATHARINE SEAL & LEX HOOGDUIN, INT'L MONETARY FUND, STAFF DISCUSSION NOTE NO. 13/05, MACROPRUDENTIAL AND MICROPRUDENTIAL POLICIES: TOWARD COHABITATION 4 (2013), https://www.imf.org/external/pubs/ft/sdn/2013/sdn1305.pdf [https://perma.cc/RWG8-6YGL].

396. *See supra* notes 37–39 and accompanying text (discussing the goals of microprudential regulation).

397. *See, e.g.*, Kate Berry & John Reosti, *Libor, Pot Top Bankers' Fall Wish List in Congress*, AM. BANKER (Aug. 24, 2021, 9:00 PM), https://www.americanbanker.com/news/libor-pot-top-bankers-fall-wish-list-in-congress (noting that "banking policy is not high on lawmakers' agenda" and "[b]anking legislation has been largely out of the spotlight").

described here does not necessarily suggest more onerous regulation—it simply entails a different type of oversight.

### A. OPTIMAL MACROPRUDENTIAL REGULATION REQUIRES REGULATORY CONSOLIDATION

To optimize macroprudential regulation in the United States, Congress would need to restructure the existing regulatory architecture. The current regulatory system—in which responsibility is divided among many different banking, securities, commodities, and insurance agencies—is notoriously balkanized.[398] This sectoral fragmentation creates problematic gaps and overlaps that undermine systemic risk oversight.[399] Indeed, jurisdictional balkanization creates barriers to interagency coordination, incentives for regulatory turf wars, and opportunities for regulatory arbitrage.[400] Moreover, because each regulator oversees a narrow segment of the financial sector, the agencies typically focus on microprudential objectives within their respective jurisdictions.[401] As a result of balkanization, the United States lacks a dedicated financial stability regulator to operationalize a market-wide macroprudential approach.[402]

Regulatory balkanization inhibits oversight of both time-varying and cross-sectional risks. For example, consider how jurisdictional fragmentation undermines countercyclical regulation. As discussed in Part III, the countercyclical capital buffer (CCyB) is the Federal Reserve's primary tool for addressing time-varying risks in the banking sector.[403] If the Federal Reserve activates the CCyB, however, financial activity may migrate from banks to less-regulated firms.[404] This regulatory arbitrage behavior could therefore undermine the efficacy of countercyclical policy.[405] Balkanization likewise impedes oversight of cross-

398. *See, e.g.*, Andrew Metrick & Daniel Tarullo, *Congruent Financial Regulation*, BROOKINGS PAPERS ON ECON. ACTIVITY, Spring 2021, at 143, 165 (noting the United States' "famously balkanized organization of financial regulation"). On the federal level, the U.S. regulatory system includes the Federal Reserve, Federal Deposit Insurance Corporation, Office of the Comptroller of the Currency, and National Credit Union Administration for depository institutions; the Securities and Exchange Commission for securities; the Commodity Futures Trading Commission for commodities; and the Federal Insurance Office for insurance—in addition to the Consumer Financial Protection Bureau and Financial Stability Oversight Council, which reach across different sectors. *See* BARR ET AL., *supra* note 142, at 85–90 (discussing the U.S. regulatory architecture). In addition, states maintain their own regulatory regimes, which further fragments financial oversight. *See id.* at 86.

399. *See* Kress et al., *supra* note 24, at 1507–08 (explaining how regulatory gaps and overlaps impede effective financial stability regulation in the United States).

400. *See id.* at 1521–22 (noting that "interagency coordination problems, jurisdictional turf wars, races-to-the-bottom, and other pitfalls [are] inherent in [the United States'] current fragmented system").

401. *See id.* at 1522 ("[M]ost U.S. sectoral regulators currently focus on microprudential goals . . . .").

402. As discussed above, although the Financial Stability Oversight Council is in theory responsible for systemic risk oversight, its legal authorities to implement macroprudential regulation are extremely limited. *See supra* Section III.A.3.

403. *See supra* Section III.B.1.

404. *See* Erik F. Gerding, *The Dialectics of Bank Capital: Regulation and Regulatory Capital Arbitrage*, 55 WASHBURN L.J. 357, 358 (2016) (discussing regulatory capital arbitrage in banking).

405. *See* BANK POL'Y INST., COUNTERCYCLICAL CAPITAL BUFFER ISSUE SUMMARY 1 (2019), https://bpi.com/wp-content/uploads/2019/05/CCyB-One-Pager.pdf.pdf [https://perma.cc/56WQ-YNUQ] ("Raising the [CCyB] would very likely mask systemic risk by shifting some activity . . . to non-banks.").

sectional risks. Since sectoral regulators are limited to addressing risks within their jurisdictions, the current, fragmented structure is ill-suited to mitigate systemic threats that extend beyond longstanding regulatory boundaries.[406]

To address these shortcomings, Congress could restructure the United States' financial regulatory system by creating a single financial stability regulator. Indeed, optimal financial stability oversight requires a dedicated systemic risk regulator with "consolidated authority, a macroprudential orientation, and market-wide reach."[407] This approach—often dubbed "twin peaks"—allows the financial stability regulator to address systemic risks consistently across the financial system, while a second regulator concentrates on consumer protection and market conduct.[408] Australia has long used the twin peaks model, and the United Kingdom adopted a twin peaks structure soon after the 2008 crisis.[409] Congress could implement a similar approach in the United States by either consolidating the existing prudential regulators into a single financial stability agency or empowering the Financial Stability Oversight Council (FSOC) to regulate systemic risk directly, rather than merely issue nonbinding recommendations.[410]

Despite a compelling case for restructuring the U.S. financial regulatory system, it is unlikely that Congress will act anytime soon. Over the past several decades, numerous policymakers and scholars have proposed simplifying the United States' balkanized regulatory structure.[411] Yet Congress has never implemented these recommendations, even in the wake of the 2008 crisis.[412] Congress's reluctance to

406. *See* Kress et al., *supra* note 24, at 1513 ("[B]ecause each financial regulator focuses narrowly on its jurisdiction, no agency has a complete view of the risks within the larger financial system.").

407. *Id.* at 1521.

408. *See* Allen, *supra* note 188, at 1140 (discussing the twin peaks model). A variation on this structure adds a microprudential regulator as a third "peak" to address solvency issues distinct from systemic risks. *See* BARR ET AL., *supra* note 142, at 83.

409. *See* Allen, *supra* note 188, at 1140–41.

410. *See supra* notes 195–203 and accompanying text (discussing the FSOC's limited authorities under the Dodd-Frank Act).

411. *See, e.g.*, THE DEP'T OF THE TREASURY, BLUEPRINT FOR A MODERNIZED FINANCIAL REGULATORY STRUCTURE 138–39, 143–80, 183 (2008), https://home.treasury.gov/system/files/136/archive-documents/Blueprint.pdf [https://perma.cc/AEE5-VPQF] (recommending that the United States adopt a multi-peaked regulatory structure); GRP. OF THIRTY, FINANCIAL REFORM: A FRAMEWORK FOR FINANCIAL STABILITY 34–35 (2009), https://www.group30.org/images/uploads/publications/G30_FinancialReformFrameworkFinStability.pdf [https://perma.cc/Y496-33K7] (recommending a single- or twin-peak regulatory structure); Howell E. Jackson, *A Pragmatic Approach to the Phased Consolidation of Financial Regulation in the United States* 38 (Harv. L. Sch. Pub. L. & Legal Theory Working Paper Series, Paper No. 09-19, 2008), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1300431 [https://perma.cc/8D23-U7US] (proposing a twin peaks regulatory structure for the United States).

412. Despite numerous proposals to consolidate regulators, Congress eliminated only one agency, the Office of Thrift Supervision (OTS), in the Dodd-Frank Act. *See* Dodd-Frank Wall Street Reform and Consumer Protection Act, Pub. L. No. 111-203, § 313, 124 Stat. 1376, 1523 (2010) (codified at 12 U.S.C. § 5413); *see also* Dain C. Donelson & David Zaring, *Requiem for a Regulator: The Office of Thrift Supervision's Performance During the Financial Crisis*, 89 N.C. L. REV. 1777, 1779 (2011) (discussing Congress's decision to eliminate the OTS).

restructure the regulatory system may be attributable, in part, to pressure from entrenched interests—namely, the regulatory agencies and regulated entities—that benefit from the status quo.[413] Moreover, political gridlock may prevent Congress from passing any financial regulatory legislation in the near-term, let alone a sweeping legislative overhaul of the regulatory architecture.[414] As a result, the possibility of reducing fragmentation in the U.S. regulatory system is likely to remain remote for the foreseeable future. Thus, if the United States is to strengthen systemic risk oversight, the financial regulatory agencies will need to make better use of the macroprudential tools already available to them under existing law.

### B. REGULATORS CAN STRENGTHEN MACROPRUDENTIAL OVERSIGHT USING EXISTING AUTHORITIES

Even if Congress does not rationalize the United States' regulatory structure, the current regulatory agencies can still enhance macroprudential oversight using their existing legal authorities. Indeed, the agencies have numerous tools at their disposal that, if implemented effectively, would shift the regulatory framework in a macroprudential direction. This Section recommends specific reforms that regulators could implement to address both countercyclical and time-varying risks. The ideas presented here are not comprehensive, and regulatory restructuring along the lines discussed in Section V.A would be necessary to maximize their effectiveness. Taken together, however, these proposals represent a promising starting point toward adopting the macroprudential orientation that modern financial market oversight demands.

#### 1. Improving Time-Varying Tools

Recall from Part I that macroprudential regulation seeks to combat financial boom-and-bust cycles by dampening risk-taking during expansionary periods and encouraging financial activity during downturns.[415] To date, however, countercyclical tools implemented in the wake of the 2008 crisis have proven ineffective, and other postcrisis reforms—such as the Basel III liquidity rules—have exacerbated the financial system's inherent procyclicality.[416] Therefore, to better protect against time-varying risks, financial regulators should use their existing authorities to improve countercyclical oversight, particularly through capital and liquidity regulation.

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413. *See, e.g.*, Jerry W. Markham, *Merging the SEC and CFTC—A Clash of Cultures*, 78 U. CIN. L. REV. 537, 548 (2009) (noting that prior efforts to merge the SEC and CFTC "revealed strongly entrenched constituencies willing to battle to keep themselves separate").

414. *See* Metrick & Tarullo, *supra* note 398, at 176 ("Whatever the merits of consolidating and enhancing agency authority to counteract systemic risk, near-term prospects for such legislation are at best modest.").

415. *See supra* Section I.B.1.

416. *See supra* Section III.B (discussing the limitations of the CCyB and Dodd-Frank's mortgage reforms); *see also supra* Section III.A.2 (explaining how the postcrisis liquidity reforms exacerbate procyclicality).

*a. Capital*

To mitigate time-varying risks, policymakers must ensure that bank capital rules incorporate countercyclical principles. At present, however, the primary countercyclical component of the United States' bank capital framework, the CCyB, suffers from two crucial shortcomings. First, the CCyB is prone to underuse because regulators may decline to activate the buffer in light of potential backlash for slowed economic growth.[417] Second, even if regulators decide to use the CCyB, its countercyclical impact may be limited because it applies only to the largest banks and BHCs.[418] Fortunately, regulators can correct these deficiencies—and thereby address time-varying risks more effectively—with their existing statutory authorities.

To combat regulators' predisposition to underutilize the CCyB, the banking agencies should implement a rule-based approach to the buffer. Under a rule-based CCyB, regulators would set the buffer to adjust automatically based on a mathematical formula designed to identify periods of elevated risks in the financial sector.[419] Such a formula could be based on credit-to-GDP ratios, real estate prices, credit default swap spreads, price-to-earnings ratios, or other economic indicators that signal the potential for financial stress.[420] The CCyB would then automatically reset when the formula output—or any of the individual variables—exceeds specified thresholds.[421] As Professors Jeremy Kress and Matthew Turk have written, automating the CCyB in this way would "pre-commit future regulators to increase the capital buffer when financial conditions warrant" and, therefore, "ensure that banks' capital buffers are based on economic fundamentals and

417. *See supra* notes 223–27 and accompanying text (explaining why regulators may decline to use the CCyB).

418. *See* 12 C.F.R. §§ 3.11(b), 217.11(b), 324.11(b), 252.5(d)(1)(i)(A)(1) (2022) (applying the CCyB to banks and BHCs with more than $250 billion in assets).

419. *See* Kowalik, *supra* note 370, at 70. Several academics and policy experts have proposed a rule-based CCyB. *See, e.g.*, *id.* (arguing that a rule-based CCyB would "eliminate the problem of adverse implementation incentives by explicitly stating how capital requirements should vary over the business cycle"); McDonnell, *supra* note 364, at 136 (concluding that a rule-based CCyB would significantly decrease the probability of "failing to increase the countercyclical buffer when conditions warrant an increase"); Tarullo, *supra* note 6, at 19–20 (asserting that a rule-based CCyB would "buttress[] resiliency while financial stress is rising"); FILIPPO OCCHINO, ECON. COMMENT. NO. 2018-03, ARE THE NEW BASEL III CAPITAL BUFFERS COUNTERCYCLICAL? EXPLORING THE OPTION OF A RULE-BASED COUNTERCYCLICAL BUFFER 1 (2018), https://www.clevelandfed.org/publications/economic-commentary/2018/ec-201803-countercyclical-capital-buffers [https://perma.cc/37ZR-N6XC] (proposing a rule-based countercyclical buffer); Kress & Turk, *supra* note 50, at 559 (recommending that regulators "should adopt a rule-based approach to the CCyB").

420. Some researchers have already created formulas that reliably identify periods of elevated financial stability risks during which the CCyB should be activated. *See, e.g.*, David Aikman, Michael T. Kiley, Seung Jung Lee, Michael G. Palumbo & Missaka N. Warusawitharana, *Mapping Heat in the U.S. Financial System* 2–3 (Fed. Rsrv. Bd. Fin. & Econ. Discussion Series, Working Paper No. 2015-059, 2015), https://www.federalreserve.gov/econresdata/feds/2015/files/2015059pap.pdf [https://perma.cc/4GHH-546N] (introducing a formula of forty-four indicators that consistently predicts heightened vulnerabilities in the U.S. financial system).

421. *See* Kress & Turk, *supra* note 50, at 560.

not left to regulators' discretion."[422] Thus, a rule-based approach would negate the downward bias inherent in a purely discretionary CCyB framework.[423]

Second, the regulatory agencies should expand the CCyB to encompass more of the financial system. As currently implemented, the CCyB applies to sixteen U.S. banks and BHCs with more than $250 billion in assets.[424] The approximately five thousand other U.S. banks are not subject to the CCyB or any other countercyclical capital requirement.[425] As a result, if regulators activate the CCyB—either discretionarily or under a rule-based formula—risks would likely migrate from the largest firms to smaller banks, potentially undermining the efficacy of the countercyclical intervention.[426] To prevent this type of regulatory arbitrage, regulators could expand the CCyB to all U.S. banks and BHCs.[427] Applying the CCyB to banks and BHCs of all sizes would help mitigate time-varying risks, as small- and medium-sized firms have historically contributed to boom-and-bust cycles.[428] Moreover, broadening the application of the CCyB would be consistent with the Dodd-Frank Act, which directed the banking agencies "to make . . . capital standards . . . countercyclical" for all banks and BHCs, not just the largest firms.[429]

*b. Liquidity*

In addition to improving countercyclical capital regulation, policymakers should rethink liquidity rules to better mitigate time-varying risks. The U.S.

422. *Id.* at 559–60. As Kress and Turk point out, automating the CCyB would have several additional benefits. For example, a rule-based CCyB would "enhance predictability" and allow banks to "build up extra capital before the CCyB officially resets and thereby reduce the costs of adjusting their capital ratios when required." *Id.* at 560–61. Further, "[b]ecause the buffer would be tied to a pre-specified formula, activating the CCyB would not signal regulators' concerns about market stability that might make it more difficult for banks to raise capital." *Id.* at 561.

423. Of course, "future regulators would retain discretion to override the automatic triggers" in a rule-based CCyB, but "a rules-based formula would anchor regulators' expectations as to what level the CCyB should be." *Id.* at 561 n.285.

424. *See supra* note 418 and accompanying text; *see also Large Holding Companies*, FED. FIN. INSTS. EXAMINATION COUNCIL: NAT'L INFO. CTR., https://www.ffiec.gov/npw/Institution/TopHoldings [https://perma.cc/3CUB-6S4Q] (last visited Sept. 30, 2023) (listing sixteen U.S. BHCs with more than $250 billion in assets).

425. *See* Fed. Deposit Ins. Corp., *Quarterly Banking Profile: Second Quarter 2022*, 16 FDIC Q., no. 3, 2022, at 1, 7, 11 (listing 4,758 commercial banks and savings institutions in the United States with assets less than $250 billion).

426. *See supra* notes 404–05 and accompanying text (discussing regulatory arbitrage).

427. Professors Jeremy Kress and Matthew Turk have previously proposed expanding the CCyB to encompass more banks. Kress & Turk, *supra* note 50, at 562.

428. *See* Kress & Turk, *supra* note 24, at 655–63 (discussing recurrent small-bank crises throughout U.S. history). More recently, SVB's collapse reinforced the potential risks associated with banks that are not currently subject to the CCyB. *See supra* Section IV.A.3.

429. Dodd-Frank Wall Street Reform and Consumer Protection Act, Pub. L. No. 111-203, § 616(a)(2), (c), 124 Stat. 1376, 1615–16 (2010) (codified as amended at 12 U.S.C. §§ 1844(b), 3907(a)(1)). The Act instructed the banking agencies to "seek to make the capital standards . . . for insured depository institutions countercyclical so that the amount of capital required to be maintained by an insured depository institution increases in times of economic expansion and decreases in times of economic contraction." *Id.* § 616(c) (codified as amended at 12 U.S.C. § 3907(a)(1)). The statute contains a parallel requirement for BHC capital requirements. *Id.* § 616(a), 124 Stat. at 1615 (codified as amended at 12 U.S.C. § 1844(b)).

banking agencies originally adopted the Basel III liquidity rules in the wake of the 2008 crisis with the goal of reducing systemic risks.[430] In actuality, however, the LCR exacerbated market stresses during the COVID-19 pandemic as banks hoarded liquidity to comply with the LCR instead of using liquid assets to support the financial system.[431] In light of this experience, the banking agencies should reevaluate liquidity regulation to ensure that it does not prioritize microprudential safety and soundness at the expense of macroprudential stability.

As currently implemented, the LCR contains a purported countercyclical component. Under the LCR rule, a bank is required to publicly report, on a quarterly basis, the ratio of its high-quality liquid assets (HQLAs) to the net cash outflows the bank would likely incur over a one-month period of significant stress.[432] In general, a bank's ratio of HQLAs to its projected net cash outflows must be at least 100%.[433] However, a bank is permitted to use its stockpile of HQLAs, and reduce its LCR below 100%, with minimal regulatory penalty.[434] As the banking agencies explained, "[B]y requiring that ample liquid assets be held during favorable conditions such that a [bank] can use them in times of stress, the LCR effectively works as a countercyclical requirement."[435]

The LCR's countercyclical component did not function as intended during the COVID-19 pandemic, however, because banks responded to market expectations about their liquidity. Although the LCR rule in theory permits banks to use their liquid assets and thereby drop below the 100% threshold, banks instead hoarded HQLAs to appear strong in their public LCR disclosures.[436] In response, the federal banking agencies took the unusual step of publicly exhorting banks to use their liquidity buffers in early 2020.[437] Despite regulators' encouragement, banks

430. *See supra* notes 171–74 and accompanying text.

431. *See supra* notes 181–84 and accompanying text (discussing the LCR's role in exacerbating liquidity stress during early 2020).

432. *See* 12 C.F.R. §§ 249.90–.91 (requiring a covered BHC to publicly disclose its LCR each calendar quarter); *id.* § 249.30 (discussing net cash outflows).

433. *See id.* § 249.10(a).

434. *See id.* § 249.40(a), (b)(2) (providing that a BHC must notify the Federal Reserve on any business day when its LCR drops below 100% and, if the BHC's LCR remains below 100% for three consecutive business days, it must submit a plan for achieving compliance with the LCR rule).

435. Liquidity Coverage Ratio: Liquidity Risk Measurement Standards, 79 Fed. Reg. 61440, 61518 (Oct. 10, 2014) (to be codified at 12 C.F.R. pts. 50, 249, 329).

436. *See* BILL NELSON & BRETT WAXMAN, BANK POL'Y INST., BANK TREASURERS' VIEWS ON LIQUIDITY REQUIREMENTS AND THE DISCOUNT WINDOW 4 (2021), https://bpi.com/wp-content/uploads/2021/10/Bank-Treasurers-Views-on-Liquidity-Requirements-and-the-Discount-Window.pdf [https://perma.cc/HD7Q-U6Q5] (reporting that several large bank treasurers expressed concern "about the potential public reaction to a bank breaching its minimum LCR requirement, even in the context of the COVID pandemic"); BANK OF ENG., DP1/22, THE PRUDENTIAL LIQUIDITY FRAMEWORK: SUPPORTING LIQUID ASSET USABILITY 15 (2022), https://www.bankofengland.co.uk/prudential-regulation/publication/2022/march/prudential-liquidity-framework-supporting-liquid-asset-usability [https://perma.cc/EE5H-4B79] ("Anecdotal evidence from UK banks during the Covid-19 stress suggests there was significant concern around adverse market reactions to disclosing lower than expected LCRs – or sharp falls in LCR – at the end of the first quarter of 2020.").

437. *See* Press Release, Bd. of Governors of the Fed. Rsrv. Sys., Fed. Deposit Ins. Corp. & Off. of the Comptroller of the Currency, Statement on the Use of Capital and Liquidity Buffers (Mar. 17, 2020),

still proved reluctant to report LCRs below the 100% threshold, ultimately necessitating the Federal Reserve to establish emergency liquidity programs to support the financial system.[438] Banks' behavior during the pandemic validated former Federal Reserve Governor Daniel Tarullo's prescient warning that "the existence of a clear ex ante regulatory requirement [may] be regarded by investors and analysts as a convenient shorthand for a firm's strength, and that banks . . . will do all they can to maintain themselves above that level."[439]

To make liquidity regulation more countercyclical, therefore, the banking agencies must alleviate the market constraint during times of stress. Regulators could use several strategies to convince banks that investors will not punish them for drawing down their HQLAs during a crisis. For example, instead of merely encouraging banks to use their HQLA buffers, regulators could affirmatively recalibrate banks' and investors' expectations by lowering the LCR target from 100% to perhaps 75% or 85% as some jurisdictions did during the pandemic.[440] Alternatively, regulators could temporarily relax inputs in the LCR formula, such as the haircuts applied to certain categories of HQLAs or the assumptions about net cash outflows, to make it easier for a bank to satisfy the 100% target while it uses its HQLAs.[441] If regulators believe banks might still feel pressure from investors to report strong LCRs during a crisis, they could temporarily suspend the public disclosure requirement—or even prohibit disclosure of banks' LCRs—to allow firms to shield themselves from market scrutiny while they draw down their HQLAs to support the economy.[442]

Of course, alleviating the market constraint associated with the LCR would not be without potential drawbacks. For example, changing the calculation or limiting public disclosure of banks' LCRs during a crisis could provoke harmful market speculation about banks' actual liquidity positions.[443] Moreover, allowing

https://www.federalreserve.gov/newsevents/pressreleases/files/bcreg20200317a1.pdf [https://perma.cc/7WBD-EHWK] ("The Board, FDIC, and Office of the Comptroller of the Currency . . . are encouraging banking organizations to use their . . . liquidity buffers as they respond to the challenges presented by the effects of the coronavirus.").

438. *See supra* notes 182–83 and accompanying text.

439. Tarullo, *supra* note 6, at 17.

440. *See* BASEL COMM. ON BANKING SUPERVISION, EARLY LESSONS FROM THE COVID-19 PANDEMIC ON THE BASEL REFORMS 50 (2021), https://www.bis.org/bcbs/publ/d521.pdf [https://perma.cc/TB2X-DXER] (noting that several jurisdictions, including India, Korea, Mexico, South Africa, Turkey, and the UAE, temporarily reduced their LCR standard during the pandemic).

441. *See, e.g.*, van den End & Kruidhof, *supra* note 177, at 91, 98, 105–06 (proposing a "flexible approach [to] the *LCR* . . . that recognises less liquid assets in the buffer . . . to mitigate its adverse side effects during times of stress"); BILL NELSON, BANK POL'Y INST., A MODEST CHANGE TO THE LCR THAT COULD SUBSTANTIALLY IMPROVE FINANCIAL STABILITY 5 (2019), https://bpi.com/wp-content/uploads/2019/03/A-Modest-Change-to-the-LCR-That-Could-SUbstantially-Improve-Financial-Stability.pdf [https://perma.cc/V7UF-47XZ] (proposing a "dynamic LCR" that would decrease net cash outflow assumptions during times of stress).

442. *See* Tarullo, *supra* note 6, at 17 (suggesting that regulators "might forbid disclosure" of LCRs during a crisis).

443. *See id.* (recognizing that prohibiting disclosure of banks' LCRs "might make things even worse, as outside actors ma[k]e their own—likely inaccurate and overly pessimistic—estimates of banks' LCRs based on inference[s] from publicly available information").

banks to deplete their cushion of liquid assets during a crisis could jeopardize their stability, increasing the risk of a systemic failure.[444] These potential drawbacks augur in favor of strong liquidity regulation in normal market conditions so that banks can use their HQLAs without sacrificing their own safety and soundness during a crisis.[445]

In sum, the banking agencies ought to reevaluate the post-2008 liquidity rules to better address time-varying risks. Unlike capital rules, however, policymakers need not toughen liquidity rules to achieve macroprudential objectives. To the contrary, a macroprudential perspective requires bank regulators to credibly relax liquidity constraints during crises to mitigate time-varying risks.

2. Improving Cross-Sectional Tools

In addition to time-varying risks, macroprudential regulation also seeks to mitigate cross-sectional risks—that is, direct and indirect connections within financial markets that can transmit instability.[446] Other than the single counterparty credit limits (SCCL) rule and central clearing of over-the-counter (OTC) derivatives, however, the post-2008 framework does little to address such vulnerabilities.[447] As a result, some cross-sectional risks—such as those exposed by Archegos's and SVB's implosions—still persist.[448] This Section proposes strategies for alleviating cross-sectional risks using regulators' existing statutory authorities. It suggests three specific reforms: implementing general equilibrium stress tests, enhancing oversight of correlated exposures, and expanding mandatory central clearing to other systemically important instruments.

*a. Stress Tests*

Although the Federal Reserve's current stress testing framework is primarily microprudential, regulators could repurpose the stress tests to better fulfill macroprudential objectives. As discussed in Section III.A.1, the prevailing stress testing framework is microprudential in two critical respects. First, when evaluating a BHC's performance in a hypothetical stress scenario, the Federal Reserve uses partial equilibrium models that ignore dynamic feedback loops and spillover effects.[449] Second, the stress test's primary regulatory consequence—

444. *See supra* notes 166–67 and accompanying text (noting that liquidity strains were a significant contributor to the 2008 crisis).

445. In addition to reforming the LCR to alleviate constraints during times of stress, policymakers should require that the assets a bank counts as HQLAs be classified as "mark-to-market" for accounting purposes. If classified as "held-to-maturity," such assets should be subject to a significant haircut. This approach would ensure that a bank can use its HQLAs without incurring write-downs, as occurred during the March 2023 banking turmoil. *See* Samuel Wilkes, *SVB Opens Floodgates on Liquidity Buffers Debate*, RISK.NET (Mar. 30, 2023), https://www.risk.net/regulation/7956095/svb-opens-floodgates-on-liquidity-buffers-debate.

446. *See supra* Section I.B (describing time-varying risks and cross-sectional risks).

447. *See supra* Section III.C (discussing the SCCL rule and central clearing of OTC derivatives).

448. *See supra* Sections IV.A.1, 3 (discussing the Archegos collapse and SVB failure).

449. *See supra* notes 149–53 and accompanying text.

the calibration of a BHC's capital buffer—is a quintessential microprudential device.[450] Fortunately, regulators can reform both aspects of the stress testing framework to better address cross-sectional risks.

As a first step toward enhancing the stress tests, the Federal Reserve should adopt dynamic models that better reflect how the financial system might behave during a crisis. Numerous data scientists have proposed refinements to the Federal Reserve's models that would more accurately simulate crisis scenarios.[451] For example, the Federal Reserve could simulate shocks to the cost and availability of short-term funding, spillover effects from fire sales, or potential network effects from a counterparty default.[452] In fact, the Federal Reserve began developing general equilibrium models along these lines in the mid-2010s, but it halted the initiative in the wake of the 2016 election.[453] In addition to reviving this work, the Federal Reserve could implement periodic "war game" simulations to better understand and anticipate how financial market actors and regulators would behave during times of stress.[454] Taken together, general equilibrium models and war game exercises would more accurately assess how the entire financial system would perform in a crisis, rather than simply analyzing each BHC in isolation under the existing framework.

In addition to introducing general equilibrium models, the Federal Reserve should rethink stress testing's regulatory consequences. Under the current framework, the stress test's primary upshot is the calibration of each BHC's stress capital buffer (SCB).[455] This firm-by-firm capital determination is strikingly microprudential.[456] A more macroprudential approach would use the stress tests to address the resilience of the financial system as a whole rather than each BHC individually.[457] For example, Professor Matthew Turk has proposed reconceptualizing stress tests as "tools for diagnosing weaknesses in the regulatory requirements promulgated by federal banking agencies, rather than in the banks themselves."[458] Turk suggests that the Federal Reserve should increase capital requirements for all systemically important BHCs when any firm fails the stress test, since the failure indicates that the prevailing regulatory

450. *See supra* notes 154–56 and accompanying text.

451. *See, e.g.*, Demekas, *supra* note 20, at 7–17 (summarizing various general equilibrium models).

452. *See* Bassett & Rappoport, *supra* note 153, at 461 (proposing to add short-term funding stress to the Federal Reserve models); *see also id.* at 476–79 (reviewing other potential enhancements to the Federal Reserve's models).

453. *See* Tarullo, *supra* note 18, at 75 n.12 (noting that the Federal Reserve explored "modeling of some second-order effects for inclusion in the annual stress tests" before the 2016 election).

454. *See* John Crawford, *Wargaming Financial Crises: The Problem of (In)experience and Regulator Expertise*, 34 REV. BANKING & FIN. L. 111, 168–74 (2014) (discussing the benefits of financial war games); Baradaran, *supra* note 141, at 1322–24, 1326 (proposing war games as a complement to stress testing).

455. *See supra* note 142 and accompanying text.

456. *See supra* notes 154–56 and accompanying text.

457. *See* Hanson et al., *supra* note 5, at 3.

458. Turk, *supra* note 139, at 1701.

framework is inadequate to prevent systemic insolvencies.[459] To enhance the macroprudential orientation of the stress tests, the Federal Reserve could move away from piecemeal regulatory consequences toward a more holistic regulatory response along the lines that Turk describes.

Of course, creating macroprudential stress tests will not be easy. Indeed, as Professor Richard Herring and Til Schuermann note, accurately simulating second-order effects in stress testing models "is quite challenging."[460] However, these obstacles are not insurmountable, as several other jurisdictions have already adopted general equilibrium models for their stress tests.[461] For example, the Bank of England incorporates modeling of funding and fire-sale spillovers in its stress tests.[462] The Federal Reserve ought to do the same to ensure that the United States' stress testing framework fulfills its macroprudential promise.

*b. Oversight of Correlated Exposures*

To mitigate cross-sectional risks, policymakers must grapple with the many ways in which a financial institution's behavior may affect other firms. The SCCL rule addressed one type of cross-sectional risk: namely, direct interconnections among large financial companies.[463] The post-2008 framework, however, largely neglects a second kind of cross-sectional risk: indirect correlations among firms with similar investments, liability funding sources, or collateral holdings.[464] As the Archegos implosion demonstrated, when many institutions hold similar assets, a sudden price shock may trigger widespread fire sales and inflict losses among similarly situated firms, even if those firms are not directly exposed to one another.[465] Moreover, as the SVB collapse demonstrated, correlation risk can go undetected on the liability side as well, leading to sudden and fatal outflows of funding in times of stress.[466] To alleviate cross-sectional risks, therefore, regulators must strengthen oversight of correlation risk within the financial sector.

One approach to mitigating correlation risk would involve stronger oversight of instruments that financial institutions hold as collateral or as hedges. This strategy might have been particularly successful at containing the fallout from Archegos's collapse. Recall that Credit Suisse, Goldman Sachs, and Morgan

459. *See id.* at 1753 ("Once stress testing is redesigned to serve a genuine macro-prudential function, particularized interventions at individual banks no longer make sense, because a premise of detecting systemic risk is that it exposes vulnerabilities which run across the banking sector as a whole.").

460. Richard J. Herring & Til Schuermann, *Objectives and Challenges of Stress Testing*, *in* HANDBOOK OF FINANCIAL STRESS TESTING, *supra* note 149, at 9, 27.

461. *See* Enriques et al., *supra* note 34, at 370 (noting that several jurisdictions have incorporated "network-sensitive" methods in their stress tests).

462. *See* BANK OF ENG., STRESS TESTING THE UK BANKING SYSTEM: 2017 RESULTS 40–41 (2017), https://www.bankofengland.co.uk/-/media/boe/files/stress-testing/2017/stress-testing-the-uk-banking-system-2017-results.pdf [https://perma.cc/9LBJ-B9GK] (describing the Bank of England's approach to modeling fire-sale risk).

463. *See supra* Section III.C.1.

464. *See supra* Section I.B.2.b (discussing correlation risk).

465. *See supra* Section IV.A.1.

466. *See supra* Section IV.A.3.

Stanley purchased ViacomCBS stock and other equities to hedge their total return swaps with Archegos.[467] From a microprudential perspective, each of Archegos's counterparties appeared to appropriately hedge their swap exposures.[468] Neither the banks nor their supervisors, however, appreciated that many other firms were holding identical instruments as hedges and were therefore susceptible to steep losses if any counterparty liquidated its position.[469] Regulators could better protect against these interdependencies by collecting data about banks' collateral holdings and hedging strategies and then applying stricter capital charges to exposures that may be susceptible to fire sales. If policymakers had implemented this approach, they might have identified that many large firms owned large stakes in ViacomCBS as hedges against their Archegos exposures and applied more stringent capital consequences to offset the associated fire-sale risk.[470] Going forward, regulators could adopt this macroprudential strategy to address correlation risks that the regulatory framework currently ignores.

A second strategy for mitigating indirect correlations would necessitate further refinements to the Federal Reserve's stress tests. As discussed above, the stress tests have increased correlations among the largest BHCs by encouraging firms to shift the asset side of their balance sheets toward instruments that are treated favorably by the Federal Reserve's models.[471] This convergence creates the prospect that numerous systemically important BHCs might suffer simultaneous stresses during an economic downturn.[472] From a systemic perspective, therefore, more diversity in the composition of banks' assets is desirable.[473] Diversity matters on the liability side, too, as demonstrated by the fallout from SVB's collapse. Recall that a disproportionate amount of SVB's deposits came from uninsured deposits in one niche industry: tech start-ups.[474] When SVB faltered, the ensuing market panic centered on banks with similar funding profiles.[475]

The Federal Reserve could adopt several strategies to ensure that the stress tests do not encourage excessive balance sheet correlations—on the asset side or the liability side. For example, the Federal Reserve could use multiple scenarios in each year's stress test and use the scenario that is most binding for each

467. *See supra* note 303 and accompanying text; Zuckerman et. al, *supra* note 292.

468. *See supra* note 309 and accompanying text.

469. *See supra* notes 310–12 and accompanying text.

470. *See supra* note 303 and accompanying text (discussing Archegos's counterparties' hedges); *supra* note 304 and accompanying text (noting ViacomCBS as one of the largest holdings in Archegos's portfolio).

471. *See supra* note 161 and accompanying text.

472. *See* Kevin Stiroh, Exec. Vice President, Fin. Inst. Supervision Grp. of the Fed. Rsrv. Bank of N.Y., Supervisory Implications of Rising Similarity in Banking 4 (Nov. 1, 2018) (transcript available at https://www.bis.org/review/r181109g.pdf [https://perma.cc/9C5Y-QDNR]) ("If all firms are effectively the same, they could become . . . susceptible to the same shocks in a way that leaves the aggregate provision of financial services more volatile.").

473. *Cf. id.* ("If firms . . . become more similar, each might become safer individually. The industry as a whole, however, might not be any safer or more resilient.").

474. *See supra* notes 332–33 and accompanying text.

475. *See supra* note 334 and accompanying text.

BHC.[476] In addition, the Federal Reserve could limit how much information it discloses about its stress testing models to prevent BHCs from reverse engineering the tests and optimizing their balance sheets for the selected parameters.[477] To identify potentially risky funding correlations across the banking sector, such as those that plagued SVB and other banks in early 2023, the Federal Reserve could incorporate liquidity shocks into the stress tests.[478] In sum, by making the stress tests less uniform and by incorporating funding shocks, the Federal Reserve could discourage systemically important BHCs from maintaining similar balance sheets and thereby minimize harmful correlations in the financial system.

*c. Central Clearing*

Finally, regulators could leverage advancements in central clearing to address persistent cross-sectional risks. As discussed above, the 2008 crisis demonstrated that financial institutions operate in a highly interconnected system in which one firm's distress can inflict significant losses on its counterparties.[479] Dodd-Frank's central clearing requirement for OTC derivatives mitigates these cross-sectional risks by reducing complexity, facilitating margin collection, and mutualizing losses among derivative market participants.[480] Admittedly, this reform concentrates risk in clearinghouses, necessitating strong risk management to prevent a potentially catastrophic clearinghouse failure.[481] From a systemic perspective, however, there is a general consensus that centrally cleared derivatives pose less systemic risks than those that are bilaterally traded.[482] Regulators should consider, therefore, whether mandatory central clearing ought to be expanded to other systemically important instruments.

U.S. Treasury securities would be a strong candidate for mandatory central clearing. Even before the COVID-19 pandemic roiled Treasury markets, observers sounded alarms about recurring disruptions in "the world's most important

476. *See, e.g.*, Victoria Guida, *Former Bank Regulatory Chief Tarullo Urges Fed to 'Aim Higher' on Stress Tests*, POLITICOPRO (Oct. 7, 2022, 2:06 PM), https://subscriber.politicopro.com/article/2022/10/former-bank-regulatory-chief-tarullo-urges-fed-to-aim-higher-on-stress-tests-00060976 (discussing Daniel Tarullo's proposal for the Federal Reserve to use multiple stress testing scenarios each year).

477. *See, e.g.*, GREGG GELZINIS, CTR. FOR AM. PROGRESS, THE FED'S PROPOSED STRESS TESTING CHANGES ARE A MIXED BAG 5 (2018), https://www.americanprogress.org/wpcontent/uploads/2018/03/StressTesting-brief1.pdf [https://perma.cc/TP6V-SV46] (cautioning that too much transparency in the Federal Reserve's models "might enable firms to reverse engineer the stress tests" and that ensuing balance sheet convergence "would increase the correlation risk across the banking sector").

478. *See* JILL CETINA, OFF. OF FIN. RSCH., BRIEF SER. NO. 15-06, INCORPORATING LIQUIDITY SHOCKS AND FEEDBACKS IN BANK STRESS TESTS 3 (2015), https://www.financialresearch.gov/briefs/files/OFRbr-2015-06-Incorporating-Liquidity-Shocks-and-Feedbacks-in-Bank-Stress-Tests.pdf [https://perma.cc/DGE3-JZFS].

479. *See supra* notes 97–101 and accompanying text (discussing AIG's collapse).

480. *See supra* notes 281–85 and accompanying text (discussing the benefits of central clearing).

481. *See* Schwarcz, *supra* note 275, at 1354; Roe, *supra* note 275, at 1692; Kress, *supra* note 275, at 72–73.

482. *See supra* notes 284–85 and accompanying text.

market."[483] Illiquidity and volatility in U.S. Treasuries spiked in the spring of 2020 and have persisted even as the pandemic subsided, amplifying concerns about structural weaknesses in the market.[484] Central clearing of Treasury cash transactions and Treasury-backed repurchase agreements (repos) could help alleviate these strains by facilitating multilateral netting, lessening gross exposures, easing market participants' balance sheet constraints, and "reduc[ing] the likelihood that small shocks would be amplified and result in larger stress."[485] Citing many of these potential benefits, the SEC proposed reforms in October 2022 that would require a significant proportion of Treasury trades to be centrally cleared.[486] By finalizing this proposal, regulators could adapt one of the most successful macroprudential components of the post-2008 regulatory reforms to the vitally important Treasury market and thereby mitigate cross-sectional risks.

## CONCLUSION

This Article has shown that the financial regulatory framework's reputation as macroprudential is unwarranted and leads to suboptimal regulatory guardrails. Post-2008 legal reforms strengthened financial oversight, but they did not fundamentally transform the underlying regulatory philosophy as is commonly believed. Instead, the prevailing regulatory approach in the United States and abroad is still primarily microprudential. As a result, the financial system remains

483. Tracy Alloway & Liz Capo McCormick, *The World's Most Important Market Has a Big and Repetitive Problem*, BLOOMBERG (June 14, 2022, 4:03 PM), https://www.bloomberg.com/news/articles/2022-06-14/the-world-s-most-important-market-has-a-big-and-repetitive-problem (discussing the importance of the U.S. Treasury market); *see also* U.S. DEP'T OF THE TREASURY, BD. OF GOVERNORS OF THE FED. RSRV. SYS., FED. RSRV. BANK OF N.Y., U.S. SEC & U.S. COMMODITY FUTURES TRADING COMM'N, RECENT DISRUPTIONS AND POTENTIAL REFORMS IN THE U.S. TREASURY MARKET: A STAFF PROGRESS REPORT 17–21 (2021), https://home.treasury.gov/system/files/136/IAWG-Treasury-Report.pdf [https://perma.cc/VQ7T-2TPK] (discussing a "flash rally" in Treasuries in October 2014 and Treasury-backed repurchase agreements (repo) market disruption in September 2019).

484. *See, e.g.*, *The World's Most Important Financial Market Is Not Fit for Purpose*, ECONOMIST (Oct. 6, 2022), https://www.economist.com/finance-and-economics/2022/10/06/the-worlds-most-important-financial-market-is-not-fit-for-purpose (discussing Treasury market stresses in 2020 and thereafter).

485. U.S. DEP'T OF THE TREASURY ET AL., *supra* note 483, at 30–31 (discussing benefits of expanded central clearing of Treasuries); *see also* Yadav, *supra* note 320, at 1244, 1246–47 (proposing to expand central clearing in the Treasury market); Darrell Duffie, *Still the World's Safe Haven? Redesigning the U.S. Treasury Market After the COVID-19 Crisis* 15–20 (Hutchins Ctr. on Fiscal & Monetary Pol'y at Brookings, Working Paper No. 62, 2020), https://www.brookings.edu/wp-content/uploads/2020/05/WP62_Duffie_v2.pdf [https://perma.cc/DBY2-V6TG] (discussing benefits of central clearing of Treasuries); Paolo Saguato, *The Liquidity Dilemma and the Repo Market: A Two-Step Policy Option to Address the Regulatory Void*, 22 STAN. J.L. BUS. & FIN. 85, 133–39 (2017) (extolling the benefits of central clearing in repo markets).

486. *See* 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, 87 Fed. Reg. 64610, 64613–14 (proposed Oct. 25, 2022) (to be codified at 17 C.F.R. pt. 240) (noting that proposed expansion of Treasury clearing will "lower[] overall systemic risk in the market"). Certain parts of the Treasury market are already centrally cleared, including Treasury futures and repo transactions between dealers. U.S. DEP'T OF THE TREASURY ET AL., *supra* note 483, at 29. The SEC's proposal would expand central clearing to all Treasury-backed repo and reverse repo agreements involving a clearing member, and many Treasury cash transactions. 87 Fed. Reg. at 64620.

susceptible to emerging stability risks and a recurrence of the 2008 crisis. This is not merely a theoretical concern. The banking turmoil caused by Archegos's collapse, the COVID-19 pandemic, and the unraveling of SVB demonstrate that the risks are real. To safeguard the financial system, therefore, policymakers must continue moving the regulatory framework in a macroprudential direction. This Article has outlined a variety of steps policymakers could take to establish more macroprudential tools in the regulatory toolkit. More important than any of these discrete policy recommendations, this Article has shown that dispelling the "macroprudential myth" is a necessary first step toward enacting the genuine macroprudential approach that the modern financial system demands.