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Mehrsa Baradaran

University of Georgia School of Law, mehrsa@uga.edu



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ARTICLES

Regulation by Hypothetical

*Mehrsa Baradaran**

A new paradigm is afoot in banking regulation—and it involves a turn toward the more speculative. Previous regulatory instruments have included geographic restrictions, activity restrictions, disclosure mandates, capital requirements, and risk management oversight to ensure the safety of the banking system. This Article describes and contextualizes these regulatory tools and shows how and why they were formed to deal with industry change. The financial crisis of 2008 exposed the shortcomings in each of these regimes. In important ways, the Wall Street Reform and Consumer Protection Act of 2010 (“Dodd-Frank”) departs from these past regimes and proposes something new: Call it “Regulation by Hypothetical.”

Regulation by hypothetical refers to rules duly promulgated under appropriate statutory and regulatory mechanisms that require banks and their regulators today to make predictions about sources of crisis and weakness tomorrow. Those predictions—which, by their very definition, are conjectural

* Assistant Professor, University of Georgia School of Law. I would like to thank workshop and conference participants at the University of Georgia, the University of Connecticut Financial Scholar’s Conference, the Association of American Law Schools Annual Conference, the Southeastern Law Schools Association Annual Conference, and Law & Society Annual Conference. I would also like to thank Saule Omarova, Dan Coenen, Bo Rutledge, Usha Rodriguez, Elizabeth Pollman, Anita Krug, Cliff Rossi, Julie Hill, Kent Barnett, and Jared Bybee for their helpful comments on earlier versions of this draft. Special thanks to Peter Conti-Brown for his invaluable guidance in the early stages of this article as well as his help with the title. I would also like to thank my research assistants: Heather Percival, Ricardo Lopez, and Maria Rivera-Diaz.

and speculative, even hypothetical—then become the basis of the use of the state’s regulatory power. This Article discusses two prominent instances of regulation by hypothetical: stress tests and living wills. It then discusses the strengths and weaknesses of such a regime and describes how the reliance on regulation by hypothetical can exacerbate the practice of government sponsorship of private financial risk taking. The Article then provides a solution that would strengthen this regime: using financial war games to increase the predictive value of the hypothetical scenarios.

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I. INTRODUCTION

The history of banking regulation in the United States resembles a cat-and-mouse game of industry change followed by regulatory response. Often, a crisis or industry innovation leads to a new regulatory regime. Regulatory initiatives have included geographic restrictions, activity restrictions, disclosure mandates, capital requirements, and risk management rules.¹ The recently enacted Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 (“Dodd-Frank”), which was a response to the recent financial crisis, introduces yet another strain of banking industry supervision: regulation by hypothetical. Regulation by hypothetical refers to rules that require banks today to make predictions about crises and weaknesses tomorrow. Those predictions—which, by definition, are speculative—then become the basis for regulatory intervention.

This Article discusses two prominent instances of regulation by hypothetical: stress tests and living wills. Both of these forms of regulation were codified in Dodd-Frank, and they are two of the pillars supporting Dodd-Frank’s attempt to manage risk in systemically important financial institutions (“SIFIs”).² This Article will examine both the origins and the evolution of these reforms. It will also discuss the strengths and weaknesses of regulation by hypothetical and describe how reliance on this regulatory tool can exacerbate governmental sponsorship of private financial risk taking. Ultimately,

1. Most of these initiatives followed the banking industry’s growth after the Great Depression. *See infra* Part II.

2. *See* 12 U.S.C. § 5365(a), (d) & (i) (2012).

this Article concludes that the regulation by hypothetical regime must be either abandoned or strengthened because its current form has significant flaws.

Regulation by hypothetical adopts and extends the risk management framework used by firms for decades. That framework uses mathematical models to capture risk exposure in an increasingly complex financial landscape. What distinguishes regulation by hypothetical from prior risk management practices is that banks now *must* adhere to a governmentally imposed system of regulation that is both derived from and centered on hypothetical risk modeling.³

The motivations of regulation by hypothetical are contagion containment, prophylaxis, and building partnerships between public regulators and private institutions to stay ahead of crises before they develop.⁴ Part of the reason the risk management regime failed is that individual firm models could not account for scenarios that might cripple the entire financial market and cause systemic risk, such as a nationwide decline in housing prices.⁵ In theory, regulation by hypothetical addresses this problem by streamlining risk modeling and bringing it in-house to banking regulators, specifically the Board of Governors of the Federal Reserve (“FRB”). This new top-down risk modeling structure assures that systemic risk will be detected more easily, addressed more consistently, and modeled more rigorously than by shortsighted and insular private firms.⁶ In sum, Dodd-Frank endorses this risk management regime, mandates adherence to it, and enlarges the government’s role in its implementation.

There are three significant problems with regulation by hypothetical as it is currently envisioned and practiced through stress testing and living wills. First, most scholars and regulatory bodies have concluded that risk management led by banks was a failure.⁷ If the risk management framework failed, as some say, because firms did not consider risks that were severe enough, then hypothetical regulation could provide an antidote by compelling banks to consider *more severe* scenarios of economic failure. However, if the risk management regime failed because it was based on a faulty premise

3. See *infra* Part III.

4. For more on the way that Dodd-Frank entrenches a public-private partnership, see DAVID A. SKEEL, *THE NEW FINANCIAL DEAL: UNDERSTANDING THE DODD-FRANK ACT AND ITS (UNINTENDED) CONSEQUENCES* 79 (2011).

5. Andrew G. Haldane, Exec. Dir. Fin. Stability, Bank of Eng., *Why Banks Failed the Stress Test*, Address at the Marcus-Evans Conference on Stress-Testing (Feb. 9–10, 2009), available at www.bis.org/review/r090219d.pdf, archived at <http://perma.cc/X3YR-5AKK>.

6. See *infra* Part III.A.

7. See *infra* Part III.A.

that it is possible to imagine and prepare for every adverse scenario that might affect a firm in the future, then any regulations relying on hypotheticals are doomed from the start. In other words, insofar as the risk management regime was predicated on the assumption that modeling for risk was an effective way of containing it, and the regime failed to account for unprecedented events (such as a nationwide plummeting of housing prices), the hypothetical regime is similarly limited. Ex ante hypotheticals are inherently unable to account for unprecedented events.⁸ Regulations based on hypotheticals are thus built on a precarious foundation.

Second, the FRB, the creator and administrator of mandated hypothetical testing, comes to the project with a conflict of interest.⁹ The FRB has always been a systemic risk regulator, and Dodd-Frank emphasizes and strengthens that function of the FRB.¹⁰ But the FRB is also tasked with ensuring calm and vibrant markets.¹¹ Therefore, if the FRB creates a stress test that is too difficult and firms are not able to withstand the pressure, markets may panic. On the other hand, if the FRB creates a “soft” stress test in order to reassure markets about bank safety, systemic risks may well go unaddressed.¹² This is not a theoretical problem. It was apparent during the first round of stress testing in 2009 that the FRB was more interested in calming markets.¹³ As a result, many knowledgeable observers accused the FRB of conducting a very light stress test and giving all of the firms a

8. See *infra* Part III.D.1.

9. This specific conflict only applies to stress testing. The Federal Deposit Insurance Corporation administers living wills.

10. Dodd-Frank strengthens the Federal Reserve’s role as systemic risk regulator not only through mandated stress testing, but also through the creation of the Federal Systemic Oversight Counsel. 12 U.S.C. §§ 5321–5333 (2012).

11. See THE BOARD OF GOVERNORS OF THE FEDERAL RESERVE SYSTEM, THE FEDERAL RESERVE SYSTEM: PURPOSES AND FUNCTIONS (9th ed. 2005), available at http://www.federalreserve.gov/pf/pdf/pf_complete.pdf, archived at <http://perma.cc/98F-E3UV> (stating that the Federal Reserve should seek “to promote effectively the goals of maximum employment, stable prices, and moderate long-term interest rates” because “when prices are stable . . . the prices of goods, services, materials and labor . . . serve as clearer signals and guides to the efficient allocation of resources and thus contribute to a higher standard of living.”); *What is the Purpose of the Federal Reserve System?*, THE FEDERAL RESERVE (Feb. 4, 2014), http://www.federalreserve.gov/faqs/about_12594.htm, archived at <http://perma.cc/RPZ9-U85Z> (stating that the purpose of the Federal Reserve is “[m]aintaining the stability of the financial system and containing systemic risk that may arise in financial markets.”).

12. Mark S. Copelovitch & David A. Singer, *Financial Regulation, Monetary Policy, and Inflation in the Industrialized, World* 70 J. POL. 663 (2008) (“An econometric analysis of inflation in 23 industrial countries from 1975 to 1999 reveals that inflation is significantly higher in those countries with central banks that are vested with bank regulatory responsibility.”).

13. See *infra* Part III.D.1.a.

clean bill of health.¹⁴ The FRB then publicized the results, which predictably caused a boost in the stock prices of the stress-tested banks, as well as a general surge of market confidence.¹⁵

This market effect of regulator-conducted stress testing leads to the third problem with regulating by hypothetical, which focuses on the flip side of the FRB conflict. When the government conducts what it claims to be a rigorous stress test of a bank and then gives that bank a clean bill of health, the market receives a signal not only that the bank's risks are well managed but also that the government itself will stand behind the bank if the assessment proves incorrect. Whereas individual firms used faulty risk management modeling in the pre-Dodd-Frank era to inform their investment strategies, regulation by hypothetical has a game-changing quality. Regulators are now using models to reassure markets of firm strength, thereby providing a stamp of approval that could lead to unjustifiable reliance by markets. The federal government has already been accused of oversubsidizing large banks by providing below-market funding, Federal Deposit Insurance Corporation ("FDIC") insurance, and implicit bailout protection of firms deemed too big to fail ("TBTF").¹⁶ This new regime creates another federal subsidy to the largest banks—a market signal that certifies the health of these firms. If the hypotheticals were accurate and the stress testing rigorous, this might not be that troublesome. But as this paper demonstrates, these hypothetical tests are not accurate barometers of bank health. In fact, the regulatory stamp of approval more likely has the effect of lulling markets into complacency and suppressing more rigorous analysis of the largest firms. It may also increase the likelihood of these firms being bailed out again in the event of a disaster because counterparties can claim that reliance on FRB pronouncements led them to invest in unsafe banks. In the end, regulation by hypothetical functions as an implicit guarantee by regulatory bodies of the largest banks. This guarantee, based on limited hypothetical scenarios, gives rise to perhaps the most troubling aspect of regulation by hypothetical.

Thus, regulating by hypothetical and its problematic market signaling further entrenches a flawed partnership of the nation's banks with the federal government. If regulators are going to continue

14. See *infra* Part III.D.1.a.

15. See *infra* notes 158–60 and accompanying text.

16. See *infra* Parts II.F.1 & III.D.1.c; see also Lawrence G. Baxter, *Betting Big: Value, Caution, and Accountability in an Era of Large Banks and Complex Finance*, 31 REV. BANKING & FIN. L. 765, 827–31 (2012) (detailing various public subsidies); Ann Graham, *Bringing to Hell the Elephants in the Economy: The Case for Ending "Too Big to Fail,"* 8 PIERCE L. REV. 117, 118 (2010) (identifying specific banks that are "too big to fail," and describing their characteristics).

to mandate hypothetical regulation, they must insist on aggressive risk modeling. One such tool would involve borrowing from military war game modeling to accurately predict crisis responses. The military has long engaged in “war games,” or realistic simulations of a potential conflict, to prepare themselves for the actual military event. The premise of military war games is that the best way to prepare for the unknowns of war is to practice responses to different possible scenarios. The current hypotheticals only look at balance sheets at a static point in time and do not attempt to predict how firm management might react to specific market events.¹⁷ For example, in predicting systemic risk, it would be relevant to know whether a fund manager faced with a stock market loss would try to prevent further loss, double down on risk in order to try to recuperate losses, or attempt to hedge to account for the loss. All of these responses would implicate different parts of the financial market as well as different counterparties. An accurate war game scenario accounts for all of these possibilities.¹⁸

The Article proceeds as follows. Part II offers a brief survey of financial regulation generally, describing the broad policy goals of financial and banking regulation since the Great Depression in order to provide context for the regulation by hypothetical regime. Part III explains regulation by hypothetical as a creation of Dodd-Frank and explains in greater detail stress tests and living wills as instances of such regulation. Part III also describes the inherent weaknesses of these forms of regulation, including the ways in which hypothetical financial regulation offers an implicit governmental guarantee against risks not covered by such hypotheticals. Part IV then discusses how hypothetical financial regulation can be improved. Specifically, Part IV suggests modeling financial war games, in keeping with practices long followed by military and intelligence regimes.

II. FINANCIAL REGULATION SINCE THE GREAT DEPRESSION

Bank regulation since the Great Depression has taken five major forms: geographic restrictions, activity restrictions, capital or equity requirements, disclosure mandates, and risk management oversight. These regimes have been employed successively and in tandem to combat new problems and to make use of technological

17. Robert F. Weber, *A Theory for Deliberation-Oriented Stress Testing Regulation*, 98 MINN. L. REV. 2236, 2260–68 (describing static risk models and the potential application of war games).

18. *Id.* at 2263–66.

innovation in modernizing regulatory tools. This Part will briefly outline the strains of banking regulation since the Great Depression. This historical account highlights that banking regulation has undergone significant change in the last one hundred years. It also reveals how banking regulation gradually responded to new developments in the industry. Today, once again, the banking industry is facing transformative change. And, as in the past, major shifts in bank regulation are in the offing. Many industry analysts wish to revive old forms of regulation, while others advocate novel approaches to address new risks posed by an increasingly complex banking environment. Layered on top of this debate is Dodd-Frank, which has put in place a new strain of banking regulation: regulation by hypothetical. While other forms of banking regulation have been reexamined, regulation by hypothetical is a new form of government control that has been added to the mix of regulatory tools. It remains to be seen how prominent a role these new forms of regulation will play in both the near- and long-term. But one thing is certain: regulation by hypothetical—like past approaches to bank regulation—raises profound questions about the proper mix of private and public power in the financial industry. Table 1 identifies and briefly describes the six key forms of bank regulation:

Table 1: Banking Regulatory Regimes

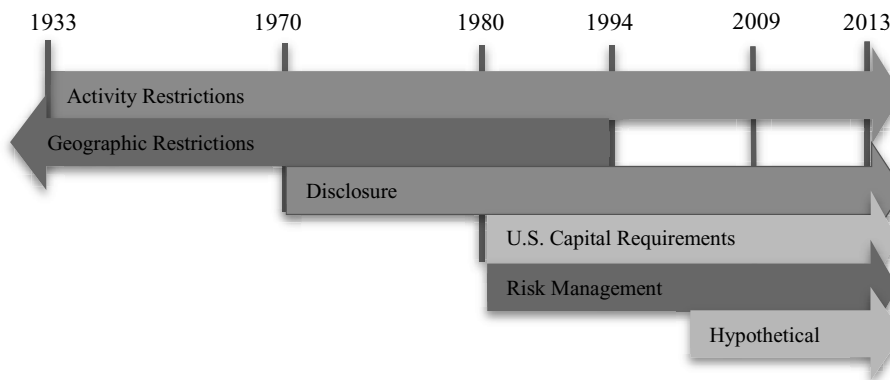
	Geographic Restrictions	Activity Restrictions	Capital /Equity	Disclosure ¹⁹	Risk Management	Hypothetical
Basic definition and aims of regulation	Unit banking and prohibiting banks from interstate branching in order to prevent excessive concentrations in banking	Separating traditional banking functions from more risky commercial ventures Siloing risky activities from commercial banking Imposing interest rate caps and lending limits.	Mandating minimum capital requirements in order to reduce incentive for risk taking as well as providing a buffer for failure	Mandating thorough and accurate disclosure of activities, risk exposures, or firm ratings Relying on market discipline	Oversight and monitoring of internal risk modeling and external modeling of risk exposures of firms or product lines	Using hypothetical future scenarios to inform ex ante regulation
Examples	McFadden Act Bank Holding Company Act Douglas Amendment geographic restrictions repealed by the Riegle-Neal Interstate Branching Act of 1994)	Glass-Steagall Act Bank Holding Company Act Volcker Rule/narrow banking	Basel (adopted by FIRREA) FDIC capital adequacy regime SIFI Capital surcharge	Sarbanes-Oxley SEC and FINRA disclosure regimes FDIA disclosure re: holdings of managers ²⁰	CAMELS Federal Reserve "R" ratings	Stress Tests Living Wills

19. The SEC disclosure regime only applies to publically traded commercial banks and investment banks. Currently, all the U.S. SIFIs are publically traded and therefore subject to the SEC disclosure regime.

20. DeNaples v. OCC, 706 F.3d 481, 486 (D.C. Cir. 2013).

These different forms of regulation have marked particular historical periods, as Figure 1 indicates:

Figure 1: Timeline of Regulatory Regimes



These different forms of regulation arose in different periods as a result of major changes in the banking industry. The remainder of this Part recounts the impetus behind each regulatory device, thus setting the stage for a close look at recent changes in the banking industry and the resulting emergence of regulation by hypothetical.

A. Geographic Restrictions

In the United States, bank branching across state lines is a relatively recent phenomenon. Unit banking, or single-branch banking, was one of the major tenets of early banking regulation.²¹ Banks were permitted to operate only out of a single branch so as to prohibit concentrations of power. But this approach also caused inefficiencies by impeding economies of scale; in addition, banks were unable to protect against risk through diversification because each institution's fate was tied to the economic condition of a single region.²² Eventually, banks were permitted to merge with other branches in order to move their funds efficiently across regions.²³ However, even then, banks, including national banks, were prohibited from crossing

21. Jerry W. Markham, *Banking Regulation: Its History and Future*, 4 N.C. BANKING INST. 221, 231 (2000).

22. *Id.* at 232.

23. FED. COMM. ON BRANCH, GRP. & CHAIN BANKING, BRANCH BANKING IN THE UNITED STATES 1 (1930), available at http://fraser.stlouisfed.org/docs/historical/federal%20reserve%20history/frcom_br_gp_ch_banking/branch_banking_us.pdf, archived at <http://perma.cc/8FWZ-8N5A>.

state lines.²⁴ This prohibition was lifted in 1994 through the Riegle-Neal Interstate Branching Act.²⁵

The justification for geographic restrictions hearkens back to the views that marked the founding era, including those of Thomas Jefferson. Jefferson and others deeply feared excessive power and concentration in banking.²⁶ They worried that, if banks became too large, then the money centers—such as New York, Philadelphia, and Boston—would endanger America’s budding democratic movement, which had its roots in local civic engagement.²⁷ Unit banking, which prohibits banks to have more than one branch, was thus entrenched in banking regulation from its start and proved difficult to lift for nearly a century.²⁸

These restrictions were gradually weakened due to industrialization forces and economic pressure. The Great Depression dealt the first blow to geographic restrictions. Many small, rural banks failed as the nation became more urban and as agricultural strongholds were weakened.²⁹ The McFadden Act, passed in 1927, allowed banks to branch within state lines so that rural banks could

24. Randall S. Kroszner, *The Motivations Behind Banking Reform*, 24 REGULATION 36, 37 (2001), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=272796, archived at <http://perma.cc/CEY7-SKQ2>.

25. *Id.*

26. John S. Gordon, *A Short Banking History of the United States*, WALL ST. J. (Oct. 10, 2008), <http://online.wsj.com/article/SB122360636585322023.html>, archived at <http://perma.cc/A8GP-WS5H>.

27. Thomas Jefferson once observed:

Can it be thought that the Constitution intended that for a shade or two of convenience, more or less, Congress should be authorized to break down the most ancient and fundamental laws of the several States Nothing but a necessity invincible by any other means, can justify such a prostitution of laws, which constitute the pillars of our whole system of jurisprudence.

Jefferson’s Opinion on the Constitutionality of a National Bank: 1791, YALE LAW SCHOOL, LILLIAN GOLDMAN LAW LIBRARY, http://avalon.law.yale.edu/18th_century/bank-tj.asp, archived at <http://perma.cc/YLJ3-A6UT> (last visited Sept. 25, 2014).

28. Once expectations were set, banks in smaller regions fought hard to keep geographic restrictions intact so they could compete against bigger city banks, which had greater access to funds and a greater ability to branch. The arguments for continuing geographic restrictions focused on the practical problems caused by excessive concentrations in banking, such as “reduced competition, impaired service quality, increased price, driving out local firms, disadvantaging local areas, enabling a few large banks to amass inordinate economic power; reducing local control over banking, politicizing the banking system, and heightening pressure to bail out big banks that get into trouble.” RICHARD S. CARNELL, JONATHAN R. MACEY & GEOFFREY P. MILLER, *THE LAW OF BANKING AND FINANCIAL INSTITUTIONS* 178 (4th ed. 2008).

29. See David C. Wheelock, *Regulation, Market Structure, and the Bank Failures of the Great Depression*, 77 FED. RES. BANK ST. LOUIS REV. 27, 30 (1995), available at https://research.stlouisfed.org/publications/review/95/03/Regulation_Mar_Apr1995.pdf, archived at <http://perma.cc/W5BZ-6AX9>.

diversify their holdings.³⁰ These limits continued until advanced technology again made them unsustainable. The final blow to geographic restrictions was in 1994, after many years of banks trying to circumvent the rules. The ATM was introduced in the United States in the 1970s, which made it possible for bank customers to perform transactions regardless of their bank's location.³¹ This innovation coupled with increased bank mergers in the 1980s and 1990s led policymakers to lift these now-outdated restrictions. The resulting Riegle-Neal Act³² was not forward thinking, but rather a reaction to pressure from the industry and a recognition of the changing face of banking. Banks needed to branch nationwide in order to exploit economies of scale and allocate their resources efficiently by diversifying their lending and deposit activities.

B. Activity Restrictions

The National Bank Acts (“NBA”)³³ of 1863 and 1864 included the first set of nationally mandated activity restrictions. One such restriction limited bank activities to those “incidental powers as shall be necessary to carry on the business of banking,”³⁴ thus keeping banks

30. *ABC's of Banking: Lesson Five*, CONNECTICUT DEPARTMENT OF BANKING, <http://www.ct.gov/dob/cwp/view.asp?a=2235&q=297892>, archived at <http://perma.cc/ZUL3-4E52> (last visited Aug. 11, 2014).

31. Kim Zetter, *Sept. 2, 1969: First U.S. ATM Starts Doling Out Dollars*, WIRED (Sept. 2, 2010, 7:00 AM), <http://www.wired.com/thisdayintech/2010/09/0902first-us-atm/>, archived at <http://perma.cc/QY9K-PEG7>.

32. See Joseph N. Heiney, *Consolidation in the U.S. Banking Industry since Riegel-Neal*, 9 J. BUS. & ECON. RES. 71, 71 (2011).

33. Regulation in the early days of banking was primarily a state matter. It consisted mostly of charter restrictions—with states trying to keep unscrupulous individuals out of the banking business. The NBA created a national banking system as well as a federal bank regulator, the Office of the Comptroller of the Currency (“OCC”) to regulate them. The purpose of the first NBA and the newly formed national banks was to create a national currency that would help the government fund the Civil War. The purpose of the second NBA was to create federally chartered banks that would operate in addition to the banks chartered by the states. See Matthew Jaremski, *State Banks and the National Banking Acts: A Tale of Creative Destruction*, 45 J. MONEY, CREDIT & BANKING 379, 384 (2013); U.S. DEP'T OF THE TREASURY, OFFICE OF THE COMPTROLLER OF THE CURRENCY: A SHORT HISTORY 6 (2011), available at <http://www.occ.gov/about/what-we-do/history/OCC%20history%20final.pdf>, archived at <http://perma.cc/5B88-28R6> (explaining that, while the second NBA permitted both the chartering of new banks and the conversion of state banks into national ones, the first Comptroller of the Currency “gave preference to the latter, convinced that experienced bank managers were essential to the system's success”).

34. Carl Felsenfeld, *The Bank Holding Company Act: Has it Lived its Life?*, 38 VILL. L. REV. 1, 48 (1993) (quoting National Bank Act of 1864, ch. 106, § 8, 12 U.S.C. § 24 (1988)).

from engaging in commercial activities.³⁵ The Glass-Steagall Act, a follow-up to the NBA, enforced comprehensive activity restrictions on all national banks. The centerpiece of post–Great Depression reform was the Glass-Steagall Act,³⁶ which prohibited banks from engaging in a wide array of activities while also imposing interest rate caps and lending limits.³⁷ These reforms separated riskier banking activities (securities and insurance underwriting and propriety trading) from traditional banking activity (deposit taking and lending) and permitted banks to engage in only the latter.

In order to understand the need for activity restrictions, it is important to understand the problems they were meant to address. The central problem in banking was the prevalence of bank failures and irrational runs. Often, banks viewed as overly risky were punished by crude market discipline in the form of depositor runs.³⁸ But runs were painful, imprecise, and, more importantly, inefficient: often healthy banks that were perceived as unhealthy, either through association or rumor, would also be exposed to customer runs.³⁹ And although many states had deposit insurance funds, the funds often could not support large bank failures.⁴⁰

The inception of federal deposit insurance after the Great Depression ended bank runs but introduced a major moral hazard problem: because the insurance system shielded banks from market punishment and catastrophic failure, it incentivized banks to take on greater risks. With the initiation of the FDIC insurance fund, top-down

35. *Id.* The NBA also imposed credit limits and capital requirements—a bank could not lend more than ten percent of its capital to any one customer. William B. Glidden, *National Bank Limits and the Comptroller's Regs: A Clarification*, 101 BANKING L.J. 430, 430 (1984). The Act also required banks to maintain cash reserves at federally specified levels. Bruce L. Rockwood, *Interstate Banking and Nonbanking in America: A New Recipe for an Old Prescription or Why Does the Elephant Banker Wear Tennis Shoes and Water Wings, and Carry an Economist Pocket Diary?*, 12 SETON HALL LEGIS. J. 137, 149 (1989). The acts also created geographic restrictions for banks that mostly mirrored those provided by the states. Jeffrey D. Dunn, *Expansion of National Bank Powers: Regulatory and Judicial Precedent Under the National Bank Act, Glass-Steagall Act, and Bank Holding Company Act*, 36 SW. L.J. 765, 768 (1982).

36. Banking Act of 1933, ch. 89, Pub. L. No. 73-66, 48 Stat. 162, *repealed by* Gramm-Leach-Bliley Act, Pub. L. No. 106-102, 113 Stat. 1338 (1999).

37. Markham, *supra* note 21, at 237–38; *see also* Karen E. Klein, *What Regulation Q's Repeal Means for Business Checking*, BLOOMBERG (July 22, 2011), <http://www.businessweek.com/small-business/what-regulation-qs-repeal-means-for-business-checking-07222011.html>, *archived at* <http://perma.cc/BCH-3AYT> (stating that Regulation Q “regulated interest rates on various bank accounts, but it was whittled away by 1980s deregulation legislation”).

38. *See* RICHARD GROSSMAN, *UNSETTLED ACCOUNT: THE EVOLUTION OF BANKING IN THE INDUSTRIALIZED WORLD SINCE 1800* (2010).

39. *Id.*

40. Ricki Tigert Helfer, *What Deposit Insurance Can and Cannot Do*, 36 FIN. & DEV. 22, 22 (1999).

and comprehensive federal regulation of banking started in earnest.⁴¹ If the federal government was going to foot the bill for bank failures, it was also going to make sure banks were behaving responsibly.

Glass-Steagall's activity restrictions succeeded in keeping banking crisis-free for nearly fifty years,⁴² but this regulatory regime also fell victim to significant change in the industry. These bright-line restrictions could not be maintained without sacrificing the profitability and competitiveness of the banking industry. By the 1990s, banking had become far more complex and international in nature.⁴³ Further, many traditional banking functions had migrated out of banks and into the capital markets with the development of money market accounts.⁴⁴ Responding to these changes, regulators abandoned the clear-cut lines of activity restrictions. This move has recently been criticized, and many are calling for reinstated "walls" between "safe" banking functions, such as deposit taking and lending, and "risky" banking functions, which now include derivatives trading and the sale of an ever-expanding array of securitized products.⁴⁵

Proponents of activity restrictions argue that, from the 1930s until the 1970s, this regime kept banks stable and safe with few bank failures; it was not until regulators disregarded activity restrictions that banks began to fail, turning the threat of repeated crises in banking into a reality.⁴⁶ As it turns out, this account is accurate but

41. Although the NBA was the first comprehensive federal banking legislation, its purpose was not to regulate banks or support them through deposit insurance.

42. Mehmet Hasan Eken et al., *The Evolutions in Regulations in Banking: A Cycle Based Approach*, 2 ACRN J. FIN. & RISK PERSPECTIVES 15, 18 (2013).

43. See *id.* at 19 ("[T]he dismantlement of GSA was inevitable due to the fact that the deregulation of banking industries in developed countries (mainly in Europe) had potentially placed U.S. banks in a disadvantageous environment and left them uncompetitive."); *The Long Demise of Glass-Steagall*, PBS.ORG, <http://www.pbs.org/wgbh/pages/frontline/shows/wallstreet/weill/demise.html>, archived at <http://perma.cc/WTC6-B8Z8> ("One reason Greenspan favor[ed] greater deregulation [was] to help U.S. banks compete with foreign institutions.").

44. *The Long Demise of Glass-Steagall*, *supra* note 43.

45. Arthur E. Wilmarth, Jr., *Reforming Financial Regulation to Address the Too-Big-To-Fail Problem*, 35 BROOK. J. INT'L L. 707, 747-79 (2010); see also Arthur E. Wilmarth, Jr., *Narrow Banking: An Overdue Reform That Could Solve the Too-Big-To-Fail Problem and Align US and UK Financial Regulation of Financial Conglomerates (Part 1)*, 31 No. 3 BANKING & FIN. SERVICES POL'Y REP. 1, 15-19 (2012) (stating that Dodd-Frank did not implement a regulatory regime that would correct the risk exposure of banks from risky nonbanking activities).

46. See Terry Carter, *How Lawyers Enabled the Meltdown and How They Might Have Prevented It*, 95 A.B.A. J. 34, 35 (2009) (stating that the Gramm-Leach-Bliley Act created a new regulatory regime that allowed banks to partake in the same activities as brokerage firms and investment bankers, which lead to increased risk taking by banks and contributed to the financial meltdown); Richard Grossman, *U.S. Banking History, Civil War to World War II*, EH.NET (March 16, 2008), <http://eh.net/encyclopedia/us-banking-history-civil-war-to-world-war-ii/>, archived at <http://perma.cc/8B9J-BKEX> ("For example, several court decisions, along with the Financial Services Modernization Act (Gramm-Leach-Bliley) of 1999, have blurred the previously strict

too simplistic. Well before activity restrictions were officially lifted by regulators, banks were finding ways around them.⁴⁷ Banks claimed that changes in banking were incompatible with outdated restrictions.⁴⁸ In other words, the lifting of activity restrictions was not a forward-looking move but rather a regulatory response to a new reality in banking. By the 1970s, U.S. banks could claim, with good reason, that they could not compete with foreign banks or the private securities firms without being permitted to offer increased services, diversify their investment products, and access higher-profit markets to offset interest rate losses.

Recent years have seen a renewed interest in activity restrictions.⁴⁹ The Volcker Rule calls for restrictions that would separate higher-risk activities from traditional banking activities.⁵⁰ The wisdom of the Volcker Rule and other modernized forms of activity restrictions is beyond the scope of this Article. Rising pressures for its adoption, however, illustrate how banking law continues to evolve in response to crisis—in this case, the financial crisis of 2008.

C. The Shift: From Bright-Line to Market-Driven Regulation

For many years, banks were primarily engaged in lending and deposit taking, and they had a monopoly in the consumer and corporate credit markets. Activity and geographic restrictions were well suited to this era of simple banking. During the 1970s and 1980s, banking changed fundamentally due to competition from the capital markets, increased technology, and the globalization of finance. As banking became more complex, banking regulation changed. The clear separations between banking and commerce eroded, and bright-line regulatory rules were discarded in favor of more nuanced, discretionary, market-driven models. Both regulators and banks

separation between different financial service industries (particularly, although not limited to commercial and investment banking)."); see also CARNELL, MACEY & MILLER, *supra* note 28, at 27 (arguing that "the once formidable wall between commercial and investment banking fell after a long bombardment").

47. Arthur E. Wilmarth, Jr., *The Dodd-Frank Act: A Flawed and Inadequate Response to the Too-Big-To-Fail Problem*, 89 OR. L. REV. 951, 987 (2011); see *The Long Demise of Glass-Steagall*, *supra* note 43 (explaining the various ways in which the Federal Reserve Board interpreted the Glass-Steagall Act to allow previously prohibited activities).

48. Corinne Crawford, *The Repeal of the Glass-Steagall Act and the Current Financial Crisis*, 9 J. BUS. & ECON. RES. 127, 128 (2011).

49. David Cho & Binyamin Appelbaum, *Obama's 'Volcker Rule' Shifts Power Away from Geithner*, WASH. POST (Jan. 22, 2010), <http://www.washingtonpost.com/wp-dyn/content/article/2010/01/21/AR2010012104935.html>, archived at <http://perma.cc/BV45-B9AD>.

50. *Id.* Advocates for renewed activity restrictions have also suggested breaking up the banks. Arthur E. Wilmarth, Jr., *supra* note 47, at 987.

avored these shifts because the deployment of new regulatory tools—such as disclosure rules, capital requirements, and risk management modeling—involved fewer regulatory intrusions and greater freedom for banks to compete in the financial industry. Regulators, who were unable to keep up with the complexity of the market also preferred market-centered regimes that allowed banking counterparties and the banks themselves to evaluate risk.

D. Disclosure

The premise of the disclosure regulatory regime is that regulators must enforce the frequent dissemination of material facts about publically traded companies so that the market can accurately gauge the price of its securities. Disclosure facilitates market discipline, which in turn protects investors. However, unlike securities regulators, banking regulators historically have not embraced disclosure as a primary regulatory tool. Because of banks' susceptibility to runs and their extreme need for consumer trust, bank regulators gave them "special treatment" and did not force them to disclose their vulnerabilities so as to prevent "an irrational public response leading to runs on banks."⁵¹ Confidentiality, rather than disclosure, was used as a way to shield banks from instability. Thus, the regulatory regime sought to maintain public confidence in banks by keeping information about their condition confidential.⁵² The emphasis on confidentiality in banking regulation after the Depression was perhaps "most tellingly revealed by the exclusion of banks from the . . . mandatory disclosure regime implemented by the Securities Act of 1933 . . . and the Securities Exchange Act of 1934."⁵³ Ironically, these reforms were initially enacted to respond to the misdeeds of the banking industry.⁵⁴

51. Laurie Durcan & Bruce K. Riordan, *Banking Disclosures, Financial Privacy, and the Public Interest*, 6 ANN. REV. BANKING L. 391, 395 (1987).

52. *Id.* at 400.

53. Robert P. Bartlett, *Making Banks Transparent*, 65 VAND. L. REV. 293, 307 (2012). Most of today's large TBTF banks were formerly investment banks that used to be held as partnerships. Starting in the 1970s and ending in the mid-1990s, these commercial banks and investment banks went public in waves. Once they did, the disclosure regimes attached to most large banks that were not already public entities.

54. *See generally* MICHAEL PERINO, *THE HELLHOUND OF WALL STREET: HOW FERDINAND PECORA'S INVESTIGATION OF THE GREAT CRASH FOREVER CHANGED AMERICAN FINANCE* (2010). Investigations immediately following the Great Depression focused on short sellers and other market operators. *Id.* at 129. When Ferdinand Pecora took over these investigations into the Great Crash, he changed the focus of the investigation. *Id.* Pecora "for the first time . . . showed commercial bankers engaged in a reckless grab for profits that pushed hard on the boundaries of legal behavior." *Id.* For instance, compensation practices for officers "provided an incentive for

Historically, banks were forced to disclose information to their regulators, but this information, referred to as “call reports,” was kept confidential.⁵⁵ In 1972, the FDIC made these call reports publicly available due to increasing bank failures and the growing notion that market devices could discipline banks along with activity restrictions.⁵⁶ As the banking market became increasingly deregulated and traditional “command and control” banking regulation became unpopular, market discipline was increasingly seen as a key pillar of bank oversight. Increased disclosure, it was thought, would lead to market discipline, which would make command-and-control regulation less necessary.⁵⁷ During this time, the FDIC, OCC, and FRB moved toward requiring increased disclosure in banks’ annual financial statements.⁵⁸ Congress gave these regulators increased enforcement

excessive risk taking,” causing officers to “focus on short-term profits, not long term performance.” *Id.* at 146–47. These compensation practices incentivized officers to sell risky securities without adequately informing the public about these securities; rather, officers advised the public to rely on the incomplete information provided by the banks. *Id.* at 152. Pecora showed that this problem permeated the banking industry, from the smaller banks all the way to “the top of the banking structure.” *Id.* at 219. It was Pecora’s belief that “the absence of any regulations requiring disclosures to shareholders and investors” was one of the main culprits of that period’s financial woes. *Id.* at 272. After the investigation, and “[w]ith Pecora still keeping pressure on Wall Street,” Congress passed a securities bill with the idea that “[n]ew securities could now only be sold if investors were given all the information they needed to make an informed decision about whether to buy them.” *Id.* at 287–88.

55. Alfred D. Mathewson, *From Confidential Supervision to Market Discipline: The Role of Disclosure in the Regulation of Commercial Banks*, 11 J. CORP. L. 139, 143 (1986). The examination “[reviewed] all of the operations of the bank, including loan practices, trust operations, internal control, checking and savings accounts, data processing, internal security, and personnel practices.” *Id.*

56. Bartlett, *supra* note 53, at 309.

57. *Id.* at 304–05. (“In light of these events, it was generally believed that market participants could potentially provide an important ally in bank oversight.”). Publicly available call reports were revised at this time “to increase the information available about a bank’s loan portfolio.” *Id.* at 309. Additionally, in 1983, “[m]assive payment defaults on international loans encouraged Congress to pass the Lending Supervision Act” which “requires all banks and bank holding companies to publically disclose any material concentrations of loan exposure in foreign countries” quarterly to the regulators. Durcan & Riordan, *supra* note 51, at 398. In the late 1980s, “the FDIC initiated a program for the commercial publication, on a quarterly basis, of redacted decisions of the FDIC Board of Directors (removing identities of banks and other parties) and the accompanying decisions of the administrative law judges issued in formal enforcement adjudications.” Michael P. Malloy, *Public Disclosure as a Tool of Federal Bank Regulation*, 9 ANN. REV. BANKING L. 229, 236 (1990).

58. *Id.* at 236–40. Banks’ financial statements were to be available to “security holders, depositors, and anyone who [requested]” them. 12 C.F.R. § 18.1(a) (1989). For banks regulated by the FDIC, the report was to include:

- (i) a fair presentation of the bank’s financial condition at the end of that year and the preceding year; (ii) the results of operations for each such year; (iii) other information that the FDIC may require of a particular bank; and (iv) a specified disclaimer to the effect that “[t]his statement has not been reviewed, or confirmed for accuracy or relevance, by the Federal Deposit Insurance Corporation.”

power to administer the sections of the 1933 and 1934 Securities Acts (“SEC Acts”) that applied to banks.⁵⁹ Further, in 1964, Congress subjected companies with greater than five hundred shareholders and \$1 million of assets to the mandatory disclosure requirements of the Exchange Act. Congress delegated enforcement powers to the FDIC, OCC, and FRB. These legislative changes ended the “three-decade exemption of many banks from federal periodic disclosure obligations.”

In addition to government intervention, industry evolution contributed to greater information sharing by banks. Most significantly, the 1970s and 1980s saw a surge of banks going public, thereby triggering quarterly public disclosure obligations under the SEC Acts.⁶⁰

However, despite the move toward more disclosure, bank regulators continued to give banks special protection from the usual rules of corporate openness. For example, the results of regularly conducted bank examinations of banks, which result in a rating system referred to as CAMELS, are confidential and immune from even Freedom of Information Act (“FOIA”) requests.⁶¹

Malloy, *supra* note 57, at 243 (quoting 12 C.F.R. § 350.4). The OCC and FRB reports were substantially identical. *Id.*

59. “Congressional concern in 1964 with the volume of OTC trading in the shares of banks and other nonlisted companies ultimately prompted Congress to subject any company with greater than 500 shareholders of record and \$1 million of assets to the mandatory disclosure requirements of the Exchange Act,” ending the “three-decade exemption of many banks from federal periodic disclosure obligations.” Bartlett, *supra* note 53, at 308. The amendment also delegated enforcement powers to the agencies (FDIC, OCC, FRB) that already regulated banks. Thus, “[s]ince 1964, the banking regulators also enforced the periodic reporting and proxy requirements of the Exchange Act pertaining to publicly traded banks under their supervision.” David G. Oedel, *Civil Liability for the Concealment of Bank Trouble*, 6 ANN. REV. BANKING L. 443, 446 (1987).

60. Steven M. Davidoff, *Did Going Public Spoil the Banks?*, N.Y. TIMES (Aug. 22, 2008), <http://query.nytimes.com/gst/fullpage.html?res=9C03E7DF1639F931A1575BC0A96E9C8B63>, archived at <http://perma.cc/BB3N-BTQQ>. The Securities Act of 1933 was centered around the idea of disclosure with the purpose of better informing investors on their sales and purchases of securities. The Securities Exchange Act of 1934 focused on the registration and regulation of securities exchanges, or, in other words, the secondary trading of securities between persons unrelated to the insurer. The 1934 Act also targeted brokers and dealers and implemented broad antifraud and antimanipulation standards. Sections 12, 13, and 14 of the 1934 Act incorporates standards for continuous registration, annual and periodic reports, and stockholder proxy solicitation disclosures for companies whose securities are already in public hands.

61. FDIC, RISK MANAGEMENT MANUAL OF EXAMINATION POLICIES § 1.1, available at <http://www.fdic.gov/regulations/safety/manual/>, archived at <http://perma.cc/R3TE-J768> (last updated Nov. 13, 2012); see also John Crawford, *Predicting Failure*, 7 VA. L. & BUS. REV. 171, 197–98 (2012) (explaining the CAMELS system and noting that it “is highly confidential and is known only to the relevant examiners and bank managers”).

E. Capital

The capital regime requires banks to have a capital floor, which is the regulatory version of equity or net worth—it is the amount by which a firm's assets exceed the firm's liabilities.⁶² If a bank meets minimum capital requirements, there will be little need for governmental micromanagement of bank activities. The minimum capital requirement is designed to protect safety and soundness by forcing firms to have more skin in the game and ownership of their risks. The theory of forcing firms to maintain a floor on capital is that the higher the floor, the less likely a firm is to engage in risky activities. Therefore, the battle between regulators and banks has been over how much capital is required, with banks generally advocating less and regulators encouraging more.⁶³

The more equity a bank has, all other things being equal, the less likely it is to fall into insolvency. Capital is often referred to as a buffer,⁶⁴ but to think of it as a buffer is misleading. When a bank experiences a loss, the bank's capital is not affected. Only when a bank experiences a net balance sheet loss (when they have more liabilities than assets) does capital become relevant. In that event, the net loss represents a loss of assets against liabilities; when assets fall below liabilities, the bank is insolvent and equity (capital) losses occur. In other words, capital is shareholder equity; it does *not* refer to bank reserves.

Capital is purely a balance sheet item and represents the gap between the firm's equity or ownership interest (i.e., common stock) and its liabilities. It is not cash in a safe, but it is a reflection of how a bank funds itself. A bank can either fund itself through debt (i.e., loans) or equity (i.e., stock). The more a bank funds itself through the latter, the higher the capital ratio.⁶⁵ Banks prefer higher leverage (to

62. CARNELL, MACEY & MILLER, *supra* note 28, at 252–53.

63. Dawn Kopecki & Zachary Tracer, *Dimon Says Banks to Have More Capital Than They Can Use*, BLOOMBERG.COM (Feb. 26, 2013, 11:00 PM), <http://www.bloomberg.com/news/2013-02-26/dimon-says-banks-to-have-more-capital-than-they-know-how-to-use.html>, archived at <http://perma.cc/PV8M-YUZN> (quoting JPMorgan, Chase & Co. CEO Jamie Dimon as believing that all banks would soon have too much capital and that regulation encouraging banks to hold on to capital could impede growth).

64. James Shotter, *Switzerland Imposes Capital Buffer on Banks*, FIN. TIMES (Feb. 13, 2013, 2:58 PM), <http://www.ft.com/intl/cms/s/0/be839108-75ca-11e2-b702-00144feabdc0.html>.

65. Banks prefer to fund themselves through debt because they view it as cheaper than equity. However, Admati and Hellwig dispute this. They argue that it is only cheaper today because banks are already highly leveraged and must pay more for equity because of their heightened risk exposure. Admati and Hellwig contend that this way of doing business is not the only option. ANAT ADMATI & MARTIN HELLWIG, *THE BANKERS' NEW CLOTHES: WHAT'S WRONG WITH BANKING AND WHAT TO DO ABOUT IT* 112 (2013).

have less of an equity interest) because they can achieve greater returns on their investments. However, this leverage also creates heightened risk. For example, shareholders who stand to lose more equity (capital) will likely engage in less risk taking than one that is less exposed.⁶⁶ One of the purposes of the capital regime, therefore, is to affect manager behavior in favor of more prudent decisionmaking. Over the past thirty years, regulators and banks have been engaged in an ongoing negotiation over how much capital is ideal.

The capital regime is quite complex, with capital ratios that are calculated based on several tiers of capital that depend on levels of risk.⁶⁷ Common stock, for example, is Tier 1, and subordinated debt is Tier 2.⁶⁸ Each bank must retain certain percentages of each tier of capital, with more risk-tolerant banks preferring the higher-risk Tier 2 category and risk-averse banks and regulators preferring the safer Tier 1 categories.⁶⁹ Aside from the voluminous discussions on how capital should be categorized, it is the consensus of most regulators and industry observers that the ultimate strength of a bank rests on its net worth or capital funds.⁷⁰

The capital regime started in earnest just as the activity restrictions regime started to fall out of favor. The capital regime allows banks to conduct their business any way they choose as long as they have a minimum amount of regulatory capital. This new regime seemed appropriate for the new world of complex banking, where banks were constantly one step ahead of the regulators that were trying to prohibit new risk taking. It is perhaps the easiest form of bank regulation for the modern era—although its simplicity has diminished as capital requirements have been spliced into tiers, percentages, and tranches.⁷¹

Complexities have also grown because capital requirements have become entangled with risk modeling, as discussed below. Capital requirements have been a part of U.S. regulatory history since the

66. See David Enrich & Victoria McGrane, *Capital Rules Tighten for Big Banks*, WALL ST. J. (June 27, 2011), <http://online.wsj.com/news/articles/SB10001424052702303627104576409662082986084>.

67. BASEL COMM. ON BANKING SUPERVISION, INTERNATIONAL CONVERGENCE OF CAPITAL MEASUREMENT AND CAPITAL STANDARDS 14 (2006).

68. *Id.*

69. *Id.*

70. Sandra L. Ryon, *History of Bank Capital Adequacy Analysis* (FDIC Div. of Econ. Research, Working Paper No. 69-41, 1969).

71. Andrew G. Haldane, Exec. Dir. Fin. Stability, Bank of Eng., *The Dog and the Frisbee 9*, Speech at the Federal Reserve Bank of Kansas City's 366th Economic Policy Symposium, "The Changing Policy Landscape", Jackson Hole, Wyoming (Aug. 31, 2012), available at <http://www.bis.org/review/r120905a.pdf?frames=0>, archived at <http://perma.cc/FM2-USFX>.

earliest days of banking but were applied inconsistently and haphazardly until they were standardized in the 1980s in response to large-scale bank failures.⁷² During this time, both U.S. and international banks were distressed. The Basel Committee, an international forum of bank regulators that issue standardized supervisory guidelines, was formed to streamline and modernize international banking regulation.⁷³ In 1988, the Basel Committee issued a final report (“Basel I”) that included minimum capital requirements.⁷⁴ The Committee’s innovative approach to capital accounted for differences in the riskiness of assets. Basel I created four risk categories and announced guidelines weighing each balance sheet item’s riskiness and assigning it to a category.⁷⁵ The capital required for each bank was determined by weighing and sorting assets by risk.⁷⁶

72. 1895 COMPROLLER OF THE CURRENCY ANN. REP. 39 (reporting that in 1895 state minimum capital requirements “varie[d] from no provisions at all, and elsewhere from \$5,000 to \$100,000”). The first federal capital requirements were part of the NBA in 1864, which required banks to retain various capital thresholds depending on the population of the surrounding areas. National Bank Act, ch. 106, § 7, 13 Stat. 99, 101 (1864) (codified as amended in scattered sections of 12 U.S.C.). In 1933, the federal government introduced capital requirements that were a percentage of a firm’s deposits. Roland I. Robinson, *The Capital Deposit Ratio in Banking Supervision*, 49 J. POL. ECON. 41, 41, 43, 47–49 (1941). At that time, minimum capital levels were determined by calculating a leverage ratio that compared a bank’s capital to total assets. The ratio was set by the OCC and the FRB at six percent for some community banks and five percent for larger regional banks; the FDIC established a six percent ratio for all banks, regardless of size. BOARD OF GOVERNORS OF THE FEDERAL RESERVE SYSTEM, Interpretive Letter 3-1506 (Dec. 17, 1981); FDIC, Statement of Policy on Capital Adequacy, 46 Fed. Reg. 62,693-02 (1981); see also Phil Battey, *Regulators Fail on Uniform Bank Capital Policy*, AM BANKER, Dec. 18, 1981, at 1 (summarizing the different approaches adopted by the FDIC, OCC, and Federal Reserve). However, even these capital requirements were difficult to enforce without a legislative mandate supporting regulatory enforcement. Banking statutes at the time did not mention specific capital requirements. In one case, in spite of the fact that a bank “ranked near the bottom of its peer group in all of the equity related ratios,” the Fifth Circuit held that the OCC had not presented sufficient evidence to show that operating with less capital was unsafe or unsound. *First Nat’l Bank of Bellaire v. Comptroller of the Currency*, 697 F.2d 674, 677, 679, 685 n.3 (5th Cir. 1983). The regulatory enforcement mandate came when Congress passed the International Lending Supervision Act of 1983, which required banking regulators to “cause banking institutions to achieve and maintain adequate capital by establishing minimum levels of capital for such banking institutions.” International Lending Supervision Act of 1983, Pub. L. No. 98-181, 908(a)(1), 97 Stat. 1278, 1280, § 908(a)(2), 97 Stat. 1280 (codified at 12 U.S.C. § 3907(a)(2)). The Act gave regulators the authority to establish minimum levels of capital and deemed it an unsafe and unsound practice for banks to have capital below the threshold. *Id.* at § 908(a)(2), 97 Stat. 1280, §908(b)(1), 97 Stat. 1280 (codified at 12 U.S.C. § 3907(a)(2), (b)(1)).

73. See Benton E. Gup, *Introduction to the Basel Capital Accords*, in THE NEW BASEL CAPITAL ACCORD 1, 1 (Benton E. Gup ed., 2004).

74. BASEL COMM. ON BANKING SUPERVISION, INTERNATIONAL CONVERGENCE OF CAPITAL MEASUREMENT AND CAPITAL STANDARDS (1988), available at <http://www.bis.org/publ/bcbs04a.pdf>, archived at <http://perma.cc/CG3H-WXUZ>.

75. BASEL COMM. ON BANKING SUPERVISION, *supra* note 67, at 231.

76. *Id.*

The Basel I approach was adopted by U.S. regulators in 1989 and became effective in 1990.⁷⁷

The Basel I framework favored a “risk-weighted” ratio, as opposed to the previous U.S. regime of a simple “leverage ratio.”⁷⁸ The innovative risk weighing was said to more accurately account for different types of risks, but even this new complex and sensitive framework soon became too simplistic for an increasingly complex banking system. In short, these risk categories were both under- and overinclusive, promoting regulatory arbitrage. Several shortcomings became apparent: (1) the four risk categories were overly broad approximations of risk, which caused some banks to easily evade the rules by investing in risky assets or off-balance sheet items that were far riskier than their category acknowledged;⁷⁹ (2) the Basel I categories accounted only for credit risk and not other types of risk, such as operational risk, interest rate risk, liquidity risk, and so forth;⁸⁰ and (3) the Basel I framework did not adequately gauge risks for large banks that were pioneering new products, such as derivatives that could not easily be categorized without complex internal risk models.⁸¹ In other words, risk weighing suffered from the same

77. OCC Risk-Based Capital Guidelines, 54 Fed. Reg. 4169 (Jan. 27, 1989) (codified at 12 C.F.R. pt. 3, app. A); Capital Adequacy Guidelines for State Member Banks: Risk-Based Measure, 12 C.F.R. pt. 208, app. A (2014); Capital Adequacy Guidelines for Bank Holding Companies: Risk-Based Measure, 12 C.F.R. pt. 225, app. A; Statement of Policy on Risk-Based Capital, 12 C.F.R. pt. 325, app. A. Congress implemented similar requirements for thrift institutions as part of the Financial Institutions Reform, Recovery, and Enforcement Act of 1989. Pub. L. No. 101-73, § 301, 103 Stat. 183, 303–04 (codified at 12 U.S.C. §§ 1463–1464 (1990)). The thrift regulator has previously proposed similar guidelines. See Federal Home Loan Bank Board, Proposed Rule, Regulatory Capital Requirements for Insured Institutions, 53 Fed. Reg. 51,800 (Dec. 23, 1988).

78. See BASEL COMM., *supra* note 67, at 12 (“In developing the revised Framework, the Committee has sought to arrive at significantly more risk-sensitive capital requirements . . .”); BASEL COMM. ON BANKING SUPERVISION, REVISED BASEL III LEVERAGE RATIO FRAMEWORK AND DISCLOSURE REQUIREMENTS 1 (2014) (“[A] simple leverage ratio framework is critical and complementary to the risk-based capital framework.”).

79. See DANIEL K. TARULLO, BANKING ON BASEL: THE FUTURE OF INTERNATIONAL FINANCIAL REGULATION 80–82 (2008) (cataloguing various types of regulatory arbitrage possible under Basel I, but concluding that “there is very little empirical work that quantifies the practice”); Steven R. Grenadier & Brian Hall, *Risk-Based Capital Standards and the Riskiness of Bank Portfolios: Credit and Factor Risks*, 26 REG. SCI. & URBAN ECON. 433, 438 (1996); Patricia A. McCoy, *Musings on the Seeming Inevitability of Global Convergence in Banking Law*, 7 CONN. INS. L.J. 433, 450–56 (2001); Camille M. Caesar, Note, *Capital-Based Regulation and U.S. Banking Reform*, 101 YALE L.J. 1525, 1542 n.106 (1992).

80. See U.S. GOV’T ACCOUNTABILITY OFFICE, RISK-BASED CAPITAL: BANK REGULATORS NEED TO IMPROVE TRANSPARENCY AND OVERCOME IMPEDIMENTS TO FINALIZING THE PROPOSED BASEL II FRAMEWORK 9–10, 16 (2007) (identifying various risks and explaining that Basel I did not account for them); Michael P. Malloy, *Capital Adequacy and Regulatory Objectives*, 25 SUFFOLK TRANSNAT’L L. REV. 299, 313–14 (2002).

81. U.S. GOV’T ACCOUNTABILITY OFFICE, *supra* note 80, at 17.

problems that plague risk management in general: the inability to account for new bank activities that generate unprecedented risks.

Basel II was issued in 2004 to address these problems.⁸² It accounted for a variety of risks in addition to credit risk and permitted firms to use their internal risk modeling mechanisms to evaluate more complex product lines.⁸³ Basel II also called for heightened supervision and disclosure in an effort to facilitate market discipline of capital retention by banks.⁸⁴ A key criticism of Basel II focuses on its reliance on internal risk modeling by banks, which is often unreliable and hard to evaluate.⁸⁵ Others note that the outsourcing of risk modeling to self-interested financial institutions is inappropriate and can lead to abuse.⁸⁶ Basel II was adopted by U.S. regulators for only the largest banks and only in a way that required them to implement its requirements on a phased-in basis.⁸⁷

82. BASEL COMM. ON BANKING SUPERVISION, INTERNATIONAL CONVERGENCE OF CAPITAL MEASUREMENT AND CAPITAL STANDARDS: A REVISED FRAMEWORK (2004), *available at* <http://www.bis.org/publ/bcbs107.pdf?noframes=1>, *archived at* <http://perma.cc/RZ4-5TJL> [hereinafter *BASEL II*]; *see* BASEL COMM. ON BANKING SUPERVISION, OVERVIEW OF THE NEW BASEL CAPITAL ACCORD 2 (2001), *available at* <http://www.bis.org/publ/bcbsca02.pdf>, *archived at* <http://perma.cc/K8UR-W9TX> (stating that the Basel Committee's primary goal was "to deliver a more risk-sensitive standardized approach that on average neither raises nor lowers regulator capital for internationally active banks").

83. *BASEL II*, *supra* note 82, at 48–112, 142–48.

84. *Id.* at 158–90.

85. *See, e.g.*, TARULLO, *supra* note 79, at 79, 152–59; George G. Kaufman, *Basel II: The Roar that Moused*, in *THE NEW BASEL CAPITAL ACCORD* 39, 43 (Benton E. Gup ed., 2004):

[T]he loss rates determined by regulators are subject to large errors so that gaming is still likely, and the models used by the banks to generate their internal values are likely to be too complex and opaque for supervisors (and even many bankers themselves) to understand thoroughly, so the resulting capital amounts will be difficult to evaluate for adequacy and compliance with the requirements.

Douglas O. Edwards, Comment, *An Unfortunate "Tail": Reconsidering Risk Management Incentives After the Financial Crisis of 2007–2009*, 81 U. COLO. L. REV. 247, 268 (2010) (concluding that the value-at-risk model "is powerful, but . . . but fails to capture an outlier event that might topple a financial institution").

86. Erik F. Gerding, *Code, Crash, and Open Source: The Outsourcing of Financial Regulation to Risk Models and the Global Financial Crisis*, 84 WASH. L. REV. 127, 180–86 (2009) [hereinafter *Code, Crash*]; Erik F. Gerding, *The Dangers of Delegating Financial Regulation to Risk Models*, 29 BANKING & FIN. SERVICES POL'Y REP. 1, 5–6 (2010) [hereinafter *Dangers of Delegating*]; Joseph J. Norton, *A Perceived Trend in Modern International Financial Regulation: Increasing Reliance on a Public-Private Partnership*, 37 INT'L LAW 43, 57 (2003).

87. John C. Dugan & Jennifer Xi, Briefing Paper to European Parliament Policy Department A: Economic and Scientific Policy, U.S. Implementation of Basel II: Final Rules Issued, but No Supervisory Approvals to Date (2011), *available at*, <http://www.europarl.europa.eu/document/activities/cont/201110/20111012ATT29102/20111012ATT29102EN.pdf>, *archived at* <http://perma.cc/E2T8-8EVD>.

The financial crisis of 2008 brought with it a renewed emphasis on capital requirements.⁸⁸ Some claimed that insufficient enforcement of capital requirements caused the crisis.⁸⁹ Even so, the Treasury took the position—and Congress ultimately agreed—that the capital requirement percentages should be left up to regulators so as to prevent too rigid of a framework.⁹⁰ Three years after the passage of Dodd-Frank, regulators are still debating the best formula to use as they implement new capital rules.⁹¹

Meanwhile, the shortcomings of Basel II have produced the recently promulgated Basel III accord.⁹² Erik Gerding explains that the gamesmanship of Basel I and Basel II begat Basel III.⁹³ However, Basel III still relies on risk weighing to categorize different capital categories. Basel III has honed (or some say further complicated)⁹⁴ the risk-weighted formula that applies to the largest banks. The new ratio, a very low three percent, includes securitized risks, on-balance sheet

88. See, e.g., William M. Isaac, *How to Save the Financial System*, WALL ST. J., Sept. 19, 2008, at A23 (arguing that the U.S. implementation of Basel II will exacerbate the financial crisis by requiring additional capital when none is available); Lawrence B. Lindsey, *The Panic of 2008: Loosen Deposit Insurance Rules to Prevent Bank Run*, WALL ST. J., Sept. 17, 2008, at A27 (arguing that risk-based capital standards are not appropriate).

89. See, e.g., U.S. GOV'T ACCOUNTABILITY OFFICE, FINANCIAL MARKETS REGULATION: FINANCIAL CRISIS HIGHLIGHTS NEED TO IMPROVE OVERSIGHT OF LEVERAGE AT FINANCIAL INSTITUTIONS AND ACROSS SYSTEM 6 (2009); Damian Paletta, *Regulators Agree to Create Stricter Capital Requirements for Banks*, WALL ST. J. (Apr. 2, 2009, 2:55 PM), <http://online.wsj.com/article/SB123868295604882511.html>, archived at <http://perma.cc/Q37U-REPV> (quoting U.S. Comptroller of the Currency John Dugan as stating that “there was not enough capital in the banking system coming into” the financial crisis). But see TARULLO, *supra* note 79, at 259 (concluding that it is unlikely that “any capital regulation regime could have sufficiently contained [mortgage-backed securities] risks so that the subprime situation would have been merely a problem rather than a crisis”).

90. Mike Konczal, *Dodd-Frank is Finally Being Implemented. Will that be Enough?*, WASH. POST (May 6, 2013), <http://www.washingtonpost.com/blogs/wonkblog/wp/2013/05/06/dodd-frank-is-finally-being-implemented-will-that-be-enough/>, archived at <http://perma.cc/8CFA-LBEQ>.

91. See Jennifer McGillivray & Hung-Gay Fung, *The Need for Ethical Reform in the US Financial Industry*, 5 INT'L REV. ACCT., BANKING & FIN. 17, 36 (2013) (“If there were a clear answer to all of the questions [surrounding regulation and ethics in the financial industry], much of the concern about the financial industry and its professionals would not exist.”); Charles M. Horn et al., *Dodd-Frank Implementation: Navigating the Road Ahead*, MONDAQ (Jan. 3, 2013), <http://www.mondaq.com/unitedstates/x/214152/Financial+Services/DoddFrank+Implementation+Navigating+The+Road+Ahead>, archived at <http://perma.cc/AL7Z-A39M> (“We anticipate that, in the first half of 2013, the federal bank regulatory agencies will finalize the three capital proposals that were released in June 2012.”).

92. Emily Lee, *Basel III and Its New Capital Requirements, as Distinguished From Basel II*, 131 BANKING L.J. 27, 27–28 (2014).

93. ERIK F. GERDING, LAW, BUBBLES, AND FINANCIAL REGULATION 197–235 (2014).

94. Haldane, *supra* note 71, at 6–7 (noting that Basel III is six-hundred pages long compared to just thirty pages of Basel I without any added benefit).

assets, derivative exposures,⁹⁵ and other modern financial products. Critics claim that, even with Basel III's targeted approach, the ratio is too low and the formula still allows for circumvention and risk hiding.⁹⁶ Basel III has not yet been adopted by the United States.⁹⁷ Regulators remain uncertain about which parts of Basel III's new formula to adopt and how much they want to rely on blunter leverage ratios.⁹⁸ Many observers, including Senators Sherrod Brown and David Vitter, have proposed abandoning the Basel framework and simply refocusing on heightened leverage ratios.⁹⁹

In *The Bankers' New Clothes*, Professors Anat Admati and Martin Hellwig argue that the legislative and regulatory reactions to the financial crisis leave the essential structure of the economy's circulatory system as fragile as it ever was.¹⁰⁰ Their book reads as an ode to simple and strict capital requirements. Admati and Hellwig identify a threshold cause of and a threshold response to the crisis banking: the cause, too much debt; the solution, significantly more equity.¹⁰¹ After that buffer is established, the urgency of getting exactly right every detail of every stress test, living will, or individual regulation will matter less. Admati and Hellwig argue, in other words,

95. DAVIS POLK & WARDWELL LLP, *BASEL III LEVERAGE RATIO: U.S. PROPOSES AMERICAN ADD-ON; BASEL COMMITTEE PROPOSES IMPORTANT DENOMINATOR CHANGES 7* (2013), http://www.davispolk.com/sites/default/files/07.19.13.Basel_3.Leverage.pdf, archived at <http://perma.cc/UQ8J-SK88>.

96. See Brooke Masters, *Basel III Capital Rules Too Low, Says Turner*, FIN. TIMES (Mar. 16, 2011, 7:10 PM), <http://www.ft.com/intl/cms/s/0/92b24f80-4fff-11e0-9ad1-00144feab49a.html#axzz2cYQSN190>, archived at <http://perma.cc/LNA5-52GQ>; Thomas Hoenic, *Basel III Capital Interim Final Rule and Notice of Proposed Rulemaking*, FDIC (July 9, 2013), <https://www.fdic.gov/about/learn/board/hoenic/statement7-9-2013.html>, archived at <http://perma.cc/6YF-7CVV> (noting that the Basel III standard "remains inadequate to the task of assuring the American public . . . that our capital standards are adequate to contribute to financial stability.").

97. Basel III was adopted by the Federal Reserve board on July 2, 2013. Tom Braithwaite, *Banks Await Orders as Fed Acts on Basel III*, FIN. TIMES (July 2, 2013, 7:18 PM), <http://www.ft.com/cms/s/0/94abb696-e337-11e2-9bb2-00144feabdc0.html#axzz2cYQSN190>, archived at <http://perma.cc/Q4W4-X4AT>.

98. Simon Watkins, *Basel Loosens Banks' Leverage Ratio Proposals but New FX Trading World Is Still Uncertain*, EUROMONEY.COM (Jan. 15, 2014), <http://www.euromoney.com/Article/3297585/Basel-loosens-banks-leverage-ratio-proposals-but-new-FX-trading-world-is-still-uncertain.html>, archived at <http://perma.cc/QR2Z-63E7>.

99. James Pethokoukis, *Senators Brown and Vitter Offer a Smart and Simple Plan to End Too Big To Fail*, AEIDEAS (Apr. 25, 2013, 10:06 AM), <http://www.aei-ideas.org/2013/04/senators-brown-and-vitter-offers-a-smart-and-simple-plan-to-end-too-big-to-fail/>, archived at <http://perma.cc/Q7WS-J6HT>; see also Felix Salmon, *Basel: The SIFI Surcharge Arrives*, REUTERS (June 27, 2011), <http://blogs.reuters.com/felix-salmon/2011/06/27/basel-the-sifi-surcharge-arrives/>, archived at <http://perma.cc/HXG8-4NGL> (discussing Basel III's potentially negative incentive structure).

100. ADMATI & HELLWIG, *supra* note 65, at 192.

101. *Id.*

that we can and should have debates about risk management and activity restrictions, but only after the basic parameters of significantly increased equity are put in place.¹⁰² This new model is best defined as regulation by capital—or their preferred term, equity. The premise is that private actors are incentivized to displace the costs of their risky activities to the fullest extent possible and that banking regulation should prevent that displacement to the greatest extent possible.¹⁰³ In other words, regulators should push banks toward equity-based, rather than debt-based, financing, notwithstanding pressures on managers to minimize existing equity positions. Activity restrictions, risk management infrastructure, and the rest are all terrific tools for in-house use. But allowing those mechanisms to replace the risk-dampening effect of increased equity is foolish and dangerous.

In conclusion, the future of capital requirements is unclear. Many advocate that regulators should get entirely out of the business of activity restrictions, risk management, and general oversight, that the only thing regulators should enforce is capital requirements and leave the rest to the banks.¹⁰⁴ On the other hand, the banking industry continues to oppose heightened capital requirements. It will continue to fall on regulators to determine how much capital is required to reach the desired outcome of changing managerial incentives to favor prudence over risk taking.¹⁰⁵

102. *Id.*

103. *Id.*

104. Victoria Finkle, *Regulators Should Boost the Leverage Ratio for Big Banks*, *Senators Say*, AM. BANKER (Nov. 22, 2013, 12:58 PM), available at http://www.americanbanker.com/issues/178_226/regulators-should-boost-the-leverage-ratio-for-big-banks-senators-say-1063858-1.html, archived at <http://perma.cc/9HMF-G7LF>; Ray Grace, *Don't Blame Camels for Human Failure*, AM. BANKER (June 4, 2013, 4:30 PM), available at <http://www.americanbanker.com/bankthink/dont-blame-camels-for-human-failures-1059610-1.html>, archived at <http://perma.cc/V8EQ-GUJV>; Mark W. Olson, *Banking Industry Overly Focused on Capital*, AM. BANKER (July 18, 2013, 1:45 PM), available at <http://www.americanbanker.com/bankthink/banking-industry-overly-focused-on-capital-1060700-1.html>, archived at <http://perma.cc/F5D2-MQFQ>; Richard J. Parsons, *It's Time to Kill CAMELS*, AM. BANKER (June 1, 2013), available at http://www.americanbanker.com/magazine/123_6/its-time-to-kill-camels-according-to-bofa-risk-exec-1059172-1.html, archived at <http://perma.cc/5GT4-UR5F>.

105. Julie A. Hill, *Bank Capital Regulation by Enforcement: An Empirical Study*, 87 IND. L.J. 645, 696–97 (2012) (noting that regulators had broad discretion but were not at all diligent in enforcing them in the past ten years).

F. Risk Management

The risk management regime involved the most hands-off regulatory oversight mechanism prior to Dodd-Frank. To respond to increased complexity in financial markets as well as increased diversity of financial products, banks saw risk modeling as the most effective way to protect themselves from losses. Resulting risk models took many different forms but generally involved complex computer models that accounted for potential dangers to the firm, product line, or specific trade.¹⁰⁶ As banks relied more and more on these risk models to hedge their positions, regulators took note. But the regulators did not do so through comprehensive or thorough oversight of risk models. Instead, they stayed on the sidelines as banks developed and relied on these new management tools.¹⁰⁷

The risk management regime was born in the mid-1980s as firms grappled with unanticipated market shocks. After the stock market crash of 1987, many firms adopted technology-based risk management practices.¹⁰⁸ During this time, Value at Risk (“VaR”) measurements were initiated when JP Morgan’s CEO Dennis Weatherstone wanted an answer to the question, “How much could JPM lose if tomorrow turns out to be a relatively bad day?”¹⁰⁹ The purpose of the VaR regime is to determine how much exposure a firm has to downside risk based on highly sophisticated modeling.¹¹⁰ VaR modeling was labeled “the New Benchmark for Managing Financial Risk,” and there have been “over 200 books published on VaR since the October 1987 crash, roughly one a month.”¹¹¹

If VaR signaled a fundamental shift in risk modeling, firm-led stress testing (i.e., firms using computer models to determine the type and extent of loss they could withstand) was the second wave of reform in risk management, with “over 250 articles on stress testing in the past ten years, or more than one a fortnight.”¹¹² The risk management

106. See *Dangers of Delegating*, *supra* note 86, at 1 (discussing the combination of technological advances and financial innovation that allowed for the development of these sophisticated computer models beginning in the 1980s).

107. See *Code, Crash*, *supra* note 86, at 133.

108. Richard Griffiths & Shahid Chaudhri, *How to Avoid Another Failure of Risk Management* (Mar. 9, 2009), available at http://www.investment-strategy-wire.com/archive_1.html, archived at <http://perma.cc/8H4-6ZF9>.

109. Haldane, *supra* note 5, at 3.

110. Peter Conti-Brown, *A Proposed Fat-Tail Metric: Disclosure, Derivatives, and the Measurement of Financial Risk*, 87 WASH. U. L. REV. 1461, 1463 (2010).

111. Haldane, *supra* note 5, at 4.

112. See *id.* (“Stress testing has gained greater prominence and credibility within banks as a complementary risk management and capital planning tool to provide a different risk

regime coincided with a golden decade in banking. “Between October 1998 and June 2007, banks’ share prices increased almost 60%[,] and their balance sheets rose more than threefold.”¹¹³ Andrew Haldane compared the risk management system to Hans Christian Andersen’s fairy tale “The Emperor’s New Clothes.”¹¹⁴ Haldane analogized the risk models to the Emperor’s nonexistent clothing: banks flaunted their triumph over risk when they were, in fact, walking around naked for a decade.¹¹⁵ “The subprime market has played the role of the child in the fairytale,” Haldane wrote, “naively but honestly shifting everyone’s perceptions about how threadbare the financial system has become.”¹¹⁶ This following Section first discusses the creation of risk management and provides an overview of the types of regulation under the regime. Then, it reviews the various problems of risk management, including the difficulty of modeling future events based on past occurrences, the failure to account for systemic problems, and the misalignment of incentives.

1. Regulators and Risk

The rise of risk management as a vehicle for risk containment paralleled the rise of what has been labeled the “New Governance” regime in regulation. The term “New Governance” denotes an emerging system of regulatory governance in which the government and the private sector work together in dialogue to craft regulation—as opposed to the traditional system of top-down, government-dictated command-and-control regulation.¹¹⁷ Bank regulation during the rise of the risk management regime looked very much like a public-private partnership. In theory, regulators were to work with large firms to oversee firms’ internal risk management processes. In reality, regulators deferred to banks to model risk. Rather than critically engaging with risk models, regulators’ oversight was mainly aimed at assuring that banks had models in place.

perspective.”); *see also* BASEL COMM. ON BANKING SUPERVISION, PRINCIPLES FOR SOUND STRESS TESTING PRACTICES AND SUPERVISION 6 (May 2009), *available at* <http://www.bis.org/publ/bcbst147.pdf>, *archived at* <http://perma.cc/9FUU-7YRZ>.

113. Haldane, *supra* note 5, at 4.

114. *Id.* at 2.

115. *Id.* at 5.

116. *Id.*

117. Orly Lobel, *New Governance as Regulatory Governance*, (San Diego Legal Studies Paper No. 12-101, 2012), *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2179160/, *archived at* <http://perma.cc/7L6G-NKFZ>. For a synopsis of New Governance as applied to finance, see Saule Omorova, *Rethinking the Future of Self-Regulation in the Financial Industry*, 35 BROOK. J. INT’L L. 665, 666 (2010).

A U.S. Government Accountability Office (“GAO”) report released in 2009 states as a principle premise that “financial regulators have an important role in assessing risk management systems at financial institutions.”¹¹⁸ To assess whether a firm’s internal management is accurately controlling risks, bank examiners gather data from the firms and then assign a rating meant to assess the quality of the institution’s risk management system.¹¹⁹ Before the enactment of Dodd-Frank, this oversight was entity-specific with no coordinated measure to gauge system-wide risks. Nevertheless, each regulator engaged in highly technical modeling of institutional risks, most of which incorporated and evaluated the firm’s own risk-modeling formulas. Among the various risk-control measures used by regulators, the following were the most prominent:

- The FDIC’s CAMELS rating system uses a firm’s financial statements as well as on-site examinations to determine the firm’s condition with respect to capital adequacy, assets-management capability, earnings, liquidity, and sensitivity to market risk.¹²⁰
- The Federal Reserve has an “R” rating framework (which it has not released to the public) whose primary purpose is “assessing inherent risk and risk management practices of large financial institutions.”¹²¹ The Federal Reserve has a program for large, complex banking organizations that provides “continuous supervision” with a dedicated team assigned to each institution.¹²² The examiner considers “(1) board of directors and senior management oversight; (2) policies, procedures, and limits; (3) risk monitoring and management information system; and (4) internal controls for each of the risk areas.”¹²³
- The OCC has on-site examiners who assess a firm’s risk management practices, and the examiners’ findings are sent to the bank’s board of directors. OCC examiners assess the

118. U.S. GOV’T ACCOUNTABILITY OFFICE, GAO 09-499T, FINANCIAL REGULATION: REVIEW OF REGULATORS’ OVERSIGHT OF RISK MANAGEMENT SYSTEMS AT A LIMITED NUMBER OF LARGE, COMPLEX FINANCIAL INSTITUTIONS 22–24 (2009), *available at* <http://www.gao.gov/assets/130/121973.pdf>, *archived at* <http://perma.cc/6QPM-YK46>.

119. *Id.* at 3.

120. *Id.* at 10. Sensitivity to Market Risk is a new measure and foreshadows the move to a regulation by hypothetical. This indicator is meant to gauge how vulnerable a particular portfolio is to counterparty risk or systemic contagion.

121. *Id.*

122. *Id.*

123. *Id.* at 11.

- “quality, quantity, and overall direction of risks” in nine categories: strategic, reputation, credit, interest rate, liquidity, price, foreign currency translation, transaction, and compliance. Specifically, OCC examiners determine the quality of risk management by “assess[ing] policies, processes, personnel, and control systems in each category.”¹²⁴
- The SEC and FINRA (an independent securities regulator) “assess the risk management systems of large broker-dealers using discrete, but risk-focused examinations.”¹²⁵ These regulators primarily focus on “compliance with their rules and the Securities and Exchange Act of 1934.”¹²⁶ The SEC and FINRA conduct “regularly scheduled target examinations that focus on the risk areas identified in their risk assessment and on compliance with relevant capital rules and customer protection rules. At the largest institutions, SEC conducts examinations every three years, while FINRA conducts annual examinations of all broker-dealers.”¹²⁷

The GAO report noted that these various systems failed during the last financial crisis as many risks were unidentified or ignored by regulators.¹²⁸ Regulators admit that “they had not fully appreciated the extent of weaknesses [in risk management] until the financial crisis occurred and risk management systems were tested by events.”¹²⁹ Regulators also acknowledged that “they had relied heavily on management representations of risks.”¹³⁰ Among the various weaknesses in bank-run stress testing at institutions prior to the crisis, the GAO highlighted the institutional practice of relying on “*intuition*” to determine firms’ vulnerability to certain types of risk and found that senior managers often “questioned the need for additional stress testing, particularly for worst-case scenarios that they thought were implausible.”¹³¹

124. *Id.*

125. *Id.* at 13.

126. *Id.*

127. *Id.*

128. *Id.* at 3–4. For example, even though many recommendations by examiners were never addressed by institutions, little regulatory follow-up occurred. The regulators interviewed for the GAO study admit that “despite these identified weaknesses, they did not take forceful action—such as changing their assessments—until the crisis occurred because the institutions reported a strong financial position and senior management had presented the regulators with plans for change.” *Id.* at 16.

129. *Id.* at 17.

130. *Id.*

131. *Id.* at 23 (emphasis added).

Dodd-Frank streamlined risk management with industry-wide stress testing, discussed at length below, and the creation of the Financial Stability Oversight Council (“FSOC”).¹³² FSOC is now the primary regulator “charged with identifying risks to the financial stability of the United States; promoting market discipline; and responding to emerging risks to the stability of the United States’ financial system.”¹³³ The OCC is currently in the process of formalizing new risk management standards that represent “heightened expectations” for the banking industry.¹³⁴ Acknowledging insufficient enforcement of risk management standards before Dodd-Frank, the OCC plans to increase both its oversight and enforcement of their new standards.¹³⁵ It is currently working with the banking industry to finalize these rules. Industry experts view the new regulatory emphasis on standardization of risk management as a sign that “risk governance is here to stay and its importance will only increase over time.”¹³⁶

2. Problems with the Risk Management Regime

It is important to note the failures of the risk management regime here because they implicate regulation by hypothetical, which is an outgrowth of key risk management principles. For example, individual firms have been using stress testing for nearly two decades as a part of their risk management strategy.¹³⁷ However, the risk management system failed because it did not meet its main objective: protecting firms from losses due to unanticipated risks. In other words, the models failed to anticipate the risks that brought down the system.

132. U.S. DEPT OF THE TREASURY, FINANCIAL STABILITY OVERSIGHT COUNCIL CREATED UNDER THE DODD-FRANK WALL STREET REFORM AND CONSUMER PROTECTION ACT: FREQUENTLY ASKED QUESTIONS (Oct. 2010), <http://www.treasury.gov/initiatives/Documents/FAQ%20-%20FinancialStabilityOversightCouncilOctober2010FINALv2.pdf>, archived at <http://perma.cc/32WL-JD8C>.

133. *Financial Stability Oversight Council*, DEP’T OF THE TREASURY, <http://www.treasury.gov/initiatives/fsoc/Pages/home.aspx>, archived at <http://perma.cc/M558-NXAK> (last updated Apr. 25, 2013).

134. OCC Guidelines Establishing Heightened Guidelines for Certain Large Insured National Banks, Insured Federal Savings Associations, and Insured Federal Branches; Integration of CFR Parts 30 and 170, 79 FR 4282-01 (proposed Jan. 27, 2014), available at <http://occ.treas.gov/news-issuances/news-releases/2014/nr-occ-2014-4a.pdf>, archived at <http://perma.cc/HV7U-X3S2>.

135. *Id.*

136. DAVIS POLK & WARDWELL LLP, RISK GOVERNANCE: VISUAL MEMORANDUM ON GUIDELINES PROPOSED BY THE OCC (Jan. 29, 2014), http://www.dpw.com/sites/default/files/Risk.Governance.Visual.Memorandum.on_Guidelines.Proposed.by_the_OCC_.pdf, archived at <http://perma.cc/5GYX-8DZA>.

137. MARIO QUAGLIARIELLO, STRESS-TESTING THE BANKING SYSTEM 18 (2009).

“They failed Keynes’ test—that it is better to be roughly right than precisely wrong. With hindsight, these models were both very precise and very wrong.”¹³⁸ After the crisis, it seems that all risk modeling, including internal stress testing, was an unequivocal failure.¹³⁹ And modeling and stress testing not only failed by not preventing the financial crisis, they failed because, like Orpheus’s harp, they lulled regulators and firms alike into contented tranquility that all was well.

Many insightful commentators have identified problems with the risk management system in general and firm-run stress testing specifically.¹⁴⁰ The financial system readily admits that its risk modeling missed the mark: “A survey of 500 risk managers by KPMG in October [2008] found that 92% intended to review their risk management practices.”¹⁴¹ Generally, risk management might be criticized as a futile exercise that attempts to control the uncontrollable. Although this is not to say that it is useless. Indeed, risk management can give the firm a lot of useful information about its potential vulnerabilities. But it cannot be overrelied on as the antidote to risk. Specifically, three shortcomings of the risk management system—“black-swan bias,” the system’s failure to account for systemic risk, and the problematic incentives the system creates—are outlined below.

a. Modeling for the Future Based on the Past

In their attempt to predict the future, risk management models can be shortsighted. Namely, they suffer from two related phenomena: “black-swan bias” and “disaster myopia.” In 2007, Nassim Taleb’s book *Foiled by Randomness* explained the “black swan theory,” which refers to events that are outliers, have an extreme impact, and can only be

138. Haldane, *supra* note 5, at 2.

139. J.V. Rizzi, *Stress Tests Failed the Public*, AM. BANKER (Mar. 20, 2013, 11:50 AM), <http://www.americanbanker.com/bankthink/stress-tests-failed-the-public-1057668-1.html>, archived at <http://perma.cc/Y792-LC7L>; Til Schuermann, *The Fed’s Stress Tests Add Risk to the Financial System*, WALL ST. J. (Mar. 19, 2013, 7:08 PM), <http://online.wsj.com/article/SB10001424127887324532004578362543899602754.html>, archived at <http://perma.cc/BX45-299C>.

140. SENIOR SUPERVISORS GROUP, RISK MANAGEMENT LESSONS FROM THE GLOBAL BANKING CRISIS OF 2008 26 (2009).

141. Haldane, *supra* note 5, at 5; see also *Inadequate Risk Management Models Continue to Expose the Global Financial System to Great Risks*, MARKETWIRED.COM (Apr. 19, 2010, 12:01 AM) (finding that “[c]urrent quantitative risk management models simply do not work in practice”), <http://www.marketwired.com/press-release/inadequate-risk-management-models-continue-expose-global-financial-system-great-1169041.htm>, archived at <http://perma.cc/LC8T-3Z2D>.

predicted or explained after they have occurred.¹⁴² Black-swan events cannot be predicted but are incredibly consequential. History is littered with such unanticipated events, but people do not prepare for them because black-swan events represent large deviations from the norm. Taleb's theory proved quite prescient; in 2007, he wrote at length about the financial system's failure to predict and prepare for risk: "Go ask your portfolio manager for his definition of 'risk,' " and odds are that he will supply you with a *measure* that *excludes* the possibility of the Black Swan—hence one that has no better predictive value for assessing the total risks than astrology."¹⁴³

The underlying problem, then, for risk management models is that any model that uses past events to predict the probability of future events suffers from a black-swan bias. For example, many risk models prior to 2005 did not account for the possibility of a precipitous decline in national housing prices.¹⁴⁴ The models instead accounted for inflation risk (which the market experienced in the 1970s and 1980s) and other recessionary events, such as stock market declines.¹⁴⁵ In analyzing why stress testing failed, the Basel Committee blamed the use of "historical statistical relationships to assess risk."¹⁴⁶ "They assume that risk is driven by a known and constant statistical process—i.e., they assume that historical relationships constitute a good basis for forecasting the development of future risks. The crisis has revealed serious flaws with relying solely on such an approach."¹⁴⁷

This is not to say that historical risks should not be modeled and prepared for, lest history repeat itself in catastrophic ways. Markets are cyclical, and events such as high unemployment, inflation, and low GDP occur with each recession. It is imperative that firms and regulators model and prepare for these events as they are likely to recur periodically. However, those events are lagging indicators of a problem. The real challenge is recognizing bubbles that cause

142. NASSIM N. TALEB, *FOOLED BY RANDOMNESS: THE HIDDEN ROLE OF CHANCE IN LIFE AND IN THE MARKETS* 26 (2005).

143. Nassim N. Taleb, *The Black Swan: The Impact of the Highly Improbable*, N.Y. TIMES (Apr. 22, 2007), http://www.nytimes.com/2007/04/22/books/chapters/0422-1st-taleb.html?pagewanted=all&_r=0, archived at <http://perma.cc/XCH7-G3AY>.

144. *Why Economists Failed to Predict the FINANCIAL Crisis*, KNOWLEDGE@WHARTON (May 13, 2009), <https://knowledge.wharton.upenn.edu/article/why-economists-failed-to-predict-the-financial-crisis/>, archived at <http://perma.cc/4LMH-74TE>.

145. See Eamonn K. Moran, *Wall Street Meets Main Street: Understanding the Financial Crisis*, 13 N.C. BANKING INST. 5, 53 (2009) (noting Citigroup's failure to account for a "national housing downturn"); *Dangers of Delegating*, *supra* note 86, at 4 (discussing models using "historical data to calculate probabilities of future risk").

146. BASEL COMM. ON BANKING SUPERVISION, *supra* note 67, at 3.

147. *Id.*

irrationality and overvaluation, and identifying risks taken on the assumption that a certain event could not occur. Not all crises are created by bubbles,¹⁴⁸ but firms are often more vulnerable to overextension during a boom. And as others have thoroughly documented, bubbles are vexingly difficult to identify when one is in the midst of a bubble.¹⁴⁹

Not only is it difficult to predict and prepare for black swans, but it is also difficult to imagine a severe crisis when one has not occurred in the recent past. Andrew Haldane labels this phenomenon “Disaster Myopia”—that is, “the agents’ propensity to underestimate the probability of adverse outcomes, in particular small probability events from the distant past.”¹⁵⁰ While all bubbles and busts display similar patterns, each crisis has a unique and unprecedented trigger. In other words, while we repeatedly make faulty assumptions (like underestimating unprecedented risks), we never make the same faulty assumption twice—once we have experienced a national decline in housing prices, we can imagine it happening again.

Shortsightedness in risk management can be described as a problem of either scale or scope. Did previous forms of risk management fail because they did not test against sufficiently adverse degrees of stress (scale) or because they failed to account for low-probability events (scope)? The answer has large implications for the viability of regulation by hypothetical because a problem of scale can more easily be addressed (and the FRB attempted to test firms against “severely adverse” scenarios in the latest round of stress testing¹⁵¹) than a problem of scope (because it will always be difficult to account for the unimaginable).¹⁵²

148. See Claudio Borio, *Change and Consistency in the Financial System: Implications for Financial Distress and Policy*, in *THE STRUCTURE AND RESILIENCE OF THE FINANCIAL SYSTEM* (Christopher Kent & Jeremy Lawson eds., 2007), available at <http://www.rba.gov.au/publications/conf/2007/pdf/borio.pdf>, archived at <http://perma.cc/638S-AQ27> (“[T]he most classic source of financial distress [is the] overextension in risk taking and balance sheets in good times, masked by the veneer of a vibrant economy.”).

149. CHARLES P. KINDLEBERGER & ROBERT ALIBER, *MANIAS, PANICS, AND CRASHES: A HISTORY OF FINANCIAL CRISES* (5th ed. 2005); GERDING, *supra* note 93 (discussing the hypothesis that the economic climate surrounding bubbles causes a weakening of the financial regulation that would potentially avert a crisis).

149. Haldane, *supra* note 5, at 6.

150. *Id.*

151. BD. OF GOVERNORS OF THE FED. RESERVE SYS., *DODD-FRANK ACT STRESS TEST 2013 4* (2013).

152. The Basel Committee takes an optimistic view toward the fixability of stress testing emphasizing that firms should use more severe crisis simulations. *BASEL COMM. ON BANKING SUPERVISION*, *supra* note 67, at 4–5. Basel also suggests that the stress testing lacked some scope

b. Accounting for System-Wide Problems

The financial system's complexity and interconnectedness is unprecedented, making it extremely difficult for an individual firm to predict and manage systemic risk using models. Firms are exposed not only to the risk that their counterparties might face but also to the risks confronted by their counterparties' counterparties. Individual firms, therefore, are susceptible to many risks that they cannot control or account for in their models. This problem could be addressed by more regulatory involvement in risk management. Regulators are able to collect information from more market players in order to measure systemic vulnerabilities. Dodd-Frank formed FSOC to identify risks across the financial sector,¹⁵³ but it is too soon to determine the Counsel's success. In addition, as discussed below, stress testing with an eye toward measuring systemic risk could counter individual firm myopia.

c. Incentives

Proper risk modeling must incentivize firms to envision and prepare for the worst-case scenario. However, individual firms are unlikely to forgo high profits in favor of caution, especially when their counterparties are engaged in highly leveraged markets. During the recent financial crisis, for example, many troubled firms entered the subprime market because their counterparties were making large profit margins on these high-risk products, such as Mortgage-Backed Securities, Credit Default Swaps, and Collateralized Debt Obligations. Citibank CEO, Charles O. Prince, put the point this way: “[A]s long as the music is playing, you’ve got to get up and dance.”¹⁵⁴

Bailouts for TBTF firms also pose problematic incentives. Indeed, the more a bank stands to lose, the more likely it is to be bailed out—“if a bank owes a small amount it is their problem, a large amount it is the authorities [*sic*].”¹⁵⁵ Therefore, large banks like Citibank will not be rewarded for avoiding risky markets that their counterparties are engaged in for a few reasons: (1) they will be sacrificing the high profits going to their competitors; (2) due to the interconnected market,

and should have considered other types of risk—such as contractual or reputation risks in order to be more effective.

153. U.S. DEP'T OF THE TREASURY, *supra* note 132.

154. *Citi Chief on Buyouts: 'We're Still Dancing,'* DEALBOOK (July 10, 2007, 10:54 AM), <http://dealbook.nytimes.com/2007/07/10/citi-chief-on-buyout-loans-were-still-dancing/>, archived at <http://perma.cc/T5WG-DMZZ>.

155. Haldane, *supra* note 5, at 12.

they will suffer from the failures of their counterparties in any event; and (3) because of their size, they will likely be bailed out in the event of their own failure. In short, moral hazard is a significant problem.¹⁵⁶

There is also an important incentive problem within a bank itself. Many risk managers are not incentivized to run truly revelatory stress tests because if their firms' weaknesses are exposed, the risk managers lose bonuses and regulators would intervene—again leading to lower bonuses.¹⁵⁷ Therefore, stress testing “was not being meaningfully used to manage risk. Rather, it was being used to manage regulation. . . . [It] was not so much regulatory arbitrage as regulatory camouflage.”¹⁵⁸

III. DODD-FRANK'S NEW STRAIN OF REGULATION—REGULATING BY HYPOTHETICAL

The regulation by hypothetical regime is an extension of the risk management regime, with the added twist of governmental approval. I have described regulation by hypothetical as a new strain of regulation not because the methodology of testing balance sheets to future hypotheticals is novel, but because hypothetical analysis is now mandated and managed by government officials and results in regulatory responses, such as mandated capital enhancements, firm restructuring, or other remedial measures. Prior to Dodd-Frank, risk management was an internal firm affair with limited regulatory oversight—regulators oversaw the firm's risk management practices but did not independently gauge risk in any serious way. Dodd-Frank introduces, for the first time, a regulator-run process of measuring risk at both entity and systemic levels using the regulators' own models and tests. This new regime, which uses hypothetical future scenarios to test firm strength, is manifest in two of the most important mandates of Dodd-Frank: stress testing and living wills.

The Sections below consider both of these new agency oversight tools in depth and situate them in the latest regulatory regime: regulation by hypothetical. This new regime, like all other regulatory

156. PAUL KRUGMAN, THE RETURN OF DEPRESSION ECONOMICS AND THE CRISIS OF 2008 63 (2009) (“[While] ‘moral hazard’ has its origins in the insurance industry . . . [e]ventually the term came to refer to any situation in which one person makes the decision about how much risk to take, while the other person bears the cost if things go badly.”); see Peter L. Bernstein, *The Moral Hazard Economy*, 87 HARV. BUS. REV. (SPECIAL ISSUE) 101 (2009); See also William A. Lovett, *Moral Hazard, Bank Supervision and Risk-Based Capital Requirements*, 49 OHIO ST. L.J. 1365, 1367 (1989) (discussing a parallel example of moral hazard in the case of First Republic Bank in the late 1980s).

157. Haldane, *supra* note 5, at 12–13.

158. *Id.* at 13.

innovations, was created to modernize a supervisory structure that struggles to keep pace with a rapidly changing banking landscape.

A. Stress Tests

The term “stress test” is borrowed from the engineering and medical world. The most common diagnostic medical test stress test involves use of electrocardiogram (EKG) and blood tests to determine the heart’s ability to withstand external stress, which is induced by heavy exercise or use of targeted drugs.¹⁵⁹ The test is meant to assess vulnerability or weakness in the heart by exposing it to adverse conditions. The theory is that pushing the heart to the edge will enable a doctor to distinguish a diseased and compromised heart from a healthy one. The doctor can then use preventative care or ex ante intervention to avoid heart failure. Financial stress tests are meant to work the same way: by exposing a financial company to external stress, regulators are able to assess weaknesses or vulnerabilities in institutions. One important difference between a cardiac stress test and a financial stress test, which will be elaborated more fully below, is that the external stress that is placed on the heart is actual stress; the heart must actually work harder and pump more blood when an individual runs on a treadmill. In contrast, financial stress tests involve merely hypothetical exercises that expose bank balance sheets to various adverse “what-if” scenarios. Because financial stress tests do not cause actual financial distress, their diagnostic value is reduced.

Financial firms started using their own stress testing in the mid-1980s as part of their internal risk management structure. During this time, some regulators also began to conduct targeted stress tests on a few firms.¹⁶⁰ The Federal Housing Enterprise Financial Safety and Soundness Act of 1992 (“FHEFSSA”) required the Office of Federal Housing Enterprise Oversight (“OFHEO”) to conduct a periodic stress test to measure risk in Government Sponsored Entities (“GSEs”): Fannie Mae and Freddie Mac.¹⁶¹ Although these tests have been ongoing, they failed (to say the least) in predicting the catastrophic insolvencies of both these entities.¹⁶² This failure was attributable to

159. See, e.g., *Exercise Stress Test*, MEDLINE PLUS (June 18, 2012), <http://www.nlm.nih.gov/medlineplus/ency/article/003878.htm>, archived at <http://perma.cc/9D34-DBR3>.

160. For an analysis of the history of stress testing, see Weber, *supra* note 17, at 2280–84.

161. Housing and Community Development Act of 1992 §§ 1311, 1361, 12 U.S.C. §§ 4511, 4611 (2012).

162. While the OFHEO supervised these GSEs, it

was required to develop a risk-based capital regulation based on a stress test. The model and risk-based capital rule took OFHEO almost a decade to craft and finalize

shortcomings in the testers' model, which used historical data in their hypothetical scenarios, as well as the success of the GSEs in persuading their regulators to minimize "stress" situations to avoid increased capital requirements that they argued would reduce their return on equity.¹⁶³

Financial firms' adoption of stress testing can be linked to Long Term Capital Management (LTCM), a large hedge fund that achieved phenomenal success for a time by using highly leveraged investments based on mathematical models of risk.¹⁶⁴ The firm was supposed to represent the future of finance: using complex models, specifically the Nobel Prize-winning Scholes-Merton model, to ward off risks.¹⁶⁵

At the same time as returns were being boosted by bigger balance sheets and financed by higher leverage, risk was being held in check by a shift in the technological frontier of risk management. A new era had dawned, one with simultaneously higher return and

owing to the struggles of the new agency, the complexity of the stress test, and the politics associated with trying to regulate two very large and growing financial institutions viewed as crucial to the U.S. housing sector. Nevertheless, once in effect, the stress test was hailed as "state of the art" and as a mechanism to ensure that the two GSEs remained financially viable. Indeed, prominent economists concluded that if Fannie Mae and Freddie Mac could meet the OFHEO risk-based capital stress test, their risk of insolvency was "effectively zero."

W. SCOTT FRAME, CHRISTOPHER GERARDI & PAUL S. WILLEN, SUPERVISORY STRESS TESTS, MODEL RISK, AND MODEL DISCLOSURE: LESSONS FROM THE OFHEO 2 (2013); *see also* JOHN WEICHER, REFORM OF THE HOUSING FINANCE SYSTEM 3 (2010) ("[T]he new financial safety and soundness regulator (OFHEO) spent more than five years putting it in place and evaluating the GSEs. Then it turned out that the enacted stress test was so weak that the required capital level to be 'adequately capitalized' was less than the 2.5% minimum capital . . .").

163. Weber describes the reasons for the failure of these stress tests:

(1) OFHEO, [the regulator], not the GSEs, is responsible for conducting the test so no local knowledge is harnessed and corporate governance is unaffected; (2) the test is applied with respect to the GSEs' asset portfolios as they exist at a fixed point in time; (3) the variables that are stressed and, in many cases, the methodologies by which they are stressed, are also fixed, specified in FHEFSSA itself; (4) the stress scenarios are drawn from historical precedents, meaning that the stress test assumes, at least with respect to any single variable, that the worst is in the past; (5) variables are isolated and they do not interact dynamically; and (6) the outcome of the test is a binary pass-fail verification that does not prompt further action. Moreover, by tying the stress test exercise directly to a capital adequacy regime that required compliance with precise rules, Congress entrenched an adversarial, top-down regulatory relationship. OFHEO's responses to the GSEs' comments, published in the Federal Register, reflect a consistently adversarial relationship in which the GSEs, perceiving that increases to capital requirements would reduce their return on equity, advocated at nearly every juncture for the attenuation of the stressed conditions used in the tests. "Stress" was a periodically negotiated event rather than a continuous subject of deliberation within the firm and between the firm and its regulators. During these one-off negotiations, the regulator was deliberating on stressed conditions, and the regulated entity minimized threats in order to achieve lower capital requirements.

Weber, *supra* note 17, at 2283–84.

164. Xiaowei Guo, *The Fall of Long-Term Capital Management*, 1 J. BANKING, FIN. & ECON. 1, 2–3 (2008).

165. *Id.*

lower risk. This miracle came care of a compelling combination of cavalier risk-takers and roundhead risk-managers. Or so ran the rhetoric.¹⁶⁶

However, their modeling failed. In 1998, the firm lost \$4.6 billion in four months due to bad investments in Asian markets. The FRB bailed out the fund. It was the first TBTF firm bailed out by the federal government, with more to come.¹⁶⁷

During this era of high leverage and high profits, regulators mostly stayed on the sidelines. Any regulatory involvement with stress testing during this time involved regulators recommending that firms conduct them. For example, in 1993, the OCC, faced with the proliferation of complex derivatives transactions, directed bank management to “facilitate stress testing” in order to “evaluate risk exposures under various scenarios that represent a broad range of potential market movements and corresponding price behaviors and that consider historical and recent market trends.”¹⁶⁸

The next year, the Basel Committee recommended the use of stress testing to assess the effect on bank balance sheets of hypothetical future adverse events.¹⁶⁹ Basel II again required banks to have in place “sound stress testing practices” that identify “unfavorable effects on a bank’s credit exposures.”¹⁷⁰ Even so, in 2006, during the early phase of the financial crisis, an FRB survey of bank stress-testing practices found that “there was neither a well-developed set of best practices nor supervisory guidance in this area at the time.”¹⁷¹ The study concluded:

[N]one of the institutions had an integrated stress testing program that incorporated all major financial risks enterprise-wide, nor did they test for scenarios that would render

166. Haldane, *supra* note 5, at 4.

167. Joe Nocera, *Risk Mismanagement: What Led to the Financial Meltdown*, N.Y. TIMES MAG. (Jan. 2, 2009), available at http://www.nytimes.com/2009/01/04/magazine/04risk-t.html?pagewanted=all&_r=0, archived at <http://perma.cc/X2ZH-9DPQ>.

168. OFFICE OF THE COMPTROLLER OF THE CURRENCY, BANKING CIRCULAR NO. 277, RISK MANAGEMENT OF FINANCIAL DERIVATIVES (1993). The OCC followed up in 1996 with another push toward stress testing designed to “evaluate the bank’s exposure in a highly stressed market scenario.” OFFICE OF THE COMPTROLLER OF THE CURRENCY, BULLETIN 1996-43, CREDIT DERIVATIVES (1996), available at <http://www.occ.gov/news-issuances/bulletins/1996/bulletin-1996-43.html>, archived at <http://perma.cc/PF8B-JLRL>.

169. BASEL COMM. ON BANKING SUPERVISION, RISK MANAGEMENT GUIDELINES FOR DERIVATIVES ¶ III.6 (1994), available at <http://www.bis.org/publ/bcbsec211.pdf>, archived at <http://perma.cc/RS8Y-KP5Z>.

170. BASEL COMM. ON BANKING SUPERVISION, *supra*, note 67, at 96.

171. U.S. GOV’T ACCOUNTABILITY OFFICE, GAO-09-499T, FINANCIAL REGULATION: REVIEW OF REGULATORS’ OVERSIGHT OF RISK MANAGEMENT SYSTEMS AT A LIMITED NUMBER OF LARGE, COMPLEX FINANCIAL INSTITUTIONS 23 (2009), available at <http://www.gao.gov/products/GAO-09-499T>, archived at <http://perma.cc/32SK-8QBV>.

them insolvent. [Instead,] institutions were stress testing the impact of adverse events on individual products and business lines rather than on the institution as a whole.¹⁷²

Federal Reserve officials stated that “the current crisis had gone beyond what they had contemplated for a worst-case scenario, and . . . that they would probably have faced significant resistance had they tried to require the institutions to do stress tests for scenarios such as downgrades in counterparties’ credit ratings because such scenarios appeared unlikely.”¹⁷³

Dodd-Frank, for the first time, codifies stress tests of financial institutions as a mandatory and recurrent feature of bank supervision. The regulatory purpose of these tests is two-fold. First, they are diagnostic. According to the Federal Reserve, these tests “are intended to provide BHC management and boards of directors, the public, and supervisors with forward-looking information to help identify downside risks and the potential effect of adverse conditions on capital adequacy of these large banking organizations.”¹⁷⁴ Second, the stress tests’ results will drive the design of future regulation. The FRB states that stress testing is “a valuable supervisory tool that provides a forward-looking assessment of large financial institutions’ capital adequacy under hypothetical economic and financial market conditions.”¹⁷⁵

As mentioned above, prior to passage of the Act, stress testing in banks was, at most, recommended by regulators but conducted by the banks themselves. Dodd-Frank now requires the Federal Reserve to perform stress tests of systemically important firms.¹⁷⁶ The FRB’s new regulation YY—referred to as “Dodd-Frank Act Stress Tests” or “DFASTs”—was codified in 2011 and requires the FRB to conduct annual stress testing of “covered companies.”¹⁷⁷ Covered companies include banks with consolidated assets over \$50 billion and FSOC-

172. *Id.*

173. *Id.* at 23–24.

174. FED. RESERVE, DODD-FRANK ACT STRESS TEST 2013: SUPERVISORY STRESS TEST METHODOLOGY AND RESULTS 3 (2013), available at http://www.federalreserve.gov/newsevents/press/bcreg/dfast_2013_results_20130314.pdf, archived at <http://perma.cc/3PG3-PJGU>.

175. Official Board Commentary on Regulation II, 12 C.F.R. § 252 app. A (2014).

176. The Dodd-Frank Act requires all financial companies that have more than \$10 billion in total consolidated assets and are regulated by a federal financial regulatory agency to conduct capital stress tests at least annually. The Federal Reserve finalized those requirements for BHCs with between \$10 billion and \$50 billion in assets and state member banks and savings and loan holding companies with over \$10 billion in assets on October 9, 2012. See 12 C.F.R. § 252.132 (2014).

177. *Dodd-Frank Act Stress Tests*, THE FEDERAL RESERVE (June 17, 2014), <http://www.federalreserve.gov/bankinforeg/dfa-stress-tests.htm>, archived at <http://perma.cc/FC2F-2ZD3>.

designated “systemically significant” institutions.¹⁷⁸ Dodd-Frank also mandates that covered companies conduct their own semiannual stress tests using the same scenarios assessed by the FRB itself, and a “mid-cycle” stress test using other adverse scenarios.¹⁷⁹ The FRB conducted its first tests in April 2009. In 2011 and in 2012, the FRB conducted a Comprehensive Capital Analysis and Review (CCAR), which was similar to a stress test but with a narrower focus of determining whether the firms had enough capital to withstand an adverse economic scenario.¹⁸⁰ Full-scale FRB stress testing occurred again in 2013.¹⁸¹

During the tests, the Federal Reserve posited adverse financial scenarios that included lowered housing prices, increased unemployment, and a dip in the GDP, among other factors.¹⁸² These scenarios were intended to highlight vulnerabilities in each firm and to ensure that firms had enough Tier 1 capital to buffer their potential losses without becoming insolvent.¹⁸³ Firms that failed the tests were required to raise more capital either on the private market or through arrangements made with the FRB itself.¹⁸⁴

The stress tests were envisioned as a diagnostic endeavor to determine which firms could withstand the next crisis and which could not. However, the tests and their results quickly became a way for the Federal Reserve to calm the markets and restore confidence in the banking system, which is a major aspect of the FRB’s dual role.¹⁸⁵ Thus, in 2009, after the first round of stress tests, the FRB publicized

178. 12 U.S.C. § 5365(a) & (i)(1) (2012); 12 C.F.R. § 252.132(e).

179. See 12 C.F.R. § 252.144(b); *id.* § 252.145(b); Supervisory and Company-Run Stress Test Requirements for Covered Companies, 77 Fed. Reg. 62,378, 62,387 (Oct. 12, 2012) (“For the annual stress test, covered companies will use the same scenarios as the Board will use for its supervisory stress analysis.”).

180. *Comprehensive Capital Analysis and Review*, THE FEDERAL RESERVE (June 24, 2014), <http://www.federalreserve.gov/bankinfo/ccar.htm>, archived at <http://perma.cc/4SFA-HKCK>.

181. Press Release, The Fed. Reserve, Stress Test Methodology and Results (Mar. 7, 2013), available at, <http://www.federalreserve.gov/newsevents/press/bereg/20130307a.html>, archived at <http://perma.cc/8RXQ-NF7B>.

182. *Id.*

183. *Id.*

184. Alexander Abramovich, *Comparative Analysis of Stress Testing in the United States and Europe*, 15 N.C. BANKING INST. 333, 338–39 (2011). See generally Andru E. Wall, *Stress Tests & Market Discipline*, 30 BANKING & FIN. SERVICES POL’Y REP. 1 (2011) (analyzing whether transparent bank stress tests can improve market conduct).

185. See CONG. OVERSIGHT PANEL, JUNE OVERSIGHT REPORT: STRESS TESTING AND SHORING UP BANK CAPITAL 10-26, B-1 (2009); Edmund L. Andrews & Eric Dash, *U.S. Government Offers Details of Bank Stress Test*, N.Y. TIMES (Feb. 26, 2009), http://www.nytimes.com/2009/02/26/business/economy/26banks.html?_r=0, archived at <http://perma.cc/Y9R9-5EDG>.

the results, though not the methodology.¹⁸⁶ The market quickly reacted, and the stock price of each of the passing firms increased, some by as much as ninety-five percent.¹⁸⁷ Releasing the methodology of the stress tests would make the tests more effective by allowing industry experts to expose weaknesses in the models. However, if the methodology was released and criticized by experts, the market-calming objective would not be met. In the alternative, regulators could conduct stress tests and not release the results at all, which would not calm markets but could lead to more rigorous stress testing geared toward diagnosing weakness.

B. SCAP vs. CCAR

The FRB has conducted two “Supervisory Capital Assessment Programs” (“SCAPs”) exercises thus far: one in 2009 and one in 2013.¹⁸⁸ In addition, the FRB conducted two Comprehensive Capital Analysis and Reviews (“CCARs”) in 2011 and 2012.¹⁸⁹ According to the FRB, SCAP was designed to “help[] bank supervisors measure whether a Bank Holding Company (‘BHC’) has enough capital to support its operations throughout periods of stress.”¹⁹⁰ The CCAR is “a supervisory assessment by the Federal Reserve of the capital planning processes and capital adequacy of large, complex, bank holding companies.” Furthermore, it is “the central element of the Federal

186. The FRB has released the rough outlines of its testing methodology and has explained that it used its own models in determining outcomes. However, the FRB has not released the details of its models or how those models were applied to individual banks.

187. Wall, *supra*, note 184, at 1–2 (noting that credit default swap spreads also increased for four banks, indicating more confidence in the banks as a result of the stress tests).

188. BD. OF GOVERNORS OF THE FED. RESERVE SYS., THE SUPERVISORY CAPITAL ASSESSMENT PROGRAM: DESIGN AND IMPLEMENTATION (2009), available at <http://www.federalreserve.gov/bankinfo/bcreg20090424a1.pdf>; archived at <http://perma.cc/4UQD-VBFP> [hereinafter SCAP DESIGN & IMPLEMENTATION]; BD. OF GOVERNORS OF THE FED. RESERVE SYS., COMPREHENSIVE CAPITAL ANALYSIS AND REVIEW 2013: ASSESSMENT FRAMEWORK AND RESULTS (2013), available at <http://www.federalreserve.gov/bankinfo/ccar-2013-results-20130314.pdf>, archived at <http://perma.cc/U9WU-8HVW> [hereinafter 2013 CCAR ASSESSMENT FRAMEWORK].

189. SCAP DESIGN & IMPLEMENTATION, *supra*, note 188; BD. OF GOVERNORS OF THE FED. RESERVE SYS., COMPREHENSIVE CAPITAL ANALYSIS AND REVIEW: OBJECTIVES AND OVERVIEW, (2011), <http://www.federalreserve.gov/newsevents/press/bcreg/bcreg20110318a1.pdf>, archived at <http://perma.cc/5LX4-32T6> [hereinafter 2011 CCAR OBJECTIVES]; BD. OF GOVERNORS OF THE FED. RESERVE SYS., COMPREHENSIVE CAPITAL ANALYSIS AND REVIEW 2012: METHODOLOGY AND RESULTS FOR STRESS SCENARIO PROJECTIONS (2012), available at <http://www.federalreserve.gov/newsevents/press/bcreg/bcreg20120313a1.pdf>, archived at <http://perma.cc/JHQ3-K9HF> [hereinafter 2012 CCAR METHODOLOGY AND RESULTS]; 2013 CCAR ASSESSMENT FRAMEWORK, *supra*, note 188.

190. FED. RESERVE, DODD-FRANK ACT STRESS TEST 2014: SUPERVISORY STRESS TEST METHODOLOGY AND RESULTS 1 (2014), available at <http://www.federalreserve.gov/newsevents/press/bcreg/bcreg20140320a1.pdf>, archived at <http://perma.cc/524T-UGG8>.

Reserve's approach to ensuring that large BHCs have thorough and robust processes for managing their capital resources, supported by effective risk measurement and risk management practices."¹⁹¹ The SCAP and CCAR are similar in purpose, and starting in 2014, the CCAR Program will be subsumed into the 2014 Capital Plan Review program, which will apply in an identical manner to all covered companies.¹⁹²

Although both exercises measure the same thing (capital adequacy) at the same firms (large BHCs), they function in different ways. Within the framing of hypothetical regulation, SCAPs fit into the new frontier of regulator-designed hypothetical testing, and CCAR is only an extension of already functioning risk management protocols. For SCAP, "the Federal Reserve uses a standardized set of capital action assumptions that are specified in the Dodd-Frank stress test rules," which are created by the regulator.¹⁹³

In measuring how firm balance sheets will react to hypothetical stress, both exercises use a common formula across firms that is based on what similar firms have done in the past.¹⁹⁴ The FRB takes this approach because it admits that future capital actions are "uncertain."¹⁹⁵ For the CCAR, the FRB uses a BHC's own planned capital actions to assess whether the "BHC would be capable of meeting supervisory expectations for minimum capital ratios if stressful conditions emerged."¹⁹⁶ In other words, with SCAP, the FRB

191. 2012 CCAR METHODOLOGY AND RESULTS, *supra* note 189, at 4.

192. See BD. OF GOVERNORS OF THE FED. RESERVE SYS., COMPREHENSIVE CAPITAL ANALYSIS AND REVIEW 2014: SUMMARY INSTRUCTIONS AND GUIDANCE 1–2 (2013) [hereinafter 2014 CCAR INSTRUCTIONS], *available at* <http://www.federalreserve.gov/newsevents/press/bcreg/bcreg20131101a2.pdf>, *archived at* <http://perma.cc/9TWY-92T7>.

193. BD OF GOVERNORS OF THE FED. RESERVE SYS., COMPREHENSIVE CAPITAL ANALYSIS AND REVIEW 2014: ASSESSMENT FRAMEWORK AND RESULTS 21, box 3 (2014), *available at* <http://www.federalreserve.gov/newsevents/press/bcred/ccar20140326.pdf>, *archived at* <http://perma.cc/NY7Y-45W9>.

194. *Id.* The formula assumes that common stock dividends are consistent from last year, scheduled payments on capital instruments "eligible for inclusion in the numerator of a regulatory capital ratio" are paid, and there are no repurchases of common stock. Finally, the assumptions do not factor in issuances "of new common stock, preferred stock, or other instrument that would be included in regulatory capital, except for common stock issuance associated with expensed employee compensation." *Id.* at 21 box 3 & n.2.

195. See *id.* ("[F]uture capital actions . . . will not be reflected in a company's projected regulatory capital for the purpose of the company-run stress tests because of the uncertainty of these actions.")

196. *Id.* at box 3. The FRB states that the CCAR "focuses on the risk management and management practices supporting organizations' capital adequacy assessments, including their ability to deliver credible inputs to their loss estimation techniques, as well as the governance processes around capital planning practices." Policy Statement on the Scenario Design Framework for Stress Testing, 12 C.F.R. § 252 app. A (2014).

predicts how capital might be used and depleted while, with CCARs, it defers to the firms' own statements and plans to determine whether capital will remain sufficient. This Article focuses on SCAPs because they represented an unalloyed adoption of regulation by hypothetical.

C. SCAP Methodology

The FRB designed SCAP to collect as much information as possible about each firm's loss rates and resource availability, thereby illuminating potential losses and revenues for weaker-than-expected economic conditions.¹⁹⁷ The first SCAP implementation involved over 150 examiners and economists.¹⁹⁸ For this first round of SCAP testing in 2009, the selected BHCs estimated potential losses on a variety of assets and trading positions¹⁹⁹ under two alternative macroeconomic scenarios. The BHCs also projected the resources they believed were available to absorb losses over two years under both macroeconomic scenarios.²⁰⁰

Teams of regulators evaluated categories of assets, revenues, and reserves, and "engaged with the firms . . . to obtain additional information necessary to support the firms' estimates."²⁰¹ These regulators also reviewed and evaluated each firm's quantitative methods, which the firms had used to project losses and resources to create key assumptions.²⁰² The FRB took these actions to create a picture of each firm's portfolio, underwriting practices, and risk management practices, although no actual interviews or evaluations of individuals at the firms were conducted.²⁰³ To ensure consistency across all firms, the teams used a single, unitary quantitative method to evaluate all the firms' estimates.²⁰⁴

197. SCAP DESIGN & IMPLEMENTATION, *supra* note 188, at 11.

198. The Federal Reserve released a white paper describing the methodology and implementation of its SCAP program. Press Release, Bd. of Governors of the Fed. Reserve Sys., Board Publishes White Paper on Process and Methodologies Employed by Federal Banking Supervisory Agencies in Capital Assessment of Large U.S. Bank Holding Companies (Apr. 24, 2009), available at <http://www.federalreserve.gov/newsevents/press/bcreg/20090424a.htm> archived at, <http://perma.cc/QXF7-DPLB>.

199. Such as "loans, securities, and trading positions, as well as pre-provision net revenue (PPNR) and the resources available from the allowance for loan and lease losses (ALLL)." SCAP DESIGN & IMPLEMENTATION, *supra* note 188, at 4.

200. *Id.*

201. *Id.*

202. *Id.*

203. *Id.*

204. *Id.*

In 2009, the FRB team used two scenarios to conduct the stress tests: a baseline scenario and a more adverse scenario.²⁰⁵ The two scenarios were meant to mimic recessionary conditions and took into account general macroeconomic factors, with an emphasis on local housing prices because of banks' recent, heavy mortgage lending. The baseline projection built on forecasts made in 2009 by a group of professional economists that reflected their "consensus view about the depth and duration of the recession."²⁰⁶ The more adverse scenario was not intended to be a realistic assessment of what would likely happen, but rather what could happen if the recession was longer and deeper than anticipated. The more adverse scenario "reflected the possibility that the economy could turn out to be appreciably weaker than expected under the baseline outlook."²⁰⁷ The FRB designed the test to "reflect conditions that are severe but plausible."²⁰⁸

The firms' balance sheets were divided into several categories and the banks were asked to estimate their projected losses under all of the selected classes of loans, under both the baseline and more adverse scenarios.²⁰⁹ The FRB determined projected losses using a

205. *See id.* at 5 (describing the two scenarios).

206. *Id.* The baseline scenario was consistent with projections from the Consensus Forecasts, the Blue Chip survey, and the Survey of Professional Forecasters, and was designed to show a consensus of the recession's duration and depth. In addition, the FRB states that "the assumptions for house prices in the baseline economic outlook are consistent with the path that was implied by future prices for the Case-Shiller 10-city Composite index in late February and the average response to a special question on house prices in the Blue Chip survey." *Id.* However, for the more adverse scenario, house prices were held to be ten percent lower at the end of 2010. *Id.*

207. *Id.* The Federal Reserve never claimed its economic predictions would be inerrant, instead contending the predictions could be helpful to get a broad view of risk. *See id.* at 10 ("The future path of GDP growth, unemployment, and home prices . . . are unknown, with a wide range of plausible outcomes . . . this type of exercise can be extremely useful in helping . . . understand a BHC's risk, especially in periods of high uncertainty."); *see also* BD. OF GOVERNORS OF THE FED. RESERVE SYS., THE SUPERVISORY CAPITAL ASSESSMENT PROGRAM: OVERVIEW OF RESULTS 2 (2009) ("The estimates are not forecasts or expected outcomes; they are the product of a two-year-ahead 'what if' exercise . . .").

208. SCAP DESIGN & IMPLEMENTATION, *supra* note 188, at 5. The FRB report states that:

The "more adverse" scenario was constructed from the historical track record of private forecasters as well as their current assessments of uncertainty. In particular, based on the historical accuracy of Blue Chip forecasts made since the late 1970s, the likelihood that the average unemployment rate in 2010 could be at least as high as in the alternative more adverse scenario is roughly [ten] percent. In addition, the subjective probability assessments provided by participants in the January Consensus Forecasts survey and the February Survey of Professional Forecasters imply a roughly [fifteen] percent change that real GDP growth could be at least as low, and unemployment at least as high, as assumed in the more adverse scenario.

Id. at 5 n.3.

209. SCAP DESIGN & IMPLEMENTATION, *supra* note 188, at 12–15. The supervisory teams, made up of "senior examiners, economists, and financial analysts," compiled data into five distinct categories: (1) consumer lending: first and second lien mortgages; credit cards and other

variety of methods but mainly analyzed historical losses experienced at large BHCs.²¹⁰ The FRB report admits the drawbacks of relying on historical models for housing losses, noting that “historical loss experience at BHCs may not be a reliable guide to future performance under the baseline or more adverse scenario, given the path of home prices in recent years.”²¹¹ The statement doesn’t address why historical loss experience has predictive value for any of the other categories.

The second round of SCAP, executed in 2013, tracked the FRB’s 2009 approach but added a new requirement that banks run their own tests in addition to the Federal Reserve tests.²¹² In addition—and of particular importance to this Article—regulators used a new “severely adverse” scenario that, along with the baseline and adverse scenario, brought into play more variables than the original 2009 SCAP.²¹³ This new methodology was developed in response to criticisms that the adverse scenario in 2009 was not adverse enough. The additional variables incorporated into the “severely adverse” scenario included problems in the E.U. and a deeper recession than was modeled in 2009.²¹⁴ In the severely adverse scenario, from the third quarter of 2012 to the end of 2013, real GDP declines nearly five percent, unemployment increases to twelve percent, and the Consumer Price Index slows to one percent.²¹⁵ Equities drop more than fifty percent, and equity market volatility increases from twenty-one to seventy.²¹⁶

consumer loans; (2) commercial lending: commercial and industrial loans, commercial real estate loans; (3) counterparty transactions: securities in AFS and HTM portfolios, trading portfolio losses, counterparty credit risk, pre-provision net revenue, and allowances for loan and lease losses; (4) net revenue—that is, “net revenue before adjusting for loss provisions”; and (5) in allowance for lease and loss gains the teams assessed the level of reserves needed at the end of the scenario. *Id.*; *Pre-Provision Net Revenue Definition*, NASDAQ, <http://www.nasdaq.com/investing/glossary/p/pre-provision-net-revenue#provision>, archived at <http://perma.cc/828X-ATMS>.

210. FED. RESERVE, *supra* note 174, at 8.

211. *Id.*

212. SCAP DESIGN & IMPLEMENTATION, *supra* note 188, at 1–5. Another difference is that in the 2009 SCAP “[a]ll domestic BHCs with year-end 2008 assets exceeding \$100 billion were required to participate.” *Id.* The 2013 SCAP investigated any BHC “with \$50 billion or more in total consolidated assets and nonbank financial companies designated by the FSOC for Federal Reserve supervision.” FED. RESERVE, *supra* note 174 at 9.

213. FED. RESERVE, *supra* note 174, at 3–5 (describing the changes).

214. *Id.* at 7. There were twenty-six variables; fourteen of these variables captured “economic activity, asset activity, and interest rates in the U.S. economy,” while the remainder contained three variables of “real GDP growth, inflation, and the U.S./foreign currency exchange rate” in “the euro area, the United Kingdom, developing Asia, and Japan.”

215. *Id.* In comparison, under the “more adverse” scenario of the 2009 SCAP, GDP declines only 3.3 percent from the end of 2008 to the third quarter of 2009, unemployment rises to 10.3 percent, and housing prices decline more than 20 percent through 2010. SCAP DESIGN & IMPLEMENTATION, *supra* note 188, at 6–7.

216. SCAP DESIGN & IMPLEMENTATION, *supra* note 188, 7.

“House prices decline more than 20 percent by the end of 2014, and commercial real estate prices fall by a similar amount.”²¹⁷ Finally, the international component “features recessions in the euro area, the United Kingdom, and Japan and below-trend growth in developing Asia.”²¹⁸

In 2014, stress tests revealed an interesting new function. The FRB objected to five capital plans. Four of these rejections were on qualitative grounds (Citi, RBS, Santander, and HSBC), and one was on quantitative grounds (Zions). In explaining the Citigroup failure, the FRB reported:

While Citigroup has made considerable progress in improving its general risk-management and control practices over the past several years, its 2014 capital plan reflected a number of deficiencies in its capital planning practices, including in some areas that had been previously identified by supervisors as requiring attention, but for which there was not sufficient improvement. *Practices with specific deficiencies included Citigroup’s ability to project revenue and losses under a stressful scenario for material parts of the firm’s global operations, and its ability to develop scenarios for its internal stress testing that adequately reflect and stress its full range of business activities and exposures.* Taken in isolation, each of the deficiencies would not have been deemed critical enough to warrant an objection, but, when viewed together, they raise sufficient concerns regarding the overall reliability of Citigroup’s capital planning process to warrant an objection to the capital plan and require a resubmission.²¹⁹

Citi had requested an increase in its dividend from \$0.01 to \$0.05 and a \$6.4 billion share repurchase.²²⁰ The FRB objected to the plans because, among other things, the banks were unable to project losses and revenues under stress scenarios.²²¹ So the FRB actually restricted distributions based on a procedural objection to their stress testing capabilities. This could be encouraging news that the FRB is taking its risk management oversight responsibilities more seriously and may have learned its lesson. On the other hand, the stress tests are not only about disclosure—they also activate real levers of state power. Now, well-capitalized BHCs can distribute property to stockholders (even to preferred stockholders) only with FRB approval, which had never been the case before. Dividends have been made contingent and contestable to an unprecedented degree. Dividend restrictions are as old as U.S. banking law. But these restrictions are, perhaps, dividend restrictions by hypothetical. This type of restriction looks a lot like a central bank overseeing a utility rather than a private

217. *Id.*

218. *Id.* at 8.

219. BD. OF GOVERNORS OF THE FED. RESERVE SYS., *supra* note 193, at 7 (emphasis added).

220. Matthew Boesler, *Citi Fails Fed Stress Test, Stock Tanks*, BUS. INSIDER SINGAPORE (Mar. 26, 2014, 4:07 AM), <http://www.businessinsider.sg/citi-fails-fed-stress-test-stock-tanks-2014-3/#.U-fBVhaN6fM>, archived at <http://perma.cc/XZ4P-HFWU>.

221. *Id.*

bank. Could this mean that regulation by hypothetical, if administered conservatively, moves regulation towards utility banking?

D. The Hypothetical

The foundation of this new regulatory frontier is, of course, a hypothetical. In order for a stress test or a living will to accurately predict possible outcomes, regulators must present a hypothetical scenario that is realistic, thorough, and sufficiently adverse. Firms have been constructing hypothetical models for internal risk management for decades, and the FRB's hypothetical was built using general industry standards. There are two methods for risk modeling: (1) using historical data to build a model for possible adverse outcomes and (2) Monte Carlo modeling, which is more of a randomized sampling of risk. Historical models are much more prevalent.

To illustrate the difference, imagine a weather prediction scenario. In order to predict and prepare for snowfall in Atlanta in February, a historical model predicts future snowfall based on average snowfall in the past. In a historically based simulation, firms account for risks that have occurred in the past and favor those risks in their models. For example, an adverse recessionary hypothetical looks at all past recessions and the market events that ensued and includes those events in their model in order to determine how well a firm might fare if those events occurred again. Regulators can also intensify stressors in increasingly adverse scenarios. For example, in a hypothetical adverse scenario, unemployment would be nine percent. In a severely adverse scenario, unemployment would be twelve percent. Most models are considered successful if the severely adverse scenario produces larger hypothetical losses than a baseline or adverse scenario. However, historical data is limited in that, if an event has not happened in the past, the model cannot gauge its effects in the future. For example, there is no model that can accurately predict the broad market effects of thirty percent unemployment because it is historically unprecedented—there is no data for such an event. The model would have to assume that the loss would somehow correlate with unemployment data that exists. But would thirty percent unemployment just result in triple the losses as ten percent unemployment, or would it cause a chain reaction across other markets, resulting in unprecedented losses in, for example, consumer spending, credit, and GDP?

In Monte Carlo modeling, historical data is still used to define the high and low parameters, but a variety of possibilities are chosen at random. A computer model randomly chooses among a range of past

possibilities, and repeats the process until an adequate sample is attained. When modeling for market risks, a Monte Carlo model treats all risks as having the same probability or recurrence and runs many simulations of possible risks to collect a random sampling of possibilities. However, the Monte Carlo model is still limited by historical possibilities in inputting data. For example, the model would not consider or prepare for a snowfall that has not happened in the past—let’s say two feet per day of snowfall for the entire month. Such an event could create significant problems, but it would be difficult to prepare for them because the event and its aftermath are unprecedented.

Monte Carlo modeling has the advantage of including a bigger scope of risk, but it is limited in its predictive ability. The model still uses available data for its simulations, it just uses the data differently than historically based simulations. For instance, a Monte Carlo model could attempt to model thirty percent unemployment, but it could not accurately predict the results of such unemployment because, like historically based simulation, Monte Carlo modeling operates under limited data. Monte Carlo modeling is also much more difficult and time-consuming because it has to generate many scenarios in order to have a large enough data sample. Thus, most firm models use historical data, and therefore, most firm models cannot accurately predict scenarios that have not happened historically.

This is the significant problem of the hypothetical regime: it can prepare firms for cyclical market problems, but it cannot prepare them for unprecedented market occurrences. This is not to say that these hypotheticals are useless but that we need to understand their limits. There are many correlations whose modeling is worthwhile. Markets are cyclical, and firms must be prepared to withstand run-of-the-mill market problems. However, financial crises are usually not caused by mundane market occurrences.

In designing the 2013 SCAP hypothetical, the FRB considered historically based simulations and other “probabilistic approaches,” such as Monte Carlo, which would “construct a forecast from a large-scale macroeconomic model and identify a scenario that would have a specific probabilistic likelihood.”²²² The FRB publicized its process of selecting operative variables. Ultimately, in designing the baseline, adverse, and severely adverse hypotheticals, the Federal Reserve relied on historical data:

In general, the baseline scenario will reflect the most recently available consensus views of the macroeconomic outlook expressed by professional forecasters, government

222. *Id.*

agencies, and other public-sector organizations as of the beginning of the annual stress-test cycle. The severely adverse scenario will consist of a set of economic and financial conditions that reflect the conditions of post-war U.S. recessions. The adverse scenario will consist of a set of economic and financial conditions that are more adverse than those associated with the baseline scenario but less severe than those associated with the severely adverse scenario.”²²³

In deciding in favor of the historic approach, the FRB rejected the purely mathematical risk modeling approach based on randomly generated scenarios, instead adopting a simpler alternative that is less complex but inherently limited in scope. The hypotheticals, therefore, focus on scenarios that involve recessions of varying degrees that resemble past recessions. The FRB explains that a “scenario featuring a recession may be somewhat clearer and more straightforward to communicate,” and the “probabilistic approach relies on estimates of uncertainty around the baseline scenario and such estimates are in practice model-dependent.”²²⁴ The FRB is in line with the industry in their preference of a more realistic, easy-to-administer, historically based hypothetical over the more complex Monte Carlo mathematical models.

To counteract the problem of the limited scope of historical data, the FRB intends to account for more and more possible risks as they present themselves in real time. Thus, in addition to the fixed scenarios, which are mainly focused on GDP and unemployment risks, the FRB states that it will add a “salient risk” category each year that will use current conditions to anticipate possible risks to the banking sector.²²⁵ The FRB admits, however, that this will be difficult when

223. Policy Statement on the Scenario Design Framework for Stress Testing, 12 C.F.R. § 252 app. A (2014):

This approach requires consideration of the type of recession to feature. All post-war U.S. recessions have not been identical: some recessions have been associated with very elevated interest rates, some have been associated with sizable asset price declines, and some have been relatively more global. The most common features of recessions, however, are increases in the unemployment rate and contractions in aggregate incomes and economic activity. For this and the following reasons, the Board intends to use the unemployment rate as the primary basis for specifying the severely adverse scenario. First, the unemployment rate is likely the most representative single summary indicator of adverse economic conditions. Second, in comparison to GDP, labor market data have traditionally featured more prominently than GDP in the set of indicators that the National Bureau of Economic Research reviews to inform its recession dates. Third and finally, the growth rate of potential output can cause the size of the decline in GDP to vary between recessions. While changes in the unemployment rate can also vary over time due to demographic factors, this seems to have more limited implications over time relative to changes in potential output growth. The unemployment rate used in the severely adverse scenario will reflect an unemployment rate that has been observed in *severe* post-war U.S. recessions, measuring severity by the absolute level of and relative increase in the unemployment rate.

224. *Id.*

225. *Id.*

economic conditions are buoyant as “a boom can obscure the weaknesses present in the system.”²²⁶

1. Weakness of Stress Tests

a. Not Adverse Enough

Many commenters claimed that the FRB’s 2009 stress tests were not stringent enough—with an open question as to whether they were purposefully so.²²⁷ A 2009 Saturday Night Live sketch mocked Tim Geithner’s announcement about the stress test results:

Initially, my department had planned to give each bank a numerical grade of 1 to 100—100 being a perfect score. But then we decided that might unfairly stigmatize banks who scored low on the test because they followed reckless lending practices or were otherwise not good at banking. So we changed to a simple “PASS/FAIL” system. However, on reflection, a few of us felt that THAT system was too rigid, so we changed it once again to “PASS/PASS.*” This seemed less judgmental and more inclusive. Eventually, at the banks’ suggestion, we dropped the asterisk and went with a “PASS/PASS” system. Tonight, I am proud to say that, after the written tests were examined, every one of the nineteen banks scored a “PASS”! Congratulations, banks! ²²⁸

The question of whether the soft test was on purpose implicates the problematic dual role of the FRB as systemic risk regulator as well as marketmaker, which involves assuring trust in financial markets. Was the intent of the tests to assure markets or to test accurately firm vulnerabilities? If regulators view these tests as a means of calming the markets, there is an inherent incentive to go light on “adverse” conditions. For example, the “more adverse” scenario used in February 2009, which was billed as being “unlikely,” did not look unlikely at all by the fall of 2009.²²⁹ These regulatory incentives should not be ignored.

226. *Id.*

227. David Wessel, *Bank Checkup Also Tests Regulators*, WALL ST. J. (Apr. 16, 2009, 12:01 AM), <http://online.wsj.com/article/SB123983475012122683.html>; see also David Ellis, *Watchdog Wants Stress Test Do-Over*, CNN (June 9, 2009, 6:48 AM), http://money.cnn.com/2009/06/09/news/companies/tests_warren/, archived at <http://perma.cc/B9S7-T6ZR> (“[T]he Congressional Oversight Panel pointed to the unemployment report for the month of May as a sign that the stress tests were not stressful enough.”); Gretchen Morgenson, *Stress Tests are Over. The Stress Isn’t*, N.Y. TIMES (May 9, 2009), <http://www.nytimes.com/2009/05/10/business/10gret.html>, archived at <http://perma.cc/K3C4-FTZG> (“The government tests were, in truth, not exceedingly tough. And some of the program’s ‘adverse’ scenarios look more like a day at the beach.”).

228. *Season 34, Episode 21: A Special Address from the Secretary of the Treasury*, SNL TRANSCRIPTS, <http://snltranscripts.jt.org/08/08ugeithner.phtml>, archived at <http://perma.cc/R79-RCHZ> (last visited Sept. 3, 2014).

229. Ellis, *supra* note 227 (“[T]he unemployment rate surged to a 26-year high of 9.45. Banking regulators that devised the stress tests had said in their most ‘adverse’ case scenario that the jobless rate would hit 8.9% in 2009.”).

European regulators had similar conflicts that became starkly apparent in their stress testing, which was modeled after the FRB stress tests. The mismatch of regulatory incentives in the European regulators' stress tests produced such inaccurate results that commentators deemed them all but useless. In 2010, the Committee of European Bank Supervisors "gave a clean bill of health to all but seven of the 91 banks that were tested, identifying an aggregate capital shortfall of only €3.5 billion."²³⁰ These test results immediately led to a positive market response. However, within four months, two of the Irish banks that passed the tests required rescuing by various state and international groups, resulting in roughly €35 Billion in capital allocations and bailout funds. Dexia, a Franco-Belgian bank, which the stress tests suggested was in good shape, in fact was in deep trouble just three months later.²³¹ Greek and Spanish banks also passed the tests only to fall into unprecedented distress only months later.²³² Cyprian banks passed the E.U. regulator conducted stress tests in 2010 and 2011 and failed shortly thereafter.²³³

One stated reason for these results was that "the tests modeled the impact of the economy on loan portfolios but didn't contemplate the possibility that government bonds could produce losses."²³⁴ Failing to account for government bond failure was not merely an oversight but an illustrative example of the conflicting dual role of regulators who are conducting the tests as well as attempting to calm markets. The European Banking authority "stopped short of applying market

230. Patrick Jenkins & Brooke Masters, *Bank Watchdog Sets Out to Square the Circle*, FIN. TIMES (Feb. 14, 2011), <http://www.ft.com/cms/s/0/d70dd886-3865-11e0-959c-00144feabd0.html#axzz2VMLLyFqf>, archived at <http://perma.cc/U4W9-6HAA>.

231. *Greek Debt Crisis Leads to Dexia Bank Failure*, NAT'L PUB. RADIO, (Oct. 11, 2011, 3:00 PM), <http://www.npr.org/2011/10/11/141246687/greek-debt-crisis-leads-to-dexia-fail>, archived at <http://perma.cc/G82G-XPNN>.

232. See David Enrich, *New Doubts on EU Bank Stress Tests*, WALL ST. J. (Jul. 20, 2010, 12:01 AM), <http://online.wsj.com/article/SB10001424052748704720004575377202517842246.html>.

233. COMM. OF EUR. BANKING SUPERVISORS, AGGREGATE OUTCOME OF THE 2011 E.U.-WIDE STRESS TEST EXERCISE COORDINATED BY CEB IN COOPERATION WITH THE ECB: SUMMARY REPORT (2011), available at http://www.eba.europa.eu/documents/10180/15935/EBA_ST_2011_Summary_Report_v6.pdf/54a9ec8e-3a44-449f-9a5f-e820cc2c2f0a, archived at <http://perma.cc/M44A-GBQG>; COMM. OF EUR. BANKING SUPERVISORS, AGGREGATE OUTCOME OF THE 2010 E.U.-WIDE STRESS TEST EXERCISE COORDINATED BY CEB IN COOPERATION WITH THE ECB: SUMMARY REPORT (2010), available at <http://www.eba.europa.eu/documents/10180/15938/Summaryreport.pdf/95030af2-7b52-4530-afe1-f067a895d163>, archived at <http://perma.cc/JH3X-T9G4>; Landon Thomas Jr., *Calculating the Impact of Cyprus' Bailout*, N.Y. TIMES (Mar. 31, 2013), http://www.nytimes.com/2013/04/01/business/global/calculating-impact-of-cypruss-bank-bailout.html?pagewanted=all&_r=1&, archived at <http://perma.cc/BD3-BUE5>.

234. David Enrich, *Greek Bets Sank Cyprus's Top Lenders*, WALL ST. J. (Mar. 27, 2013, 7:35 PM), <http://online.wsj.com/article/SB10001424127887323501004578386762342123182.html>.

valuations of peripheral sovereign debt—precisely the issue that was at the heart of investors nervousness about banks’ financial strength.”²³⁵ This politically driven omission, which was not disclosed, resulted in false market signaling that concealed the actual state of the E.U. banks.

b. Snapshot Testing—Too Narrow

Stress tests are too narrowly focused both on a single static point in time and also on a single data point (a firm’s balance sheet). Often, a crisis unfolds slowly and firms react to the falling pieces in sequence. The stress test takes a single snapshot of a future point in time when an adverse scenario suddenly hits a balance sheet. This view doesn’t capture the changes that managers could make that would affect a balance sheet prior to the full realization of the adverse scenario. Relatedly, the test only captures the balance sheet and not the reactions of the individuals making decisions about the balance sheets:

Market crises unfold over a period of time, during which market liquidity may dry out. Yet most scenario analyses are static in nature, i.e., are one period models and do not allow for the trading of positions in an environment where liquidity varies from one period to the next. [Such analyses] assume that events occur simultaneously, and that the portfolio [being tested] remains constant during the period. The modeling framework usually does not allow for dynamic hedging or the unwinding of positions. [They] are, by construction, static. Increasing the risk horizon from one day to ten days, one month, or one year, does not make the model more dynamic. . . . Clearly, liquidity risk cannot be factored into this traditional static framework.²³⁶

In addition, the tests have an admittedly narrow focus on certain types of risk. The FRB states that the stress test should focus only on “credit risk and market risk—that is, risk of mark-to-market losses associated with firms’ trading and counterparty positions—and not on other types of risk, such as liquidity risk or operational risk unrelated to the macroeconomic environment.”²³⁷

c. Market Subsidies

There is something particularly troubling about regulators using stress tests to calm markets. At best, it is inaccurate—and at worst deceptive—to calm markets using an unreleased methodology

235. Patrick Jenkins, *Why Power Remains Elusive Among the Regulators*, FIN. TIMES, Dec. 13, 2011, at 14.

236. MICHEL CROUHY ET AL., RISK MANAGEMENT 240–41 (2001).

237. Policy Statement on the Scenario Design Framework for Stress Testing, 77 Fed. Reg. 70,124, 70,128 (codified with some differences in language at 12 C.F.R. § 252 app. A (2014)).

that gives firms a clean bill of health when, in fact, they remain as vulnerable as ever to market stress. Such a tactic endangers safety and soundness while diminishing incentives for market discipline. But what is most troublesome from the standpoint of proper governance is that the clean bill of health is akin to federal regulators standing behind and insuring these firms. This gesture adds another layer of federal subsidy to an already heavily subsidized sector.²³⁸ Moral hazard is rampant in the postcrisis banking world as the government added the promise of implicit bailouts to explicit deposit insurance. The stress test regime looks like another layer of government insurance for these banks if the market is to rely on a regulator's diagnosis of a stable and safe banking system.

2. Living Wills

a. Description of Living Wills

Living wills are a response to perhaps the most vexing problem that emerged from the recent crisis: the realization that certain firms were too big to fail. TBTF firms endanger the financial sector because they create moral hazard. Specifically, TBTF firms take undue risks to generate near-term gains and diminish the capacity of regulators to assure safety and soundness. Many industry observers from across the political spectrum have claimed that the only effective reform would be to break up the banks.²³⁹ However, neither Dodd-Frank nor any other regulatory measure addresses the “too bigness” of these firms. Dodd-Frank attempts to address the “to fail” aspect of the TBTF problem. In particular, Dodd-Frank promoted the use of living wills to address “the dissatisfaction with widespread bailouts of financial firms during the recent global financial crisis.”²⁴⁰ Living wills are designed to assure “rapid and orderly resolution in the event of material

238. See Mehrsa Baradaran, *Banking and the Social Contract*, 89 NOTRE DAME L. REV. 1283 (2014).

239. Jeff Kearns & Jesse Hamilton, *Fed's Fisher Urges Bank Breakup Amid Too-Big-To-Fail Injustice*, BLOOMBERG (June 25, 2013), <http://www.bloomberg.com/news/2013-06-25/fed-s-fisher-urges-bank-breakup-amid-too-big-to-fail-injustice-.html>, archived at <http://perma.cc/P3L-3JRR>; Allan Sloan, *Are Big Banks Doomed to Fail?*, FORTUNE (June 14, 2011, 9:00 AM), <http://finance.fortune.cnn.com/2011/06/14/are-big-banks-doomed-to-fail/>; *The Dodd-Frank Act: Too Big Not to Fail*, ECONOMIST (Feb. 18, 2012), <http://www.economist.com/node/21547784>, archived at <http://perma.cc/4FK4-NGCT>.

240. Adam Feibelman, *Living Wills and Pre-Commitment*, 1 AM. U. BUS. L. REV. 95, 99 (2012).

financial distress or failure.”²⁴¹ These “wills” are similar to “contingency planning for public emergencies that arise when a hurricane, earthquake, or other natural disaster strikes.”²⁴² They are to be crafted by the firms themselves, subject to review by banking regulators.²⁴³

As we have seen, section 165 of Dodd-Frank sets up the supervisory structure for “covered companies.”²⁴⁴ These companies are to submit to the FRB, the FDIC, and the FSOC resolution plans, which must include the following:²⁴⁵

- information regarding the manner and extent to which any insured depository institution affiliated with the company is adequately protected from risks arising from the activities of any nonbank subsidiaries of the company;
- full descriptions of the ownership structure, assets, liabilities, and contractual obligations of the company;
- identification of the cross-guarantees tied to different securities identification of major counterparties, and a process for determining to whom the collateral of the company is pledged; and
- any other information that the Board of Governors and the Corporation jointly requires by rule or order.²⁴⁶

The gathering of these plans is staggered; the largest banks are required to file first, followed by the rest of the banking sector.²⁴⁷

241. Dodd-Frank Wall Street Reform and Consumer Protection Act § 115(d)(1) 12 U.S.C. § 5365(d)(1) (2012).

242. DAVIS POLK & WARDWELL LLP, CREDIBLE LIVING WILLS: THE FIRST GENERATION, (April 25, 2011), *available at* http://www.davispolk.com/files/Publication/37a3a804-6a6c-4e10-a628-7a1dbbaece7c/Presentation/PublicationAttachment/c621815c-9413-436b-91ea-3451b2b4cf32/042611_DavisPolkMcKinsey_LivingWills_Whitepaper.pdf, *archived at* <http://perma.cc/8JEZ-NLAJ>.

243. Simon Johnson, *Why Living Wills Fail*, *ECONOMIX* (June 17, 2010, 6:00 AM), <http://economix.blogs.nytimes.com/2010/06/17/why-living-wills-fail/>, *archived at* <http://perma.cc/7UHY-FB93> (explaining that, in theory, “[n]o one knows their business better than the banks themselves . . . so they should have the responsibility for explaining how they can close down their various operations—or perhaps sell more valuable parts while limiting losses for unprofitable activities”).

244. 12 U.S.C. § 5365. Covered companies are nonbank financial companies that are supervised by the FRB and bank holding companies with at least \$50 billion in assets. 12 C.F.R. § 381.2(f)(1) (2014).

245. 12 U.S.C. § 5365(d)(1).

246. *Id.*

247. *Id.* § 5365(d)(8) requires the FRB and the FDIC to issue final rules implementing Section 165(d). The first of these rules was released on November 1, 2011. Resolution Plan Required, 12 CFR § 243.3. The rule staggered the submission of annual resolution plans. Institutions that have

Regulators have required that resolution plans include an executive summary as well as a strategic analysis “describing the covered company’s plan for rapid and orderly resolution in the event of material financial distress and failure.”²⁴⁸ In creating “credible” living wills, banks must provide a strategic analysis, which should include:

[D]etailed descriptions of the (i) [k]ey assumptions and supporting analysis underlying the covered company’s resolution plan, including any assumptions made concerning the economic or financial conditions that would be present at the time the covered company sought to implement such plan; (ii) [r]ange of specific actions to be taken by the covered company to facilitate a rapid and orderly resolution of the covered company, its material entities, and its critical operations and core business lines in the event of material financial distress or failure of the covered company; (iii) [f]unding, liquidity and capital needs of, and resources available to, the covered company and its material entities, which shall be mapped to its critical operations and core business lines, in the ordinary course of business and in the event of material financial distress at or failure of the covered company; (iv) [c]overed company’s strategy for maintaining operations of, and funding for, the covered company and its material entities, which shall be mapped to its critical operations and core business lines²⁴⁹

Firms are to devise their plans using the three economic scenarios stipulated in the FRB’s stress test analysis: baseline, adverse, and severely adverse. However, for the first round of living wills, firms were asked only to devise a plan under the baseline scenario, or “a reasonable substitute developed by the covered company.”²⁵⁰ Consistent with concerns about the TBTF phenomenon, firms must devise resolution plans without relying on any government funding.²⁵¹ To streamline submissions, regulators provided baseline assumptions during the first wave of filings, which included: (1) no reliance on government intervention; (2) an idiosyncratic scenario

\$250 billion or more in total nonbank assets were to submit their living wills by July 1, 2012. Institutions with between \$100 billion and \$250 billion in assets were required to submit their living wills by July 1, 2013, and the remaining institutions were required to submit their plans by December 31, 2013.

248. 12 U.S.C. § 5365(d)(8).

249. *See* Resolution Plans (Regulation QQ), 12 C.F.R. pt. 243 (2014).

250. 12 C.F.R. § 243.4(a)(4)(i); *see also* Jeffrey M. Lacker, Speech at the Global Society of Fellows Conference: Ending “Too Big to Fail” is Going to Be Hard Work (Apr. 9, 2013), *available at* http://www.richmondfed.org/press_room/speeches/president_jeff_lacker/2013/pdf/lacker_speech_20130409.pdf, *archived at* <http://perma.cc/ATN6-WQPT> (“Because of the magnitude of the planning efforts required, . . . firms were asked for analysis under just one economic scenario”); Resolution Plans Required for Insured Depository Institutions with \$50 Billion or More in Total Assets, 12 C.F.R. § 360.10 (2014):

The FDIC recognizes the burden that the Rule imposes on [covered insured depository institutions (CIDs)] and the challenge that CIDs face in preparing their initial Resolution Plans. To reduce this burden, the FDIC is requiring that feasibility for initial Resolution Plans be assessed under only baseline economic condition scenarios. Subsequent Resolution Plans must assess feasibility under adverse and severely adverse economic condition scenarios as well.

251. Resolution Plan Required, 12 CFR § 243.3.

specific to the banking institution that does not affect the global markets generally; (3) the same hypothetical baseline assumptions from the Federal Reserve's stress tests.²⁵²

Critics have noted that the baseline assumptions provided by the regulators, specifically that a crisis would affect only the firm and no other market entities and that the government would not intervene, present a situation that looks nothing like the recent financial crisis. In the recent crisis, the reality was that "markets were not functioning normally, funding markets were closed to virtually all market participants, and the government came through with several hundred billion dollars of support."²⁵³ However, in the initial round, the agencies asked for "streamlined requirements . . . ; for example, firms were asked for analysis under just one economic scenario, rather than three."²⁵⁴ Because the living wills framework is still being developed, the initial plans "are akin to test cases that will help shape future standards and determine their effectiveness."²⁵⁵ The bottom line is that these first drafts acted as little more than a "significant learning exercise" for both regulators and firms.²⁵⁶

Compliance with the plans came with some regulatory "bite": In the event that the FRB and the FDIC decide that a SIFI's plan is "not credible or would not facilitate an orderly resolution of the company," the firm must resubmit a plan within a time frame to be determined by the agencies.²⁵⁷ If the firm fails to resubmit a plan within the specified time, the agencies "may jointly impose more stringent capital, leverage, or liquidity requirements, or restrictions on the growth, activities, or operations of the company, or any subsidiary thereof, until such time as the company resubmits a plan that remedies the deficiencies."²⁵⁸ If the firm does not adhere to regulatory demands to resolve deficiencies and resubmit a plan within two years, the

252. DAVIS POLK & WARDWELL LLP, LIVING WILLS: KEY LESSONS FROM THE FIRST WAVE FOR SECOND AND THIRD WAVE FILERS (July 11, 2012), *available at* http://www.davispolk.com/files/Publication/cbadd86a-3680-4305-bf10-f3ea147b57c3/Presentation/PublicationAttachment/26191e6f-06dd-4d1b-ada8-f74a977be52e/071112_Living_Wills.pdf, *archived at* <http://perma.cc/AL25-J2X4>.

253. Steve Schaefer, *First Living Wills from JPMorgan, BofA, Goldman Don't Tackle 2008-Level Crisis*, FORBES (July 3, 2012, 2:52 PM), <http://www.forbes.com/sites/steveschaefer/2012/07/03/first-living-wills-from-jpmorgan-bofa-goldman-dont-tackle-2008-level-crisis/>, *archived at* <http://perma.cc/YL9R-MT8C>.

254. Lacker, *supra* note 250, at 4–5.

255. Joe Adler, *Banks' Living Wills Face First Critical Test*, AM. BANKER (June 26, 2012, 2:35 PM), http://www.americanbanker.com/issues/177_122/banks-living-wills-face-first-critical-test-1050397-1.html, *archived at* <http://perma.cc/6TV3-Z7SW>.

256. *Id.*

257. 12 U.S.C. § 5365(d)(4)(B) (2012).

258. *Id.* § 5365(d)(5)(A).

agencies may require the firm “to divest certain assets or operations” that will facilitate an orderly resolution in case of failure.²⁵⁹

b. Implementation

On July 1, 2012, the first wave of banks filed their living wills. The FRB and FDIC received plans from Deutsche Bank, UBS, Morgan Stanley, JPMorgan Chase, Bank of New York Mellon, Bank of America, Credit Suisse, State Street, Citigroup, Barclays, and Goldman Sachs. The documents released to the public were summaries of longer reports provided to regulators.²⁶⁰ The banks drafted the living wills according to the baseline assumptions provided by regulators. Most of the plans included evidence of firm strength and hedging activities, such as using derivatives to deal with interest rate risks. Below are selected excerpts from bank resolution plans:

- Deutsche Bank assumes that, following an idiosyncratic adverse event affecting only the firm, the German supervisory authority, BaFin, would produce a special purpose vehicle, or “bridge bank,” and that U.S. regulators would cooperate with the German regulators. The resolution plan also assumes that there will be third-party purchasers such as “foreign financial institutions, certain U.S. banks and non-bank financial institutions,” that are able to acquire Deutsche Bank’s U.S. businesses.²⁶¹
- UBS’s plan states that, in a recovery or resolution scenario, it would focus on the preservation of the potential value of any saleable core business lines pending a potential sale.²⁶² However, UBS noted that “[g]iven the size of the UBS Group’s operations, the range of potential purchasers is likely limited to large financial institutions.”²⁶³
- Morgan Stanley assumes that, in the event of failure, “potential purchasers could include a broad range of buyers including but not limited to global, national and regional financial

259. *Id.* § 5365(d)(5)(B).

260. *Resolution Plans*, FED. RESERVE, (July 23, 2014), <http://www.federalreserve.gov/bankinforeg/resolution-plans.htm>, archived at <http://perma.cc/X9G9-SCWY>.

261. DEUTSCHE BANK, RESOLUTION PLAN (2013), <http://www.fdic.gov/regulations/reform/resplans/plans/deutschebank-165-1310.pdf>, archived at <http://perma.cc/3EEJ-5VYH>.

262. UBS AG, 2013 RESOLUTION PLAN 30 (2013), <http://www.federalreserve.gov/bankinforeg/resolution-plans/ubs-1g-20131001.pdf>, archived at <http://perma.cc/88W5-C3NS>.

263. *Id.*

- institutions, private equity and hedge funds, and other financial asset buyers such as insurance companies.”²⁶⁴
- JPMorgan states, first, that it “has a fortress balance sheet and significant liquidity and earning power.”²⁶⁵ But that if it “were to default on its obligations or be in danger of default, and neither [its] recovery plan nor another private sector alternative were available to prevent the default, the Firm could be resolved under the provisions of Title II of the Dodd-Frank Act.”²⁶⁶ In the firm’s view, its failure would not pose systemic risk to the U.S. financial system for a few reasons. One such reason is that the firm provides for recapitalization and continuation of the firm’s critical operations directly or through subsidiaries of a viable bridge entity. Additionally, where necessary, the firm provides for the divestiture or wind-down of the firm’s business with minimum disruption. Details are sparse, and the plan adds that JPMorgan “has provided the Federal Reserve with comprehensive confidential supervisory information and analyses” that are not included in the public portion of the plan.²⁶⁷
 - BNY Mellon describes its orderly resolution and concludes with the assertion that “the Resolution Plan would result in no losses to the FDIC Deposit Insurance Fund, to the United States Department of Treasury or to depositors.”²⁶⁸
 - Bank of America’s resolution plan “contemplates a resolution strategy in which Bank of America’s U.S. bank material entities (“MEs”), under a hypothetical failure scenario, would be resolved by placing them into FDIC receiverships.”²⁶⁹ Additionally, the plan provides that Bank of America’s assets would be sold to potential purchasers, such as private equity funds; hedge funds; national, international, and regional financial institutions; and other financial asset buyers.²⁷⁰

264. MORGAN STANLEY, RESOLUTION PLAN 22–23 (2013), <http://www.fdic.gov/regulations/reform/resplans/plans/morgan-165-1310.pdf>, archived at <http://perma.cc/XE6M-BLjL>.

265. J.P. MORGAN, CHASE & CO., RESOLUTION PLAN 28 (2013), <http://www.federalreserve.gov/bankinforeg/resolution-plans/jpmorgan-chase-1g-20131001.pdf>, archived at <http://perma.cc/NA5M-989Z>.

266. *Id.* at 29.

267. *Id.*

268. BNY MELLON, RESOLUTION PLAN 24 (2013), <http://www.federalreserve.gov/bankinforeg/resolution-plans/bk-ny-mellon-1g-20120702.pdf>, archived at <http://perma.cc/F92P-9EY6>.

269. BANK OF AMERICA CORPORATION, RESOLUTION PLAN 39, <http://www.fdic.gov/regulations/reform/resplans/plans/boa-1207.pdf>, archived at <http://perma.cc/XWY8-4NP5>.

270. *Id.*

- Credit Suisse’s plan contemplates its resolution under U.S. operations or other applicable insolvency regimes. The plan considers the sale of Credit Suisse’s core business lines and potentially its franchise value, although the plan admits that “this strategy may prove challenging in the event of an extended period of stress.”²⁷¹ The range of potential purchasers may include other broker dealers and banks as well as hedge funds.²⁷²
- State Street’s resolution plan “contemplates strategies involving the failure of one or more State Street legal entities and include recapitalization strategies and sale strategies for each of State Street’s Core Business Lines, which State Street believes would be attractive acquisition targets.”²⁷³
- Citigroup first states that, with its “increased financial strength and liquidity, and its client-oriented business model, it is highly unlikely that a resolution of the company would ever be required.”²⁷⁴ The basic features of Citi’s resolution plan are: replacement of senior management and Board of Directors, recapitalization of CBNA by Citigroup the Parent holding company, wind-down, or sale.²⁷⁵ It also states that “based on its capital strength and asset quality . . . , Citi can be resolved without taxpayer support.”²⁷⁶
- Barclays’s plan considers a “broad range of buyers for Barclays” and that these potential buyers, such as national or international financial institutions, would have “sufficient capital.” Or “in the absence of a single purchaser, multiple acquirers could purchase certain material entities through stock acquisition and/or the purchase of certain assets which may include assumption of associated liabilities.”²⁷⁷

271. CREDIT SUISSE, CREDIT SUISSE GLOBAL RECOVERY AND RESOLUTION PLAN 14 (2013), <http://www.federalreserve.gov/bankinforeg/resolution-plans/credit-suisse-1g-20131001.pdf>, archived at <http://perma.cc/3RRW-9L2Z>.

272. *Id.*

273. STATE STREET CO. & STATE STREET BANK & TRUST CO., RESOLUTION PLAN 23 (2013), <https://www.fdic.gov/regulations/reform/resplans/plans/statestreet-idi-7114.pdf>, archived at <http://perma.cc/MQ4X-U6BX>.

274. CITIGROUP INC. & CITIBANK, N.A., RESOLUTION PLAN 4 (2013), <http://www.federalreserve.gov/bankinforeg/resolution-plans/citigroup-1g-20131001.pdf>, archived at <http://perma.cc/TFW7-KLAW>.

275. *Id.* at 28–29.

276. *Id.* at 29.

277. BARCLAYS, RESOLUTION PLAN 13–14 (2012), <http://www.federalreserve.gov/bankinforeg/resolution-plans/barclays-plc-1g-20120702.pdf>, archived at <http://perma.cc/X6V7-9MME>.

- Goldman Sachs's resolution plan was the most thorough and self-reflective of the plans. The firm admits that "circumstances leading to the failure of a systemically important financial institution will likely be different than the specific assumptions [provided by the FDIC], and we expect that future submissions of our Resolution Plan will include other conditions and may have different assumptions."²⁷⁸ The firm recognizes the integrated nature of international financial markets but believes that selling the assets of its material entities to one or multiple buyers postproceeding would avoid a firm-wide asset liquidation and is therefore likely to have a less disorderly impact on the market.²⁷⁹ "Any sale would need to be conducted quickly with the benefit of expedited and coordinated regulatory approvals to maintain the franchise value of the Firm."²⁸⁰ Goldman Sachs also states that "potential purchasers for the businesses or assets of our Material Entities and for other non-Resolution Business Core Lines of Goldman Sachs could include global financial institutions, private equity funds, insurance companies or sovereign wealth funds."²⁸¹

c. Analysis of Living Will Regime

Although the living will requirement of Dodd-Frank is aimed at assisting in resolving the difficulties presented by large firms during the next financial crisis, most industry observers and regulators agree that living wills are unlikely to serve that purpose.²⁸² Rather, living wills appear to be a hypothetical *ex ante* exercise that serve an informational, as opposed to an operational, function.²⁸³ These plans

278. THE GOLDMAN SACHS GROUP, INC., SUMMARY OF RESOLUTION PLAN 314 (2012), <http://www.fdic.gov/regulations/reform/resplans/plans/goldman-165-1207.pdf>, archived at <http://perma.cc/4UXB-Z29L>.

279. *Id.* at 32.

280. *Id.*

281. *Id.*

282. Brad Miller, *Regulators, Demand Credible Living Wills Now—Not ‘Ultimately,’* AM. BANKER (Dec. 26, 2012, 12:00 PM) ("Simon Johnson, former chief economist for the International Monetary Fund, concluded . . . that the living wills process was 'a sham, meaningless boilerplate and box checking.'"), <http://www.americanbanker.com/bankthink/regulators-must-demand-credible-living-wills-now-not-ultimately-1055434-1.html>, archived at <http://perma.cc/FL8J-WFAQ>; Simon Johnson, *The Myth of a Perfect Orderly Liquidation Authority for Big Banks*, ECONOMIX (May 16, 2013, 12:01 AM), <http://economix.blogs.nytimes.com/2013/05/16/the-myth-of-a-perfect-orderly-liquidation-authority-for-big-banks/>, archived at <http://perma.cc/UUG4-DCGG>.

283. In advising firms on the development of living wills, the Pew Research Center suggests the regular use of hypotheticals in developing resolution plans or living wills. PEW FINANCIAL REFORM PROJECT, STANDARDS FOR RAPID RESOLUTION PLANS (2011), <http://>

are not legally binding, and very few people believe that they will actually be used to break up big banks.²⁸⁴ Former Congressman Barney Frank, one of the sponsors of the bill, even admitted that living wills are “probably not of use in a crisis, but they’re a useful pre-crisis tool.”²⁸⁵ Goldman Sachs states in its living will that a real crisis will likely not resemble the assumptions in their plan. Apparently, Goldman Sachs also “think[s] the whole assignment is busywork, and [is] not shy about saying so.”²⁸⁶

Many of the plans state that using hypothetical scenarios is helpful for planning purposes.²⁸⁷ Given these stated purposes, living wills start to resemble stress tests in their methodology and underlying objectives. Officials are thus relying on living wills to provide information that would eventually result in targeted or “smart” regulation, such as requiring more capital, restructuring firms, or even breaking up the firms.²⁸⁸ In essence, living wills would be used as a fire drill to expose weaknesses in firms that could be remedied *ex ante*. So far, however, regulators have not assessed these

fic.wharton.upenn.edu/fic/policy%20page/Standards%20for%20Rapid%20Resolution%20Plans.pdf, archived at <http://perma.cc/RWZ6-TNND>.

284. Lawrence Baxter, a professor of law at Duke University, said:

I think the heart of the problem is scale and interconnectedness. . . . I don't believe there are many people who think living wills and the orderly liquidation process are really going to work if one of those banks fails. . . . We manage that all the time with smaller banks . . . but once you get over the \$100 billion range and into the \$1 trillion range, it ceases to have any credibility.

Victoria Finkle, *Seven Reasons the Debate over 'Too Big to Fail' Is Here to Stay*, AM. BANKER, Apr. 2, 2013, available at 2013 WLNR 7937747. Jaret Seiberg, a senior policy analyst at Guggenheim Securities's Washington Research Group, stated, “At the end of the day, this isn't going to become the hidden tool to break up JPMorgan and Bank of America. . . . To take that radical of a step, you're going to need something more concrete than disputes over how credible a living will was written.” Jesse Hamilton, *Big Banks Create Living Wills to Tell U.S. Regulators How to Dismember Their Corpses*, FIN. POST (June 28, 2012), <http://business.financialpost.com/2012/06/28/big-banks-create-living-wills-to-tell-u-s-regulators-how-to-dismember-their-corpses/>, archived at <http://perma.cc/TKW7-CX6V>; Sloan, *supra* note 239; *The Dodd-Frank Act: Too Big Not to Fail*, *supra* note 239.

285. Sloan, *supra* note 239.

286. Matt Levine, *Banks Prove That They are Not Too Big to Fail By Saying “We Can Fail” on a Piece of Paper, Moving on*, DEALBREAKER (July 5, 2012), <http://dealbreaker.com/2012/07/banks-prove-that-they-are-not-too-big-to-fail-by-saying-we-can-fail-on-a-piece-of-paper-moving-on/>, archived at <http://perma.cc/ET2T-KCT6>.

287. In its resolution plan, Barclays stated that “[u]sing a hypothetical resolution scenario, resolution plans spotlight areas where cooperation among regulatory authorities across jurisdictions is required in order to facilitate actual resolution of global financial institutions.” BARCLAYS, *supra* note 277, at 2.

288. Jeffrey M. Lacker, President, Fed. Reserve Bank of Richmond, Speech at the University of Richmond: Ending ‘Too Big to Fail’ Is Going to Be Hard Work (Apr. 9, 2013), available at http://www.richmondfed.org/press_room/speeches/president_jeff_lacker/2013/pdf/lacker_speech_20130409.pdf, archived at <http://perma.cc/X6N3-LTVH>.

plans beyond a cursory review; in particular, living wills have not led to structural changes or capital infusions.²⁸⁹ But in theory, annual updates of living wills “will ensure that when a living will is needed, it accurately reflects a bank’s internal operations and risk profile.”²⁹⁰ And requiring firms to review and draft living wills on a regular basis could at least “raise the bar on the quality of their risk information and management information systems, their risk and scenario analyses and their contingency planning, all of which may have benefits even in the absence of a crisis.”²⁹¹

In its resolution plan, Barclays noted that “[r]esolution plans can enable financial institutions, working in close conjunction with their regulators to assess their operations on a holistic level to determine whether there are appropriate operational changes that can be made to make institutions more resolvable in the event of failure.”²⁹² According to Barclays, the living will should help by forcing them “to take mitigation actions to avoid failure and to reduce the contagion impact of an institution’s failure on the rest of the financial system” and by “putting processes in place to identify risk concentrations in advance, by developing capital or liquidity contingency plans that help stave off insolvency or illiquidity in the event of adverse market conditions.”²⁹³

Thus, living wills, like stress tests, are an extension of the risk management regime into a hypothetical regime. Regulators will test internal risk management mechanisms through hypothetical future scenarios. They will then use the results of these tests, assuming they are performed rigorously, to design targeted, entity-specific regulation aimed at curing particular weaknesses highlighted by the tests.

289. Barbara A. Rehm, *Regulators’ Reputation Sinks Along with Industry’s*, AM. BANKER (Mar. 28, 2013, 12:57 PM), http://www.americanbanker.com/issues/178_60/regulators-reputation-sinks-along-with-industry-s-1057876-1.html, archived at <http://perma.cc/K8U3-ZSLK>.

290. John F. Bovenzi, *Another View: Why Banks Need ‘Living Wills,’* DEALBOOK (July 8, 2010, 12:30 PM), http://dealbook.nytimes.com/2010/07/08/another-view-why-banks-need-living-wills/?_r=0, archived at <http://perma.cc/3T5N-YJYF>; see also Olivia Schmid, *Living Wills: Will They Fail to Remedy ‘Too Big to Fail?’*, 18 COLUM. J. EUR. L. ONLINE 6, 9 (2012) (“[These streamlined institutions will] be easier for regulators to oversee and will help regulators identify, early enough, areas where a SIFI’s business strategies fall short of best practices.”).

291. DAVIS, POLK & WARDWELL LLP & MCKINSEY & CO., CREDIBLE LIVING WILLS: THE FIRST GENERATION 2 (Apr. 25, 2011), available at http://www.davispolk.com/files/Publication/37a3a804-6a6c-4e10-a628-7a1d8baece7c/Presentation/PublicationAttachment/c621815c-9413-436b-91ea-3451b2b4cf32/042611_DavisPolkMcKinsey_LivingWills_Whitepaper.pdf, archived at <http://perma.cc/743E-J2ZL>.

292. BARCLAY’S, *supra* note 277, at 2.

293. *Id.*

3. Weaknesses of Living Wills

After the 2010 BP oil spill in the Gulf of Mexico, regulators required five of the largest oil companies to submit plans to deal with future hypothetical oil spills.²⁹⁴ The plans resembled living wills in many important ways. The firms were instructed to plan, in as much detail as possible, for a potential future disaster such as an oil spill.²⁹⁵ As with living wills, many observers derided the oil companies' plans as not credible. The House Energy and Commerce Committee Chairman, Henry Waxman, said that the "cookie-cutter" nature of the submissions revealed that "none of the five oil companies has an adequate response plan" for a serious oil spill.²⁹⁶ "When you look at the details, it becomes evident these plans are just paper exercises," he added.²⁹⁷ At a hearing of the House Energy and Environment Subcommittee, Congressman Bart Stupak said, "Exxon and the other oil companies are just as unprepared to respond to a major oil spill in the gulf as BP."²⁹⁸

In the five-hundred-page plans, the firms tried to assure regulators "that they could handle oil spills much larger than the one now threatening [the Gulf of Mexico's] environment and economy."²⁹⁹ However, the plans were lacking in important details and were wrong in obvious areas. For example, four of the plans included protections of walrus, sea lions, and seals, none of which are to be found in the Gulf of Mexico.³⁰⁰ In addition, Shell Oil Company noted that, in Alaska, "a larger crude oil spill would be unlikely because the water is shallow," which was an untested and disputed assumption.³⁰¹ Further, Shell claimed that if there were an oil spill, Alaska Clean Seas in Prudhoe Bay would be able to respond to any spill.³⁰² However, "[t]he company is 250 to 350 miles away" from the area where Shell plans to drill, and "[i]n the event of a spill . . . , Alaska Clean Seas would be able to provide

294. Steven Mufson & Juliet Eilperin, *Lawmakers Attack Plans Oil Companies Had in Place to Deal with a Spill*, WASH. POST (June 16, 2010), <http://www.washingtonpost.com/wp-dyn/content/article/2010/06/15/AR2010061501700.html>, archived at <http://perma.cc/Q5Q5-T9QG>.

295. *Id.*

296. *Id.*

297. *Id.*

298. *Id.*

299. *Id.*

300. *Id.*

301. *Id.*

302. *Id.*

only a fraction of the resources BP called upon within the first 24 hours after the Deepwater Horizon explosion.”³⁰³

A major problem with these disaster plans was that they were all written by “the same tiny Texas subcontractor,” a Houston-based firm with thirty-five employees.³⁰⁴ This firm “used common assumptions for different exploration wells.”³⁰⁵ Living wills for banks share this problem because they also are all drafted by the same law firm.³⁰⁶ Although this law firm is the most sophisticated shop in dealing with Dodd-Frank issues,³⁰⁷ it is still only one firm. Failure to subject living wills to a broader marketplace of ideas limits their utility.

a. Not Credible—Unrealistic

Contingency plans cannot be accurately tailored now to fit future crises for a number of reasons. First, it is difficult for firms to predict the extent of a crisis, particularly for large, multinational institutions that are subject to a multitude of domestic regulatory structures. Second, it is also hard for firms to anticipate “which parts of the firm will be under the greatest stress, what geographical regions may be affected most severely, and what the condition in various markets and economies will be, as well as the stability of counterparties and similarly situated institutions.”³⁰⁸ It is impossible to predict the financial landscape in a hypothetical future world.

Third, firms will also be incapable of predicting the exact value of their subdivisions, subsidiaries, and assets in the event of market decline. They may also be unable to accurately identify potential buyers. In their resolution plans, most of the large banks, including Goldman Sachs, stated that they would be able to find numerous potential buyers for their assets, including “global financial institutions, private equity funds, insurance companies, or sovereign

303. *Id.*

304. *Id.*

305. *Id.*

306. *Id.*; Matthew Huisman, *Q&A: Davis Polk & Wardwell's Annette Nazareth*, LEGALTIMES (May 30, 2013), <http://legaltimes.typepad.com/blt/2013/05/qa-davis-polk-wardwells-annette-nazareth.html>, archived at <http://perma.cc/3T4N-4T7Z>.

307. Julie Triedman, *For Davis Polk, Dodd-Frank Pays*, AM. LAW. (Dec. 2010), <http://www.davispolk.com/files/uploads/Articles//For.Davis.Polk.Dodd-Frank.Pays.AmLaw.dec10.pdf>, archived at <http://perma.cc/8JUW-46BD>.

308. Governor Daniel K. Tarullo, *Speech at the Symposium on Building the Financial System of the 21st Century: Toward an Effective Resolution Regime for Larger Financial Institutions* (Mar. 18, 2010), available at <http://www.federalreserve.gov/newsevents/speech/tarullo20100318a.htm>, archived at <http://perma.cc/U99P-YZBK>.

wealth funds.”³⁰⁹ However, Jim Millstein, the Treasury Department’s former chief restructuring officer, noted that “[t]here are few, if any, institutions with the balance sheet to support the purchase of one of these businesses in good times. . . . In a crisis . . . no one will be able to do it unless the FDIC supports the purchase with debt and equity financing,” a result he considers unlikely.³¹⁰ “Therefore,” he said, “there is no credible way to break [these firms] up and sell them during a crisis.”³¹¹ In the event of a real crisis, many experts state that there will not be buyers available to absorb these assets³¹²—that is, buyers other than the Federal Government. “When an institution fails, it usually happens suddenly and in an unpredictable way, and someone has to write a check.”³¹³

Lastly, SIFIs also do not have incentives to draw up credible plans. This is an area where firm management and regulators have opposing goals. Managers of these institutions “can be expected to seek to preserve as much value for shareholders as possible in its planning.”³¹⁴ However, the “supervisors’ objective in a crisis is to achieve an orderly resolution, which will often entail winding down or restructuring the insolvent firm in ways that effectively wipe out shareholder interests.”³¹⁵

b. Regulatory Discretion

Because living wills are not binding on firms or regulators, regulators exercise discretion in deciding whether to take living wills into account at all in wielding their supervisory powers.³¹⁶ Although regulators have the authority to downsize and break up banks, they

309. GOLDMAN SACHS, *supra* note 278, at 32.

310. Sloan, *supra* note 239.

311. *Id.*

312. Adam J. Levitin, *In Defense of Bailouts*, 99 GEO. L.J. 435, 468 (2011).

313. Jessica Silver-Greenberg & Nelson D. Schwartz, “*Living Wills*” for Too-Big-To-Fail Banks Are Released, N.Y. TIMES (July 3, 2012), <http://www.nytimes.com/2012/07/04/business/living-wills-of-how-to-unwind-big-banks-are-released.html>, archived at <http://perma.cc/WNB2-V4DD>.

314. Governor Daniel K. Tarullo, Speech at the Institute of International Bankers Conference on Cross-Border Insolvency Issues: Supervising and Resolving Large Financial Institutions (Nov. 10, 2009), available at <http://www.federalreserve.gov/newsevents/speech/tarullo20091110a.htm>, archived at <http://perma.cc/XCU6-4BF9>.

315. *Id.*

316. Levitin, *supra* note 312, at 468. Former FDIC Chairman Sheila Bair noted that although “she think[s] [regulators] should use the authority [given to them in Dodd-Frank], . . . how they use it is going to be up to them.” Hamilton, *supra* note 284.

may not “have the guts to actually follow the will (and pronounce the death sentence that must precede it).”³¹⁷

Prior to filing the living wills, experts predicted that the initial wave would trigger a dialogue between the agencies and firms regarding the viability of the plans.³¹⁸ However, by March 2013, observers noted that regulators had provided little feedback regarding the banks’ plans.³¹⁹ William Dudley, the president of the Federal Reserve Bank in New York, admitted that “this initial exercise has confirmed that we are a long way from the desired situation in which large, complex firms could be allowed to go bankrupt without major disruptions to the financial system and large costs to society.”³²⁰ He added that “significant changes” would have to be made and that “we have only taken the first step in a long journey.”³²¹

In April 2013, the FRB and the FDIC granted a three-month extension to institutions that filed their living wills in 2012 so those institutions could devise another round of living wills.³²² The agencies issued further instructions on what type of information should be included in living wills. Among other requirements, the agencies identified a set of obstacles that a firm may encounter during resolution.³²³ In their second set of plans, firms had to address how they will deal with multiple competing insolvencies in different jurisdictions, the problem of potential ring-fencing by foreign host authorities, the risk that third-party services might be interrupted, and the risk of insufficient liquidity.³²⁴

317. David Zaring, *A Lack of Resolution*, 60 EMORY L.J. 97, 129 (2010).

318. Adler, *supra* note 255.

319. Jesse Hamilton, *FDIC Promises Big U.S. Banks a Helping Hand on Next Living Wills*, BLOOMBERG (Mar. 5, 2013), <http://www.bloomberg.com/news/2013-03-05/fdic-promises-big-u-s-banks-a-helping-hand-on-next-living-wills.html>, archived at <http://perma.cc/MF8D-397M> (noting that banks “are not totally clear how they did in the opening round” (internal quotations omitted)).

320. President and CEO William C. Dudley, Fed. Reserve Bank of N.Y., Remarks at the Clearing House’s Second Annual Business Meeting and Conference: Solving the Too Big To Fail Problem (Nov. 15, 2012), available at <http://www.newyorkfed.org/newsevents/speeches/2012/dud121115.html>, archived at <http://perma.cc/YV8-ZQF8>.

321. *Id.*

322. Press Release, Fed. Deposit Ins. Corp., Agencies Provide Additional Instructions for Submission of Some Resolution Plans (Apr. 15, 2013), available at <http://fdic.gov/news/news/press/2013/pr13027.html?source=govdelivery>, archived at <http://perma.cc/6MSC-MYMF>.

323. FED. DEPOSIT INS. CORP. & BD. OF GOVERNORS OF THE FED. RESERVE SYS., GUIDANCE FOR 2013 § 165(d) ANNUAL RESOLUTION PLAN SUBMISSIONS BY DOMESTIC COVERED COMPANIES THAT SUBMITTED INITIAL RESOLUTION PLANS IN 2012 5, available at <http://fdic.gov/regulations/reform/domesticguidance.pdf>, archived at <http://perma.cc/NJ28-Y9LF>.

324. *Id.* at 5–6.

The second round of plans were also not scrutinized by regulators and therefore will likely be of little use.³²⁵ The FDIC would like to dispel that illusion and give these plans some legitimacy. Martin Gruenberg, the Chairman of the FDIC, stated that the eleven banks in the first wave of filing “won’t have the safety net they had last year when they were told their plans wouldn’t be rejected if they weren’t credible.”³²⁶ James Wigand, the head of the FDIC’s Office of Complex Financial Institutions, echoed this sentiment, stating that the FDIC is prepared to consider exercising its authority to correct deficiencies in living wills.³²⁷ Wigand added that 2013 resolution plans “will be subject to informational completeness reviews and reviews for resolvability under the Bankruptcy Code” and to certain benchmarks for assessing a resolution.³²⁸

In August 2014, the FDIC and the FRB engaged the living wills for the first time by sending letters to 11 banks stating that their living will plans were “not credible.” The vice president of the FDIC, Thomas M. Hoenig said in a statement that “despite the thousands of pages of material these firms submitted, the plans provide no credible or clear path toward bankruptcy that doesn’t require unrealistic assumptions and direct or indirect public support.” Regulators have still not taken any action on the living wills.³²⁹

Although regulators continue to emphasize that small steps are being taken towards forming a credible living wills framework, detractors have noted that “[t]he uncertainties in the financial system may not allow for year after year of polite suggestions by regulators and modest tweaks by institutions.”³³⁰ In the meantime, living wills impose high regulatory costs on SIFIs. Regulators estimate that a “credible” resolution plan may take up to 12,400 hours to complete, but a more complex institution may require much more preparation.³³¹

325. Hamilton, *supra* note 319.

326. *Id.*

327. *Id.*

328. *Improving Cross Border Resolution To Better Protect Taxpayers and the Economy: Hearing Before the Subcomm. on Nat’l Sec. and Int’l Trade and Fin., U.S. Senate, 113th Cong.* (2013) (statement of James R. Wigand, Director, Office of Complex Financial Institutions), available at http://www.fdic.gov/news/news/speeches/spmay1513_2.html#_ftnref3, archived at <http://perma.cc/QKK6-KDAR>.

329. Peter Eavis, *Federal Reserve and F.D.I.C. Fault Big Banks’ “Living Will,”* DEALBOOK (Aug. 5, 2014), http://dealbook.nytimes.com/2014/08/05/federal-reserve-and-f-d-i-c-fault-big-banks-living-wills/?_php=true&_type=blogs&_r=0, archived at <http://perma.cc/WJD3-Z5PV>.

330. Miller, *supra* note 282.

331. Marcia L. Goldstein et al., *Navigating Dodd-Frank’s Resolution Plan Requirement*, N.Y. L.J., Dec. 5, 2011, at S4.

Furthermore, living wills must be updated within forty-five days of an event that may have a material effect on a firm's business strategy.³³²

c. Market Messages: Potemkin's Village

Early criticisms of living wills predicted that the regime would have a damaging effect on firms' market ratings. Moody's predicted that living wills "could potentially result in rating downgrades where ratings currently incorporate a high degree of government support."³³³ These downgrades would in turn increase the firms' cost of funding.³³⁴ However, once it became apparent that these living wills would not be scrutinized, the criticisms came to echo those of stress tests, with living wills derided as "simply an exercise to make people feel better."³³⁵ Barclays admits that "market awareness of the existence of living wills and the possibility of a resolution may increase confidence in systemically important financial institutions, in particular as a result of greater collaboration among supervisors."³³⁶

Critics also assert that living wills are simply "false hope" because "they were not prepared by the executives who would respond in the event of another financial crisis."³³⁷ Instead, they are merely exercises done by lawyers and firm representatives in the context of a stable banking world.³³⁸ This is apparent in the living wills themselves. All of the plans begin by touting the strength of the firm with an overwhelmingly positive outlook. The plans show that the firms exceed capital requirements and have more than adequate funding available to them. Citigroup even noted that it "believes it is currently in compliance with the proposed Basel III [Liquidity Coverage Ratio], even though this requirement is not proposed to take effect until 2015" and states that it is unlikely that the firm will ever be in need of resolution.³³⁹ Much like Potemkin's farcical villages built

332. 12 C.F.R. § 381.3(b)(2) (2014) (requiring resolution plans).

333. Jane Croft & Patrick Jenkins, *Moody's Warns Over 'Living Wills'*, FIN. TIMES (Sept. 23, 2009, 10:38 PM), <http://www.ft.com/intl/cms/s/0/504a117a-a874-11de-9242-00144feabdc0.html#axzz2VCfnEXfe>.

334. *Id.*

335. Silver-Greenberg & Schwartz, *supra* note 313.

336. *See also Resolution Plans*, *supra* note 260 (providing an overview of resolution plans); FED. DEPOSIT INS. CORP., OFFICE OF COMPLEX FINANCIAL INSTITUTIONS DODD-FRANK ACT TITLE I: LIVING WILLS OVERVIEW (2012), *available at* http://www.fdic.gov/about/srac/2012/2012-01-25_living-wills.pdf, *archived at* <http://perma.cc/CGQ6-ADBV> (providing an overview of living wills and the regulatory process).

337. Silver-Greenberg & Schwartz, *supra* note 313.

338. Hamilton, *supra* note 284.

339. CITIGROUP INC. & CITIBANK, N.A., *supra* note 274.

to impress outsiders,³⁴⁰ living wills falsely portray the large banks that produce them as stable structures that could fail without causing major systemic disarray.

Therefore, like the stress tests, living wills are used as positive market indicators to shore up confidence in the banking system. Instilling confidence in banking should not be overlooked as a regulatory aim. After all, governments support banks through deposit insurance and bail them out during crises because a banking system cannot survive without trust. When trust is gone, banks encounter runs and consequently fail. Therefore, regulators have crosscutting incentives: to *assure* safety and soundness in banking and to *portray* safety and soundness in banking. Because firms are still reeling from a crisis, and trust in the system is low, these two aims are likely to conflict and produce unholy results. Regulators, though they would like to rehabilitate the firms as soon as possible, are perhaps even more anxious than banks to shore up the public's confidence, in large part because the latter tends to produce the former.

d. Corporations Are People

Like Greek tragedies, crises in financial firms are often stories of individual hubris. For example, Lehman Brothers' failure was at least as much about CEO Richard Fuld's mismanagement of the firm as about the failure of the subprime market.³⁴¹ Similarly, Bear Stearns suffered at the hands of a disengaged CEO, Jim Cayne.³⁴² Bank of America's ill-advised purchase of Merrill Lynch has been explained as a Southern outsider's (Ken Lewis's) desire to "play with the big boys on Wall Street."³⁴³ Michael Lewis described AIG Financial Products' irresponsible and market-creating purchases of collateralized debt obligations from Wall Street as an arrogant, uninformed wager by AIG officer Joseph Cassano. Cassano has since been labeled "The Man Who

340. Amy Tikkanen, *Grigory Aleksandrovich Potemkin*, ENCYCLOPEDIA BRITANNICA ONLINE (Apr. 15, 2014) <http://www.britannica.com/EBchecked/topic/472610/Grigory-Aleksandrovich-Potemkin>, archived at <http://perma.cc/Z84J-TDGQ>.

341. Robert Lenzer, *Wall Street Big Fish Stink from the Head Down*, FORBES (Apr. 23, 2010, 5:25 PM), <http://www.forbes.com/2010/04/23/richard-fuld-jimmy-cayne-barack-obama-streettalk-markets-lenzner.html>, archived at <http://perma.cc/3ZZF-BYD5>.

342. Roddy Boyd, *Bear Stearns CEO Steps Down*, CNN MONEY (Jan. 9, 2008, 10:16 AM), http://money.cnn.com/2008/01/08/news/companies/stearns_cayne.fortune/index.htm?postversion=2008010819, archived at <http://perma.cc/3945-DDFF>.

343. *Frontline: Breaking the Banks* (PBS television broadcast June 30, 2009), available at <http://video.pbs.org/video/1168339502/>.

Crashed the World.”³⁴⁴ Going back to previous disasters, Enron failed because of the dishonesty and conceit of “The Smartest Guys in the Room”—Enron CEOs Kenneth Lay and Jeffery Skilling.³⁴⁵

All this to say that financial crises are not just about failures of balance sheets in the face of severely adverse market scenarios, but about men and women (but mostly men) who unwittingly build houses upon sand. And there will always be tales of mismanagement and miscalculation so long as humans are involved in the markets. How can regulators take account of the risks and problems that involve individual decisionmakers? This question is central to the entire regulatory regime and too complex and multifaceted to answer in these pages. However, it is clear that the stress tests and the living wills—indeed, the entire risk management complex—appear to be leaving human decisionmaking out of their models, perhaps because there is no adequate way to design models to account for human choice. To be sure, the models are meant to reflect and inform human choice, but the hypothetical regime, so focused on future scenarios, cannot take into account how managers of balance sheets will respond to diverse scenarios.

For example, if the stock market suddenly rises or falls, will a fund manager sell, buy, short, or hedge in a particular market? And will she use the opportunity to double down on risk, hoping for a big reward? Or will she accept modest losses in order to prevent what might be a greater loss to come? Stress tests and living wills are not designed to answer these questions—nor do they pretend to. The FRB stated that the models “do not make explicit behavioral assumptions about the possible actions of a BHC’s creditors and counterparties”³⁴⁶

344. Armen Keteyian, *AIG’s Joseph Cassano Refuses to Play Fall Guy*, CBS NEWS (June 30, 2010, 8:09 AM), <http://www.cbsnews.com/news/aigs-joseph-cassano-refuses-to-play-fall-guy/>, archived at <http://perma.cc/83H3-XVP6>.

345. A. O. Scott, *Those You Love to Hate: A Look at the Mighty Laid Low*, N.Y. TIMES (Apr. 22, 2005), <http://www.nytimes.com/2005/04/22/movies/22enro.html>, archived at <http://perma.cc/E3JV-CZYH> (reviewing Alex Gibney’s documentary ENRON: THE SMARTEST GUYS IN THE ROOM (Magnolia Pictures 2005)).

346. BD. OF GOVERNORS OF THE FED. RESERVE SYS., THE SUPERVISORY CAPITAL ASSESSMENT PROGRAM: DESIGN AND IMPLEMENTATION (2009), available at <http://www.federalreserve.gov/bankinforeg/bcreg20090424a1.pdf>; archived at <http://perma.cc/4UQD-VBFP>. Cass Sunstein highlights the phenomenon of behavioral biases in a theory called bounded rationality, which describes cognitive biases that overvalue some risks, undervalue others, and lead to irrational decision making. Cass Sunstein et al., *A Behavioral Approach to Law and Economics*, 50 STAN. L. REV. 1471 (1998). These limits have been used to explain shortcomings in regulation in a variety of contexts, including workplace discrimination and personal decision making. *Id.*; see also Amanda Leiter, *The Perils of a Half-Built Bridge: Risk Perception, Shifting Majorities, and the Nuclear Power Debate*, 35 ECOLOGY L.Q. 31 (2008) (analyzing the modern debate over nuclear

There are two ways to deal with these shortcomings: (1) recognize them and abandon the hypothetical regime based on the conclusion that unreliable data and indicators are worse than none at all, or (2) attempt to remedy them by accounting for human behavior in the hypothetical scenarios. Above, I made the case that regulation by hypothetical in its current form is a flawed framework that should be abandoned. Others have also discredited the risk management regime, of which stress testing and living wills are an outgrowth.³⁴⁷ The banking sector is riddled with unmanageable risks that cannot be adequately controlled. The hypothetical regime therefore offers false confidence.

Stepping away from the risk management regime would lead to some clear remedies that are politically charged and difficult to enforce. For example, many agree that breaking up the largest banks would limit the banks' power and the effects of their failure and end TBTF.³⁴⁸ Enforcing a large capital or equity buffer would also reduce systemic risk by changing incentives and allowing absorption of more risk for longer periods of time, allowing firms to withstand crises. In addition, enforcing activity restrictions that separate traditional banking from more risky ventures could contain risks to fewer products and institutions and reduce contagion. These proposals should be seriously considered by policymakers, but they are outside the scope of this article.

However, if regulators are to press forward with regulation by hypothetical, the hypothetical needs to account for human behavior. The following Part suggests that financial war games are an important way to increase the utility of hypothetical regulation.³⁴⁹

power in light of public cognitive biases). Experts in this field have not yet had much to say about financial decision making because it has been opaque and not subject to review.

347. See Haldane, *supra* note 5.

348. See, e.g., Simon Johnson, *Break up the Big Banks*, N.Y. TIMES (Jan. 12, 2014, 7:00 PM), <http://www.nytimes.com/roomfordebate/2014/01/12/are-big-banks-out-of-control/break-up-the-big-banks>, archived at <http://perma.cc/ALK7-A2RY>.

349. Other articles have referred to financial war games in passing, but without any detail besides mentioning it as a possibility. See e.g., Weber, *supra* note 17, at 2263–66; Marco Sorge, *Stress-testing Financial Systems: An Overview of Current Methodologies* 18–20 (Bank for Int'l Settlements, Working Paper No. 165, 2004), available at <http://www.bis.org/publ/work165.pdf>, archived at <http://perma.cc/KZM6-ZARL> (“Some papers have modeled endogenous trading decisions . . . Further research should attempt to lengthen the time horizon and to extend the analysis from trading strategies to lending strategies, thus integrating the assessment of feedback effects for both market and credit risks.”).

IV. FINANCIAL WAR GAMES

The military has used war games for many years, both as a test of the military's responsiveness to crises and as a way to devise military strategies.³⁵⁰ If we are to test firms against hypothetical scenarios, it is crucial that regulators gauge not only the ability of balance sheets to withstand distress but also the likely behavior of managers and others when faced with unanticipated stresses.

Properly conducted financial war games would test firm management and balance sheets as well as regulatory response in the context of crisis management. Note the inclusion of *both* market participants *and* regulators. Because the reaction to a financial crisis is inherently a regulatory affair, a hypothesis tested against only the market participants—as is currently the case under regulation by hypothetical—tells only a partial story. This Part introduces the concept of financial war games, drawing parallels to simulated crisis management used elsewhere in government. It then discusses features of financial war games that would be peculiar to banking and financial regulation, including issues such as game design and administration, as well as limitations on the information gained from the exercises.

A. The Theory of War Games

The concept of war games—or war simulations, as the military refers to the exercise—has been practiced for centuries. Indeed, historians claim that the Persians invented the game of chess as an early war simulation.³⁵¹ Currently, war simulations involve tools that range from pure computer modeling to fully staged military ground exercises. Since the 1950s, the U.S. Department of Defense has created and used a variety of simulations,³⁵² including computerized war

350. Nicholas Schmidle, *Getting bin Laden*, NEW YORKER (Aug. 8, 2011), available at http://www.newyorker.com/reporting/2011/08/08/110808fa_fact_schmidle, archived at <http://perma.cc/6949-7U8E> (last visited Aug. 11, 2014); *FAQ's*, U.S. NAVAL WAR COLLEGE, <https://www.usnwc.edu/Research---Gaming/War-Gaming/Documents/About-Us/FAQ-s.aspx>, archived at <http://perma.cc/DQ8X-RD7K>.

351. *History of Chess*, TRADEGAMES.ORG, <http://www.tradgames.org.uk/games/Chess.htm>, archived at <http://perma.cc/RXL9-6FJH> (last visited Feb. 2, 2014).

352. According to the U.S. Department of Defense, a war game is “a simulation, by whatever means, of a military operation involving two or more opposing forces, using rules, data, and procedures designed to depict an actual or assumed real life situation.” DEP’T OF DEF., JOINT PUBLICATION 1-02: DICTIONARY OF MILITARY AND ASSOCIATED TERMS (2014), available at *FAQ's*, *supra* note 350.

games as well as “networked, multiplayer simulations.”³⁵³ Today, military simulations include “immersive virtual-reality training environments, and complex tactical team trainers comprising multiple sites each replicating the physical environment of one or more military platforms.”³⁵⁴

In *The Art of Wargaming*, Peter Perla defined a war game as:

a warfare model or simulation whose operation does not involve the activities of actual military forces, and whose sequence of events affects and is, in turn, affected by the decisions made by players representing the opposing sides. In the end, a wargame is an exercise in human interaction, and the simulated outcomes of those decisions make it impossible for two games to be the same. . . . Its forte is the exploration of the role and potential effects of human decisions.³⁵⁵

Experts state that effective military war games must be made up of several elements. First, war games must simulate the “conflictual nature of war.”³⁵⁶ In other words, a war game forces an institution to face an opponent with plans contrary to its own. This exposes uncertainties and risks in the institution’s assumptions.³⁵⁷ Second, war games must recognize that chance plays a prominent role in many decisions and outcomes. For example, the Union Army under George McClellan lost track of Robert E. Lee’s Confederate forces and would not have found them but for the “accidental discovery of a copy of Lee’s plans, which were found in a cigar box” by troops foraging in a deserted Confederate camp.³⁵⁸ Thus, human luck changed the outcome of a critical campaign and perhaps the war.³⁵⁹ But war games can aggregate the thousands of decisions by individuals at every stage in an action to accurately depict the way myriads of mundane decisions can have significance over time.³⁶⁰ By taking chance events and uncertainties seriously, “military users of war games have been using chance or Monte Carlo gaming techniques to determine combat results

353. Carrie McLeroy, *History of Military Gaming*, SOLDIERS MAG., Sept. 2008, at 4; available at http://usarmy.vo.llnwd.net/e2/rv5_other/soldiers/archives/pdfs/sep08all.pdf, archived at <http://perma.cc/X9B3-DB2V>.

354. Jason E. Summers, *Simulation-Based Military Training: An Engineering Approach To Better Addressing Competing Environmental, Fiscal, and Security Concerns*, J. WASH. ACAD. SCI., Spring 2012, at 9, 12, available at http://www.washacadsci.org/Journal/Journalarticles/V.98-1-simulation_based_military_training_jSummers.pdf, archived at <http://perma.cc/XG73-2W92>.

355. PETER PERLA, *THE ART OF WARGAMING* 164 (1990).

356. Stephen P. Glick & L. Ian Charters, *War, Games, and Military History*, 18 J. CONTEMP. HIST. 567, 573–74 (1983).

357. *Id.* at 573.

358. *Id.* at 574.

359. *Id.*

360. *Id.*

for nearly as long as they have been employing war games.”³⁶¹ The third critical element of an effective war game is to replicate the “fog of war,” a condition that results from high levels of chance and uncertainty in military combat.³⁶²

Of course, the more involved and complex the simulation, the higher the cost and the higher the informational value. For example, before the Navy SEALs operation that captured Osama bin Laden in Pakistan, the SEALs practiced the maneuver many times in the United States.³⁶³ The military did its best to replicate the Pakistani compound housing bin Laden, casting various players in realistic simulations to determine, *ex ante*, potential problems the SEALs would face during the actual attack.³⁶⁴ The war gaming proved useful training for the troops. However, there was one major hitch in the operation: one helicopter was grounded because of a centripetal air suction. This grounding occurred because, when reconstructing the compound in the U.S., the military surrounded it with a chain link fence. In reality, the compound was surrounded by walls. This discrepancy created different landing conditions in practice than the helicopters faced in reality. Had the military created an exact replica, that problem could have been avoided.

The key point is this: the closer one comes to simulating an actual scenario, the less likely it is that unanticipated situations will derail a plan of action. However, it is very costly to simulate all possible contingencies. Real war simulations, then, are used for the most high-stakes operations. While financial war games would not require the amount of expensive weaponry and human power that true war gaming requires, creating realistic financial simulations is more costly than merely running computer models. Even so, given the dangers that failed financial institutions would pose to the world economy, conducting some high-stakes simulations may well be worth the cost.

B. Financial War Games

Conducting financial war games is not without precedent. In March of 2009, the Pentagon hosted a two-day financial war game event at the Warfare Analysis Laboratory in Laurel, Maryland, a

361. Glick and Charters define Monte Carlo as “the determination of outcomes on a random basis through such means as dice, roulette wheels, etc.” *Id.* at 569, 581.

362. *Id.* at 576.

363. Schmidle, *supra* note 350.

364. *See id.*

facility that is used for conducting military war games.³⁶⁵ However, these war games focused on national security, not on financial stability.³⁶⁶ The military was concerned about global financial problems because of their “real world consequences, including failed states.”³⁶⁷ Bankers and hedge fund managers, among others, were invited to the Pentagon to role-play a financial disaster.³⁶⁸ Paul Bracken, a professor at the Yale School of Management and expert in private equity, attended the sessions. He stated that the exercise “was an example of the changing nature of conflict The purpose of the game is not really to predict the future, but to discover the issues you need to be thinking about.”³⁶⁹

Although financial regulators have not yet conducted any war game scenarios, Deloitte, a private consulting firm, has offered to conduct war game scenarios for its financial institution clients.³⁷⁰ In 2010, Deloitte acquired Simulstrat, a spinoff from the Department of War Studies at King’s College London and a pioneer in war gaming for public and private sector organizations.³⁷¹ Deloitte suggests that its clients use war games to strengthen and expose the flaws in their internal stress testing and their Dodd-Frank mandated living wills.³⁷² However, the object of these war games is not to control for risks or even test balance sheets. They are primarily used to inform firm structure or to create protocols for their crisis-management employees.³⁷³

Conducting war games would certainly benefit individual firms as the exercise allows firms to assess the scope of vulnerabilities, the strength of their contingency plans, and their general risk profiles. However, to measure systemic risk, regulators need more than just firm-specific information. Regulators need to measure risks across

365. Eamon Javers, *Pentagon Preps for Economic Warfare*, POLITICO (Apr. 9, 2009, 4:18 AM), available at <http://www.politico.com/news/stories/0409/21053.html>, archived at <http://perma.cc/PK6K-24BH>.

366. JAMES RICKARDS, *CURRENCY WARS: THE MAKING OF THE NEXT GLOBAL CRISIS* 3–16 (2012).

367. Javers, *supra* note 365.

368. *Id.*

369. *Id.*

370. DELOITTE, *THIS IS NOT A TEST: HOW SIMULATIONS AND WARGAMING CAN HELP YOU MANAGE BUSINESS RISK AND MAKE DECISIONS IN A COMPLEX ENVIRONMENT* 7 (2013), available at http://www.deloitte.com/assets/Dcom-UnitedStates/Local%20Assets/Documents/Consulting/us_cons_thisisnotatest_05102013.pdf, archived at <http://perma.cc/6M8C-X8JZ>.

371. *Deloitte Acquires King’s Wargaming Outfit*, CONTINUITY INS. & RISK ONLINE (Feb. 23, 2010), <http://www.cirmagazine.com/cir/deloitte-acquires-kings-wargaming-outfit.php>, archived at <http://perma.cc/DVA6-53PB>.

372. DELOITTE, *supra* note 370, at 3.

373. *Id.*

firms and understand how one firm's vulnerabilities can affect the system. For example, the possible failure of the insurer AIG, which was not overseen by any banking regulators, threatened to collapse the entire financial system because AIG had insured trillions of derivatives for almost every large financial institution.³⁷⁴ Regulators must be able to see the system as a whole to understand what risks threaten it. Similarly, when the military conducts a war game of a potential Syrian strike, they must include players representing Iranian, Russian, Chinese, and Israeli interests to fully understand and prepare for each nation's potential response to an attack and prepare for all those contingencies.

If regulators are committed to using hypotheticals to inform their efforts, they must ensure that the results account for all variables, especially human decisionmaking. Financial war games are one way to do so. What would such an exercise look like? Borrowing from the Pentagon's playbook, regulators would invite experts in the field to assume a role in the financial sector. The regulators would then model a financial stressor or firm failure, and each party would react to protect their own interests. The resulting data would be aggregated to provide an accurate understanding of the vulnerabilities of the system as a whole and each individual firm.

The players could be representatives from the actual firms or industry experts who could vicariously play their roles. (Ratings agencies, insurers, and regulators should also play a role.) Both choices have advantages and flaws: using experts, and not firm insiders, minimizes the risk of insiders trying to game the game. In other words, insiders with reputations to protect might behave in a more altruistic manner than they would behave in a real world situation. For example, in the event of counterparty failure, a firm might engage in opportunistic behavior that would accelerate a counterparty's failure or cause damage to other firms. But the insiders might not display this sort of behavior in a low-stakes simulation. In contrast, experts who are not repeat market players and have no reputational concerns would take actions that actually reflect those made in real crises. The downside of outside experts, however, is that they are unable to mimic or portray the culture of a firm, and as stated above, culture has a lot to do with how decisions are made.

374. Gregory Gethard, *Falling Giant: A Case Study of AIG*, INVESTOPEDIA (Mar. 25, 2009), <http://www.investopedia.com/articles/economics/09/american-investment-group-aig-bailout.asp>, archived at <http://perma.cc/BX6V-T6FB>.

C. Challenges of Financial War Games

The principal challenge to financial war gaming is that even a realistic war game simulation needs to use hypothetical situations based on historical data to determine risk exposure. As illustrated above, hypothetical models of any sort have serious and irremediable structural flaws. Carefully conducted war games have the potential to produce more, and more accurate, information than a balance sheet-based stress test, but they do not cure the faulty assumptions of the hypothetical regime.³⁷⁵ For example, a war game needs prompts and assumptions—or stress. And in devising prompts, regulators would still be using yesterday’s crisis to imagine the future and would be just as unaware of black swans or unprecedented events with catastrophic market consequences.

Furthermore, the simulations would be susceptible to gamesmanship by the players and might not accurately reflect firm response to financial stressors. Just as regulators’ incentives to instill trust in the financial system might lead them to administer “soft” stress tests, so might a firm trying to instill confidence in their creditors, counterparties, and supervisors depict a rosier picture than is accurate. In addition to the problems with war games’ effectiveness, they are also more costly to administer than stress tests. In addition to the expense associated with the creation and administration of hypothetical models, which is where stress tests stop, war games involve more human power—namely, more experts and industry insiders. However, these costs can easily be justified if they can help prevent firm failure. In addition, if war games exposed more (and more severe) firm weaknesses than stress testing, they would be more useful in designing future regulation. However, unfortunately, war games would thwart the FRB’s market-calming objectives.

IV. CONCLUSION

As banking has changed over the last century, regulators responded using a variety of regulatory tools to protect the safety of the banking system. Before the era of banking deregulation, regulators used bright-line rules and restrictions. These restrictions could not survive the transformation of banking that occurred during the 1970s and 1980s. The financial world grew larger and more complex, and

375. War games are not just another version of hypothetical scenarios. FRANK PARTNOY, WAIT: THE ART AND SCIENCE OF DELAY 70–76, 125–26, 218–24 (2013) (describing military and chess decision making).

regulators met these changes with more market- and industry-driven regulation. Many argued that activity restrictions and geographic restrictions prohibited banks from competing in the modern financial world. Regulators needed to find a way to ensure safety while allowing banks to stay competitive. Thus, the disclosure, capital, and risk management regimes were born. The disclosure regime was based on the theory that, if banks shared enough information with the market, the market would discipline excessive risk taking or mismanagement. The capital regime was thought of as a way to incentivize banks to decrease risk by putting more of their own equity on the line and provide a buffer in the event of failure. The risk management regime was an industry-led effort to account for risk in a complex and fast-changing market. Banks used the tools of risk management to estimate their vulnerabilities. Regulators oversaw the creation and administration of these models but mainly relied on bankers themselves to design and implement these internal programs.

The recent financial crisis made clear that the current menu of modern regulation had failed. The disclosure system did not work because the market was unable to account for the actual risks, and rating agencies and other monitors of information were unable to synthesize the information the banks were disclosing. Capital requirements came up short under conditions that caused a rapid depletion of capital across the entire financial sector. And risk models had not accounted for unprecedented or “black swan” events, such as a steep nationwide decline in housing prices. In the wake of these events, many commentators have demanded more capital, more disclosure, and better risk management to improve regulatory oversight.

This Article highlights a new strain of financial regulation introduced by Dodd-Frank: regulation by hypothetical. Two of Dodd-Frank’s pillars—stress tests and living wills—use hypothetical future scenarios to test firms’ current positions. The FRB creates these hypotheticals using historical data and tests firms’ current balance sheets in light of possible adverse scenarios. The new hypothetical regime is an extension of the risk management regime, but differs from risk management because regulation by hypothetical is designed and implemented by regulators and the hypothetical test results are used to inform formal regulatory responses.

The hypothetical regime, as currently practiced, suffers from several problems. If these problems are left unremedied, they will pose grave dangers to market stability. Like the tools of the risk management regime, the testing mechanisms of regulation by hypothetical will fail if they remain focused on historical data and events. In addition, these mechanisms, as now conceived, test a static

balance sheet but not a firm's dynamic response. Not only is it unlikely that currently employed tests can accurately diagnose a firm's vulnerability to future events, but it is also likely that these tests cause affirmative harms. In particular, they may signal to the public a greater measure of financial-sector stability than exists in reality. This result, which in effect embodies a form of government subsidy to the banking industry, is especially troubling in light of the many subsidies that the industry already receives.

The bottom line is that these tests must be either abandoned as a regulatory tool or significantly enhanced. One way to pursue the latter course of action is for regulators to design financial war games. Such an exercise would allow regulators to test not just firms' balance sheets but also the firms' responses to potential disasters. Henry Paulson described the quickly unfolding financial crisis of 2008 as "the financial equivalent of a war,"³⁷⁶ and certainly it thrust the banking industry into the financial equivalent of the "fog of war." The next crisis will likely unfold like a war as well. Thus, regulators should plan accordingly.

376. James B. Stewart, *The Eight Days of the Financial Crisis*, NEW YORKER, Sept. 21, 2009, available at http://www.newyorker.com/reporting/2009/09/21/090921fa_fact_stewart.