

MACROPRUDENTIAL REGULATION: A SUSTAINABLE APPROACH TO REGULATING FINANCIAL MARKETS

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Following the financial crisis that began in 2007, Congress and regulators acted to address perceived gaps in the regulation of corporate boards, including boards of large, complex financial institutions. With the goal of improving the stability of global financial markets, regulators have adopted reforms intended to enhance the role of boards, particularly those of financial institutions, as gatekeepers and systemic risk monitors. Arguing that the culture of financial institutions may lead board to govern these businesses less effectively than boards in non-financial sectors, this Article challenges assumptions that conventional regulatory or corporate governance mechanisms will conclusively address systemic risk concerns in the financial sector.

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I. INTRODUCTION

Over the last thirty years, complex derivatives contracts¹ and other exotic, innovatively engineered financial products have captured an increasingly prominent role in financial markets.² The notional value³ of over-the-counter (OTC) derivative agreements grew from \$3.45 trillion in 1990⁴ to over \$700 trillion by 2011.⁵ Financial product engineers, also described as “rocket scientists,”⁶ carefully design these financial instruments to avoid the ambit of federal and state statutes that regulate the origination and trading of complex financial instruments.⁷

In tandem with the explosive growth of complex financial products, a new category of financial institutions emerged.⁸ To avoid the legal, tax,

1. Derivatives contracts are financial agreements whose value is derived from the value of a financial instrument identified in the contract. For a description of the characteristics of derivatives, the benefits and costs derivatives transactions create, and concerns regarding market participants' use of these financial products to manage risk, see Henry T.C. Hu, *Misunderstood Derivatives: The Causes of Informational Failure and the Promise of Regulatory Incrementalism*, 102 *YALE L.J.* 1457, 1463 (1993); Kristin N. Johnson, *Things Fall Apart: Regulating the Credit Default Swaps Commons*, 82 *U. COLO. L. REV.* 167, 182 (2011); Frank Partnoy & David A. Skeel, Jr., *The Promise and Perils of Credit Derivatives*, 75 *U. CIN. L. REV.* 1019, 1021–22 (2007); Roberta Romano, *A Thumbnail Sketch of Derivative Securities and Their Regulation*, 55 *MD. L. REV.* 1, 27 (1996).

2. See Steven L. Schwarcz, *Regulating Complexity in Financial Markets*, 87 *WASH. U. L. REV.* 211, 220 (2009); Johnson, *supra* note 1, at 196–99.

3. The term notional value refers to the face value of the debt securities or loans identified in a financial arrangement. See *BARRON'S FINANCIAL GUIDES: DICTIONARY OF FINANCE AND INVESTMENT TERMS* 487–88 (8th ed. 2010).

4. ALFRED STEINHERR, *DERIVATIVES: THE WILD BEAST OF FINANCE* 53–60 (1998).

5. See *BANK FOR INT'L SETTLEMENTS OTC DERIVATIVES MARKET ACTIVITY IN THE FIRST HALF OF 2011* (2011), available at <http://www.bis.org/statistics/otcder/dt1920a.pdf>; see also Mark J. Roe, *The Derivatives Market's Payment Priorities as Financial Crisis Accelerator*, 63 *STAN. L. REV.* 539, 543 n.6 (2011) (discussing the nearly fortyfold growth in interest rate derivatives market from \$11 trillion in 1994 to \$430 trillion in 2009).

6. Arthur E. Wilmarth, Jr., *The Transformation of the U.S. Financial Services Industry, 1975–2000: Competition, Consolidation, and Increased Risks*, 2002 *U. ILL. L. REV.* 215, 335.

7. One commentator offers a careful evaluation of market participants' efforts to design contractual arrangements beyond the ambit of regulation. See Victor Fleischer, *Regulatory Arbitrage*, 89 *TEX. L. REV.* 227 (2010). For a discussion of financial products intentionally created to minimize federal and state regulatory oversight, see Erik F. Gerding, *Credit Derivatives, Leverage, and Financial Regulation's Missing Macroeconomic Dimension*, 8 *BERKELEY BUS. L.J.* 29, 43–44 (2011); Kathryn Judge, *Fragmentation Nodes: A Study in Financial Innovation, Complexity, and Systemic Risk*, 64 *STAN. L. REV.* 657, 679 (2012).

Accounting policies, for example, include over-the-counter (OTC) derivatives among off-balance-sheet transactions. Investment in off-balance-sheet transactions are typically recorded separately from existing financial obligations. For a discussion of accounting policies related to derivatives, see Kenneth C. Kettering, *Securitization and Its Discontents: The Dynamics of Financial Product Development*, 29 *CARDOZO L. REV.* 1553, 1572 (2008).

8. The term financial institution refers to investment banking firms, bank holding companies, and traditional depository banks or thrifts that engage in investment businesses in the financial services industry—including custodial, brokerage, lending, and underwriting services for securities and other assets, insurance companies, hedge funds, private equity funds, and mutual funds. ANTHONY SAUNDERS & MARCIA MILLON CORNETT, *FINANCIAL INSTITUTIONS MANAGEMENT: A RISK MANAGEMENT APPROACH* 97–103 (6th ed. 2008). The literature also refers to financial institutions as financial intermediaries. RICHARD S. CARNELL ET AL., *THE LAW OF BANKING AND FINANCIAL*

and regulatory obligations imposed on conventional depository banks, several bank holding companies, investment banks, broker-dealers, and other market participants engineered enterprises that offer services similar to conventional banking institutions, yet adopt nontraditional business organizational forms.⁹ These new banking-lite businesses offer credit intermediation, underwriting, and other financial services and products similar to those offered by their regulated counterparts.¹⁰

Commentators describe the new class of unregulated or lightly regulated financial products as shadow banking instruments and the parallel class of unregulated entities or lightly regulated businesses as shadow banking institutions.¹¹ Together, the shadow banking instruments and institutions comprise the shadow banking system.¹² The rise of the shadow banking system and its role in the recent financial crisis engenders new challenges for the U.S. federal regulatory framework.¹³

Risk taking, in a capitalist economy, is a central component in the operational strategy of every business. A risk-taking entity presumably internalizes the positive and negative externalities engendered by profit seeking behavior.¹⁴ For financial institutions, the general presumption that risk takers will internalize both the premium of higher returns and the costs associated with increased risk exposure proves problematic.¹⁵ Conventional deposit banking institutions benefit from an implicit government guarantee; the Federal Reserve and Federal Deposit Insurance Corporation have the ability to enhance the liquidity or orchestrate the dissolution of regulated banking institutions. The existence of a federal safety net creates a significant temptation for regulated banking institutions to take risks that may lead to bankruptcy or insolvency. Commentators describe these temptations as moral hazard concerns.

INSTITUTIONS 36–38 (4th ed. 2009). For a description of the increasing significance of unregulated financial institutions that offer selected credit, banking, and underwriting services, see *infra* Part III.A.

9. Erik F. Gerding, *The Shadow Banking System and Its Legal Origins* 32 (Aug. 23, 2011) (unpublished manuscript), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1990816.

10. Gerding, *supra* note 7, at 41–42.

11. See *infra* Part III.A.

12. *Id.*

13. *Id.*

14. The term externality refers to benefits or costs that result from the exploitation of an economic or social opportunity. PAUL A. SAMUELSON & WILLIAM D. NORDHAUS, *ECONOMICS* 310–15 (14th ed. 1992). The classic illustration of a negative externality depicts an industrial factory that manufactures economically valuable goods. In the process of manufacturing the goods, however, the factory pollutes the air and water of the surrounding community. The benefits of producing the goods, or the profits, flow to the factory owner. The factory, however, emits harmful pollution. Neighbors of the factory breathe the air and drink water from a ground source contaminated by the factory's pollution. Members of the community incur the costs of the factory's production, namely, the air and water pollution generated when the factory manufactures goods. We refer to these costs as negative externalities. See generally R.H. Coase, *The Problem of Social Cost*, 3 *J.L. & ECON.* 1, 15, 41–42 (1960) (proffering solutions such as imposing government tax on the factory or organizing payments by private residents to the factory).

15. William W. Bratton & Michael L. Wachter, *The Case Against Shareholder Empowerment*, 158 *U. PA. L. REV.* 653, 659 (2010).

To mitigate systemic risk concerns, or concerns that a systemically significant financial institution or a chain of financial institutions may fail,¹⁶ state and federal regulators have historically relied on prudential regulation.¹⁷ Prudential regulation centers on identifying and mitigating exposure to endogenous shocks (solvency crises) within individual financial institutions. Prudential regulation aims to prevent excessive risk taking by regulating leverage.¹⁸ Examples of prudential regulation include limits on commercial lending, banks' leverage of deposits, and margin and collateral requirements for securities transactions.¹⁹ To comply with prudential regulation, a commercial bank's board of directors typically introduces, implements, and enforces internal risk-management policies.²⁰ In the past, encouraging bank boards to dedicate significant attention to capital adequacy and other prudential concerns offered a sustainable approach to banking regulation. Times have changed, however, and in order to keep pace with these changes, financial market regulators may need more effective tools to address emerging systemic risk concerns.

The rise of the shadow banking system creates concerns that unregulated financial institutions may attempt to externalize the risks associated with their activities, creating new classes of systemic risks.²¹ Prudential regulation adopts several myopic assumptions about conventional commercial banking institutions that are not consistent with shadow banking business models.²² For example, prudential regulation assumes that regulated entities hold deposits for account holders who may with-

16. See sources cited *infra* note 21.

17. See Heidi Mandanis Schooner, *Private Enforcement of Systemic Risk Regulation*, 43 CREIGHTON L. REV. 993, 1010 (2010); see also Gerding, *supra* note 7, at 61–73.

18. "Such solvency regulation avoids deposit insurance payouts and systemic risk, transmitted through interbank deposit linkages, payment systems, or imitative runs. Prescription of bank capital adequacy—the amount of capital relative to assets—has become the dominant method of prudential regulation in recent decades. . . . A key aspect of the U.S. regulatory system is 'prompt corrective action,' a mandate for supervisors to intervene in banks as their capital and, occasionally, other performance factors decline, to correct course or close problem banks before their capital becomes negative and uninsured depositors are exposed to risk." HAL S. SCOTT & ANNA GELPERN, *INTERNATIONAL FINANCE: TRANSACTIONS, POLICY, AND REGULATION* 237 (18th ed. 2011).

19. See *infra* Part II.A.

20. *Id.*

21. While there is no universally adopted definition of systemic risk, scholars generally agree that systemic risk involves "(i) an economic shock such as market or institutional failure that triggers (through a panic or otherwise) either (X) the failure of a chain of markets or institutions or (Y) a chain of significant losses to financial institutions, (ii) resulting in increases in the cost of capital or decreases in its availability, often evidenced by substantial financial-market price volatility." Steven L. Schwarcz, *Systemic Risk*, 97 GEO. L.J. 193, 198–204 (2008); see also Viral V. Acharya et al., *Regulating Systemic Risk*, in *RESTORING FINANCIAL STABILITY: HOW TO REPAIR A FAILED SYSTEM* 283, 284–89 (2009); E.P. DAVIS, *DEBT, FINANCIAL FRAGILITY, AND SYSTEMIC RISK* 117 (1992) (defining systemic risk as "a disturbance in financial markets which entails unanticipated changes in prices and quantities in credit or asset markets, which lead to a danger of failure of financial firms, and which in turn threatens to spread so as to disrupt the payments mechanism and capacity of the financial system to allocate capital").

22. See *infra* Part III.

draw their cash or assets immediately, creating short-term liabilities.²³ Commercial banks earn fees by lending these deposits to commercial and individual borrowers, creating long-term assets.²⁴ A maturity mismatch arises.²⁵ If depositors contemporaneously demand the return of their cash and assets, described as a “run” on the bank, the bank may be unable to recall outstanding debt obligations and satisfy depositors’ demands.²⁶ A flood of depositors withdrawing assets may trigger a series of events that lead to the bank’s insolvency.²⁷ To address such endogenous risks, prudential regulation encourages banks to adopt corporate governance mechanisms that reduce the likelihood of depositors’ loss of confidence or bank runs.²⁸

In their seminal article, theorists Michael Jensen and William Meckling explore the separation of economic rights and decision-making authority that characterizes modern corporations.²⁹ Physically dispersed shareholders delegate authority over the business and affairs of the corporation to professional managers whose interests may diverge from the interests of the owners of the corporation.

Appreciating that managers may shirk, steal, or worse, shareholders create mechanisms to prevent errant behavior.³⁰ The structural mechanisms adopted to monitor professional managers create costs referred to as agency costs. Jensen and Meckling’s theory assumes that dynamic, market-based solutions emerge to address agency costs. For example, appointing a board of directors enables shareholders to monitor executives and employees’ conduct and preserve shareholders’ capital investment in the firm. Boards facilitate firms’ oversight of the positive and negative externalities that business activities engender.³¹ The board of directors serves as a critical gatekeeper, monitoring a corporation’s compliance with state and federal regulation and employees’ risk-taking decisions.³² Thus, it is not surprising that prudential regulation relies heavily

23. Steven L. Schwarcz, *Regulating Shadow Banking: Inaugural Address for the Inaugural Symposium of the Review of Banking & Financial Law*, 31 REV. BANKING & FIN. L. 619, 625 (2011–2012).

24. *Id.* at 621 n.8.

25. *Id.*

26. Jonathan R. Macey & Geoffrey P. Miller, *Bank Failures, Risk Monitoring, and the Market for Bank Control*, 88 COLUM. L. REV. 1153, 1156–59 (1988); Daniel R. Fischel et al., *The Regulation of Banks and Bank Holding Companies*, 73 VA. L. REV. 301, 307–09 (1987).

27. *See* Macey & Miller, *supra* note 26, at 1156.

28. *See infra* Part II.B.

29. Michael C. Jensen & William H. Meckling, *Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure*, 3 J. FIN. ECON. 305 (1976).

30. Owners of modern corporations delegate their authority over operational decisions to professional managers. Upon delegation of authority, a problem arises. Managers’ interests and shareholders’ interests may not align. Managers may shirk or steal in pursuit of their own interests. The expenses that shareholders incur to create mechanisms to protect their economic interests in the corporation are referred to as agency costs. For a discussion of agency costs, see Kristin N. Johnson, *Governing Financial Markets: Regulating Conflicts*, 88 U. WASH. L. REV. 185 (2013).

31. Jensen & Meckling, *supra* note 29.

32. *See infra* Part II.B.

on the board of directors of financial institutions to ensure compliance with regulatory standards.³³ The rationale for employing corporate governance as a risk-mitigating device is less persuasive, however, in the context of shadow banking instruments and institutions. Placing financial institution board reforms and prudential regulation at the center of systemic risk management fails to recognize dynamic changes in the contours of financial markets, namely, the rise of shadow banking.

Following the financial crisis that began in 2007, Congress and regulators began to develop reforms designed to improve the risk monitoring and oversight efforts of large, complex financial institutions' boards of directors. To address gaps in federal regulations governing financial markets, Congress adopted the Dodd-Frank Wall Street Reform and Consumer Protection Act (Dodd-Frank Act) on July 21, 2010.³⁴ Among other objectives, the Act aims to improve the role of complex financial institution boards as systemic risk monitors and gatekeepers.³⁵

As shadow banking institutions eclipse conventional banking institutions' historically prominent role in credit services, relying on the boards of regulated financial institutions to ensure compliance with prudential regulation overlooks the impact of shadow banks in financial markets.³⁶ Regulation must address the increasing interconnectedness between regulated financial institutions and shadow banking institutions, the economic transactions within the shadow banking system, and regulated financial institutions' use of shadow banking instruments.³⁷

This Article challenges the efficacy of board compositional and structural reforms that require boards to create risk-management committees, to appoint only independent directors to compensation committees, or to designate a majority of seats on the board or specific committees to independent directors. This Article makes three significant contributions. First, this Article illuminates the underexplored shadow banking system, examining its contours, significance, and increasing prominence in financial markets. The rise of shadow banking institutions

33. *Id.*

34. Dodd-Frank Wall Street Reform and Consumer Protection Act, Pub. L. No. 111-203, 124 Stat. 1376 (2010) (codified as amended in scattered sections of 7, 12, 15, 18, 22, 31, 42 U.S.C.).

35. See *infra* Part II.B discussing the introduction of structural and compositional board reforms, such as requiring the creation of risk management committees and imposing the obligation that independent directors comprise a majority of the members of the committee.

36. See Jon Danielsson & Hyun Song Shin, Endogenous Risk 1 (September 21, 2002) (unpublished manuscript), available at <http://www.ucd.ie/t4cms/DANIELSSON.pdf> ("Endogenous risk refers to the risk from shocks that are generated and amplified *within* the system. It stands in contrast to exogenous risk, which refers to shocks that arrive from *outside* the system.").

37. GRP. OF THIRTY, ENHANCING FINANCIAL STABILITY AND RESILIENCE: MACROPRUDENTIAL POLICY, TOOLS, AND SYSTEMS FOR THE FUTURE 13 (2010), available at http://www.group30.org/images/PDF/Macroprudential_Report_Final.pdf (stating that, since prudential supervision is limited to calibrating institution-specific balance sheet risks, there is a limit to what this supervisory framework can achieve in a financial system characterized by deep integration).

and shadow banking instruments significantly alters the kinds of enterprises that constitute systemically important financial institutions.

Second, this Article rejects the notion that conventional composition and structural corporate governance mechanisms, such as requiring boards to create specific risk-management committees or appoint independent directors to these committees, determinatively address systemic risk concerns. After examining the rationale for relying on corporate governance mechanisms to mitigate systemic risk, this Article finds that regulators' emphasis on conventional board reforms is misplaced. Concentrating on preventing endogenous events that impact regulated financial institutions leaves the financial system vulnerable to exogenous shocks created by actors and activities in the shadow banking system.

Third, this Article concludes that regulators should dedicate resources to understanding and identifying exogenous events that engender and exacerbate systemic risk concerns. This Article advocates for a greater emphasis on macroprudential regulation, an emerging regulatory framework. Macroprudential regulation examines the interconnectedness among regulated and shadow banking financial institutions, including their relationships as counterparties, shared reliance on important market utilities, common use of quantitative models and risk metrics, and their correlated exposure to certain assets.³⁸ In the past, limited research and analytical tools stymied regulators' ability to adopt a macroprudential approach.³⁹ With increasing frequency, researchers and research literature identify important benefits associated with macroprudential policy.⁴⁰ Macroprudential regulation addresses many of the weaknesses of prudential policy by focusing on both the endogenous events that impact individual financial institutions and the exogenous events that lead to systemic risk concerns.⁴¹ Because macroprudential regulation is an emerging theory, this Article merely offers a thumbnail sketch of the benefits and limits of this approach.

Part II of this Article explores the presumed role of corporate boards and post-crisis corporate governance reforms designed to enhance financial institution boards' execution of one of their central objectives—monitoring the business's exposure to risk. This Part examines board independence and risk management oversight requirements. This Part argues that financial institution boards are distinct from the boards

38. *Id.* at 28.

39. *See infra* Part IV.

40. *Id.*

41. AVINASH PERSAUD, THE WORLD BANK GRP., MACRO-PRUDENTIAL REGULATION: FIXING FUNDAMENTAL MARKET (AND REGULATORY) FAILURES 1 (2009), available at <http://rru.worldbank.org/documents/CrisisResponse/Note6.pdf> (“The solution to the crisis is not more regulation, though more comprehensive regulation may be required in some areas. Instead, it is better regulation—in particular, regulation with a greater macroprudential orientation . . .”); *see also* Gabriele Galati & Richhild Moessner, *Macroprudential Policy—A Literature Review* 7 (Bank for Int'l Settlements, Working Paper No. 337, 2011), available at <http://www.bis.org/publ/work337.pdf>.

of other types of businesses and, therefore, mitigating systemic risk concerns in financial markets requires unique reforms.

Part III explores an undertheorized area of financial markets regulation—the rise of the shadow banking system and argues that the financial institutions and financial instruments that comprise this sector of financial markets create new systemic risk concerns. Part IV concludes by offering a suggestion for a more comprehensive theoretical approach to regulation. Part IV’s analysis, limited solely to outlining a framework for reform, suggests adopting a macroprudential regulatory framework.

II. RISK-MANAGEMENT OVERSIGHT

A. *The Monitoring Board*

Two significant factors influence the decision-making processes adopted by most U.S. corporations. First, based on the influence of the organizational structure of English joint stock companies,⁴² U.S. corporations typically vest formal decision-making authority in an elected, representative body, a board of directors.⁴³ State statutes authorize the board to make decisions on behalf of the corporation. Notwithstanding this mandate, directors rarely, if ever, sully their hands advancing the proverbial corporate plow.⁴⁴ Rather, directors delegate their authority to appointed executive officers who manage the daily operations of the business.⁴⁵

A second factor explains the evolution of reposing central decision-making authority in a board of directors. As corporations evolved from entrepreneurial family-owned and controlled ventures to their modern form, a significant shift occurred in the composition of the board of directors.⁴⁶ Detailing this evolution in *The Modern Corporation and Private Property*, Adolph Berle and Gardiner Means explain that in contemporary periods the owners of corporations are no longer the robber

42. Franklin A. Gevurtz, *The Historical and Political Origins of the Corporate Board of Directors*, 33 HOFSTRA L. REV. 89, 115–22 (2004).

43. *Id.* at 108 (citing An Act Relative to Incorporations for Manufacturing Purposes, 1811 N.Y. Laws LXVII).

44. As early as the sixteenth and seventeenth centuries, the charters of English trading companies permitted passive investors to acquire transferable ownership stakes coupled with voting interests that enabled the investors to representatively govern the business. *Id.* at 122.

45. See, e.g., DEL. CODE ANN. tit. 8, § 141(e) (2010) (permitting directors to rely on the advice of officers and experts); *id.* § 141(a) (indicating that the corporation’s business and affairs shall be “managed by or under the direction of a board of directors” (emphasis added)).

46. Elizabeth Cosenza, *The Holy Grail of Corporate Governance Reform: Independence or Democracy?*, 2007 BYU L. REV. 1, 18 (“Whereas in the 1960s most boards had a majority of in-house, non-independent directors, most boards today have a majority of outside, independent directors.”); Jeffrey N. Gordon, *The Rise of Independent Directors in the United States, 1950-2005: Of Shareholder Value and Stock Market Prices*, 59 STAN. L. REV. 1465, 1465 (2007).

barons of yesteryear.⁴⁷ Berle and Means explain that the diverse, geographically dispersed owners delegate control to professional managers, leading to a separation of ownership and control of the corporation.⁴⁸ Corporate law characterizes the relationship between the board and the corporation as a fiduciary relationship;⁴⁹ investors repose significant trust in directors and delegate to directors the power and authority to make critical decisions.⁵⁰ Modern U.S. corporation statutes reflect this legacy.⁵¹

Over the course of the last century, changes in the demographics of corporate ownership have inspired a change in the composition of the board of directors.⁵² Whereas many corporations had a single majority or controlling stakeholder at the turn of the century, the shareholders of most modern corporations include, among others, a large, diverse, internationally dispersed body of individual investors; pension, mutual, retirement and money market funds; commercial banks; hedge funds; and insurance firms.⁵³ Collective action stymies shareholders' efforts to collaborate.⁵⁴ The lack of coordination among shareholders limits their direct control over the board and contributes to a rise in executive officers' authority over the management of the daily affairs of the corporation. Managers have also gained increased influence over the process for selecting director nominees.

Historically, a symbiotic relationship between the directors and officers ensured a balance of power. State and common law vests authority in the board to appoint employees and determine their compensation.⁵⁵ In modern corporations, directors rely on employees, including executive officers, to manage the daily operations of the business; officers and employees are beholden to directors who hire them on behalf of the corporation.

47. ADOLPH A. BERLE & GARDINER C. MEANS, *THE MODERN CORPORATION AND PRIVATE PROPERTY* 112 (10th ed. 2009).

48. *Id.*

49. *See, e.g.*, *Guth v. Loft, Inc.*, 5 A.2d 503, 510 (Del. 1939) (explaining that a director must "protect the interests of the corporation committed to his charge [and] . . . refrain from doing anything that would work injury to the corporation, or to deprive it of profit or advantage which his skill and ability might properly bring to it, or to enable it to make in the reasonable and lawful exercise of its powers").

50. Tamar Frankel, *Corporate Boards of Directors: Advisors or Supervisors?*, 77 U. CIN. L. REV. 501, 504 (2008).

51. Tit. 8, § 141(a). One scholar traces the earliest examples of appointing boards to Russian joint venture companies. Gevurtz, *supra* note 42, at 116. In his careful and colorful description of the historical and political origins of the corporate board, Frank Gevurtz explains that English companies likely borrowed the concept of appointing a formal board from Russian joint stock companies in the seventeenth century. *Id.*

52. *See, e.g.*, Cosenza, *supra* note 46, at 18–19; Frankel, *supra* note 50, at 507 (citing Gordon, *supra* note 46).

53. Frankel, *supra* note 50, at 504–08.

54. MELVIN EISENBERG, *CORPORATIONS AND OTHER BUSINESS ORGANIZATIONS* 204 (8th ed. 2000).

55. *See* DEL. CODE ANN. tit. 8, § 141(d)–(e) (2010).

Since the 1970s, chief executive officers (CEOs) have acquired significant authority over strategic and operational decisions.⁵⁶ The CEO's preferences dominate the selection processes for the appointment of other executive officers and may even significantly influence the director nomination process.⁵⁷ Several scholars agree that this inversion in the relationship between the board and the executive officers has drastically reduced the board's authority.⁵⁸ The evolving roles of executive officers and the board has led commentators to question the purpose of the board and the standard by which shareholders, courts, and regulators should evaluate the performance of the board.⁵⁹

Empirical studies demonstrate that directors increasingly delegate major policy decisions and responsibilities for monitoring the firm's operations to executive officers.⁶⁰ Directors rely on managers, specifically CEOs, to communicate vital information and frequently advise the board regarding strategic corporate directions.⁶¹ As a result of their increasingly passive role, directors serve as mere supervisors. In light of this significant delegation of their authority, commentators have questioned the role of the board in contemporary corporations.

Examining the effects of the changes in power dynamics between executive officers and boards, the prevailing view among corporate scholars is that the board merely serves an advisory role⁶² and its ostensible purpose is to monitor or supervise executive managers and their decision making. If the board's central role is limited to monitoring, hiring, and firing executives, several commentators argue boards are patently dysfunctional.⁶³ The exorbitant executive compensation packages⁶⁴ and

56. See Steven A. Ramirez, *The End of Corporate Governance Law: Optimizing Regulatory Structures for a Race to the Top*, 24 YALE J. ON REG. 313, 329–335 (2007); Steven A. Ramirez, *Rethinking the Corporation (and Race) in America: Can Law (and Professionalization) Fix “Minor” Problems of Externalization, Internalization, and Governance?*, 79 ST. JOHN'S L. REV. 977, 982 n.24 (2005) (“The CEO typically holds ultimate control over management and decisive control over the selection of directors.”).

57. See Cosenza, *supra* note 46, at 27.

58. See sources cited *supra* note 56.

59. Kelli A. Alces, *Beyond the Board of Directors*, 46 WAKE FOREST L. REV. 783, 783 (2011) (explaining that the corporate board has “outlived its purpose” and proposing alternative approaches for structuring decision-making authority); see also Franklin A. Gevurtz, *The Function Of “Dysfunctional” Boards*, 77 U. CIN. L. REV. 391 (2008).

60. See MYLES L. MACE, DIRECTORS: MYTH AND REALITY 107 (1971) (study finding that directors rarely challenged or monitored CEO performance, but instead often served as little more than “attractive ornaments on the corporate Christmas tree”); Myles L. Mace, *Directors: Myth and Reality—Ten Years Later*, 32 RUTGERS L. REV. 293, 295–97 (1979) (reaffirming the results of an earlier study as to director passivity); see also ROBERT AARON GORDON, BUSINESS LEADERSHIP IN THE LARGE CORPORATION 143 (1966) (“[T]he board of directors in the typical large corporation does not actively exercise an important part of the leadership function.”).

61. See DEL. CODE ANN. tit. 8, § 141(e) (2013).

62. Frankel, *supra* note 50, at 507.

63. See, e.g., Alces, *supra* note 59, at 784; Jayne W. Barnard, *Corporate Therapeutics at the Securities and Exchange Commission*, 2008 COLUM. BUS. L. REV. 793, 802; Lynne L. Dallas, *Proposals for*

excessive risk-taking strategies⁶⁵ that characterized most financial institutions' operations in the period precipitating the recent financial crisis support this conclusion.

As described above, the interests of directors and executives of corporations may diverge from the interests of shareholders. When directors and executives of a financial services intermediary promote their self-interests ahead of the stability of the enterprise, the business's losses may engender spillover effects that impact the global economy and the social and economic welfare of the nation.

Critics contend that financial institution boards relied too heavily on executive officers, failed to adopt effective risk monitoring mechanisms, and, consequently, breached their fiduciary duties to their respective corporations during the period leading up to the recent financial crisis.⁶⁶ Evidence of executive officers' self-interested pursuit of incentive-based compensation coupled with directors' reliance on executives' reports regarding risk exposure and risk management created a perfect storm. According to critics, the boards of several large systemically significant financial institutions failed to monitor the activities of executive officers and senior employees.⁶⁷ Responding to public outrage and demands for boards to accept greater accountability for the negative externalities that financial institutions' risk-management failures engendered,⁶⁸ Congress adopted several federal corporate governance reforms aimed to restore the balance between directors and executives within financial institutions.

Reform of Corporate Boards of Directors: The Dual Board and Board Ombudsperson, 54 WASH. & LEE L. REV. 91, 130 (1997).

64. See Lucian A. Bebchuk & Holger Spamann, *Regulating Bankers' Pay*, 98 GEO. L.J. 247 (2010); Roberta Romano, *The Sarbanes-Oxley Act and the Making of Quack Corporate Governance*, 114 YALE L.J. 1521, 1529–30 (2005).

65. See Kristin N. Johnson, *Addressing Gaps in the Dodd-Frank Act: Directors' Risk Management Oversight Obligations*, 45 U. MICH. J.L. REFORM 55, 112 (2011).

66. Paul Myners, *Banking Reform Must Begin in Boardroom*, FIN. TIMES, Apr. 24, 2008, <http://www.ft.com/cms/82d60c06-1212-11dd-9b49-0000779fd2ac.html> (“[B]oard members should never forget that the most vital part of their job is to challenge executives.”); John Schnatter, Editorial, *Where Were the Boards?*, WALL ST. J., Oct. 25, 2008, at A11 (“[Boards of directors] have a clear-cut fiduciary responsibility to provide oversight . . . Behind the CEO of every Freddie Mac, Bear Stearns or Lehman Brothers who led their company down a path toward financial ruin, there was a board of directors that sat by silently and let it happen.”); Review & Outlook, *Citi's Taxpayer Parachute: Why are Robert Rubin and Other Directors Still Employed?*, WALL ST. J., Nov. 25, 2008, at A14 [hereinafter *Citi's Taxpayer Parachute*] (“‘Citi never sleeps,’ says the bank's advertising slogan. But its directors apparently do . . . Such a record of persistent failure suggests a larger—you might even call it ‘systemic’—management problem . . .”).

67. *Citi's Taxpayer Parachute*, *supra* note 66.

68. See Johnson, *supra* note 65; René M. Stulz, *Risk Management Failures: What Are They and When Do They Happen?*, 20 J. APPLIED CORP. FIN. 58, 58 (2008).

B. *Recent Reforms*

With a number of systemically significant financial institutions in distress by late 2008, Congress enacted two federal assistance programs—the Emergency Economic Stabilization Act (EESA),⁶⁹ which included the Troubled Asset Relief Program (TARP), and the American Recovery and Reinvestment Act (ARRA).⁷⁰ Congress seized the opportunity that the bailout legislation created to impose corporate governance reforms on the failing financial institutions that accepted federal aid. Congress intended for the reforms to mitigate the political response to federal financial aid programs created to enhance the liquidity of failing financial institutions.⁷¹ Congressional reforms adopted during the recent financial crisis reflect the presumption that empowering boards mitigates the conflicts of interest that create systemic risk concerns. The newly enacted reforms faced significant limitations. The EESA and the ARRA only required financial firms that participated in the program to implement the imposed corporate governance reforms, and the requirement to comply with the reforms ended when the recipient of federal aid satisfied any repayment requirements.

To preserve the benefits of the corporate governance reforms enacted during the crisis, Congress incorporated several of the corporate governance provisions imposed under the ARRA and EESA reforms in the Dodd-Frank Act.⁷² In an effort to link executive compensation more directly to the performance of the firm,⁷³ to address disgruntled shareholders' complaints regarding ever-larger executive compensation packages, and to quell the explosive criticism of federal aid to failing financial firms, the Act creates a right for shareholders to have a "say-on-pay."⁷⁴ Presumably, by granting shareholders a voice in discussions regarding managers' compensation, Congress empowers shareholders to challenge

69. Emergency Economic Stabilization Act of 2008, Pub. L. No. 110-343, § 101(a)(1), 122 Stat. 3767 (2008) (codified as amended at 12 U.S.C. § 5211).

70. American Recovery and Reinvestment Act of 2009, Pub. L. No. 111-5, § 7001(a)(2), 123 Stat. 115, 517 (codified as amended at 12 U.S.C. § 5221(a)(3)).

71. See, e.g., *id.*

72. Dodd-Frank Wall Street Reform and Consumer Protection Act, Pub. L. No. 111-203, 124 Stat. 1376 (2010) (codified as amended in scattered sections of 7, 12, 15, 18, 22, 31, 42 U.S.C.). The key reforms generally apply to businesses that are subject to the periodic reporting requirements under the Securities Exchange Act of 1934 and certain systemically significant financial institutions. There are three types of companies subject to the periodic reporting requirements in the Securities Exchange Act of 1934. Companies whose securities trade on a national securities exchange, companies with more than \$10 million in assets and a class of equity securities held by at least 500 persons, and companies who filed a registration statement under section 5 of the Securities Act of 1933 that has become effective. 17 C.F.R. §§ 240.12(b), 240.12(g), 240.12g-1, 240.15(d). The term "reporting company" describes any company that is subject to reporting requirements under federal securities law.

73. See Bebchuk & Spamann, *supra* note 64, at 255–58.

74. Dodd-Frank Act § 951(a)(1).

managers' selfish pursuit of the kind of risk-taking strategies that threaten the long-term health of the firm.⁷⁵

Congress also created a say-on-pay vote giving shareholders the ability to express views on the compensation paid—golden parachutes—to departing executives and directors who are leaving the firm.⁷⁶ To align managers' incentives with shareholders' incentives, the EESA prohibited firms that received federal assistance from making golden parachute payments. While this kind of arrangement—a golden parachute—is common, contractual provisions that reward departing executives may exacerbate the tension between shareholders' interests and managers' interests. The Dodd-Frank Act does not adopt the EESA's prohibition on golden parachutes; the recently enacted legislation does, however, require disclosure regarding golden parachutes and endows shareholders with a nonbinding advisory vote on these arrangements.⁷⁷

In addition to say-on-pay, new obligations under Regulation S-K require companies subject to the Act to disclose the relationship between executives' compensation and the firm's performance, the mean of the annual compensation of all employees, the total annual compensation awarded to the CEO, and the ratio of the CEO's compensation to the median compensation of all employees.⁷⁸ The Dodd-Frank Act also requires companies whose securities trade in public markets to include clawback provisions in executives' contracts. Clawbacks enable the company to recover incentive-based compensation awarded to any current or former executive officer in the event that the company is required to restate its financial statements because of material noncompliance with applicable financial reporting requirements.⁷⁹

Underscoring the significant monitoring role of the board and the incentives that managers and inside directors may have to take excessive risks to temporarily increase the company's share price and enhance their compensation, the Dodd-Frank Act requires companies subject to the Act to appoint only independent directors to the board's compensation committee.⁸⁰ Prior to the adoption of the Dodd-Frank Act, however, federal corporate governance reforms already required certain reporting companies to create audit committees composed of only independent directors.⁸¹ In addition, preexisting regulations require

75. The Securities Exchange Act of 1934, 15 U.S.C. § 78n-1 (2006).

76. *Id.*

77. *Id.* §§ 78n-1(b)(1)–(2).

78. Dodd-Frank Act § 953.

79. *Id.* § 954.

80. 15 U.S.C. § 78j-3(a)(2).

81. See Lisa M. Fairfax, *Government Governance and the Need to Reconcile Government Regulation with Board Fiduciary Duties*, 95 MINN. L. REV. 1692, 1702 (2011) (“Indeed, corporate governance reforms under the Sarbanes-Oxley Act of 2002 (SOX) essentially required public companies to maintain independent audit committees, which enhanced that committee's role in the corporate governance landscape.”); Usha Rodrigues, *The Fetishization of Independence*, 33 J. CORP. L. 447, 453 (2008)

companies whose equity securities are publicly traded to elect independent directors to a majority of the seats on the board.⁸²

Finally, to address concerns regarding risk taking directly, the Dodd-Frank Act regulations require a narrative explanation of compensation policies affecting employees who may have incentives to take risks that may have a material effect on the corporation.⁸³ Regulations also require disclosure regarding the board's role in risk oversight.⁸⁴ Moreover, large systemically significant financial institutions must create a risk-management committee of the board of directors that oversees risk management on an enterprise-wide basis.⁸⁵

The risk-management committee must have a written charter approved by the company's board of directors.⁸⁶ At least one member of the risk-management committee must have risk-management expertise commensurate with the company's capital structure, risk profile, complexity, activities, size, and other appropriate risk-related factors.⁸⁷ The chair of the committee must be independent, meaning the chair lacks personal or financial ties to the company.⁸⁸ The risk committee must adopt a risk-management framework that sets clear risk limitations, select processes and systems for identifying and reporting risks, and develop effective and timely corrective action policies to address risk deficiencies.⁸⁹ To preserve the independence of the chief risk officer (CRO), the regulations provide for the CRO to report directly to the risk committee and the CEO.⁹⁰ In addition, if companies are subject to section 165(h), the chair of the board's risk-management committee must be independent.⁹¹

Notwithstanding regulators' enthusiasm, newly adopted reforms are far from revolutionary. For example, despite the aggressive moniker, say-on-pay merely grants shareholders the right to cast a nonbinding advisory vote on executive compensation packages previously determined by the compensation committee of the board of directors.⁹² Critics chide regulators for suggesting that say-on-pay mitigates managers' incentives

("Under SOX, the audit committee must consist entirely of independent directors, who in order to qualify cannot accept 'any consulting, advisory, or other compensatory fee' from the company on whose board they sit.")

82. Dodd-Frank Act § 952.

83. Incentive-Based Compensation Arrangements, 76 Fed. Reg. 21,170 (proposed Mar. 2, 2011).

84. *Id.*

85. See Dodd-Frank Act § 165(h).

86. Enhanced Prudential Standards and Early Remediation Requirements for Covered Companies, 77 Fed. Reg. 594, 624 (Jan. 5, 2012).

87. *Id.*

88. *Id.* at 623–24.

89. *Id.* at 624.

90. *Id.* at 625.

91. *Id.* at 623.

92. David McCann, *Say What? The Battle Over Executive Comp*, CFO (June 4, 2008), http://www.cfo.com/article.cfm/11485334/c_11485705?f=todayinfinance_next.

to engage in excessive risk taking.⁹³ Widely utilized pay for performance or incentive based executive compensation arrangements continue to engender conflicts of interest. Empirical studies evaluating the introduction of say-on-pay arrangements in the United Kingdom demonstrate that similar advisory votes have a limited impact on executive compensation.⁹⁴

Moreover, other reforms merely formalize, enhance, or supplement existing disclosure obligations and practices. For example, even prior to the formal creation of the clawback provisions in the Dodd-Frank Act, firms had the ability to limit their obligations to pay incentive-based compensation in circumstances where employees manipulated corporate returns or the company's financial statements. Firms had the ability to negotiate executives' employment arrangements or distribute bonus compensation over a vesting period of several years. Firms could also rely on common law claims if employees engaged in fraud to qualify for compensation awards. There are, however, two recently adopted board composition and structural reforms that empower the board to direct greater oversight resources to monitoring critical risk management and operational issues. These reforms emphasize director independence and the significance of effective risk-management committees.

1. *Board Independence*

The Dodd-Frank Act mandates greater participation of independent directors on key board committees. For example, under the newly adopted statute, companies subject to the Act must elect independent directors to a majority of the seats on a boards' compensation and risk-management committees. If monitoring is one of a boards' most important functions, then, presumably, independent directors significantly enhance the likelihood that a board will accomplish its objectives.⁹⁵ Independent directors mitigate the conflicts of interest that managers face when they exercise decision-making authority. While appointing independent directors is an important element of addressing risk-management concerns, the new regulations overlook the difficulties that regulators face when defining who qualifies as independent, as well as the many benefits that inside directors engender.

93. Stephen M. Bainbridge, *Is 'Say On Pay' Justified?*, 32 REGULATION 42, 45 (2009).

94. Jeffrey N. Gordon, "Say on Pay": *Cautionary Notes on the U.K. Experience and the Case for Shareholder Opt-in*, 46 HARV. J. ON LEGIS. 323, 344 (2009).

95. COLIN B. CARTER & JAY W. LORSCH, *BACK TO THE DRAWING BOARD* 50–51, 67–68 (2004); Lynn A. Stout, *The Shareholder as Ulysses: Some Empirical Evidence on Why Investors in Public Corporations Tolerate Board Governance*, 152 U. PA. L. REV. 667, 673–77 (2003).

A wealth of literature describes the continuing debate about the exact parameters of the definition of the term “independence.”⁹⁶ Although there is no universally adopted understanding of independence, commentators and regulators generally agree that references to independent directors exclude “inside directors” or employees of the company serving on the board of directors. Independent directors lack material financial and relational ties to the company; they are described as “non-interested,” “disinterested,” and “outside.”⁹⁷ Inside directors are typically salaried employees of the company.⁹⁸ Inside directors receive compensation for their service as employees as well as their service as board members. As a result, commentators note that inside directors’ material dependence on the company may inhibit their ability to vote objectively on board matters.⁹⁹ Independent directors, by contrast, are typically selected from the greater business community and their relationship with the corporation is usually limited to their service on the board.¹⁰⁰ In theory, because they lack economic and financial ties, independent directors can engage in decision making, operational supervision, and advisory services free from the strictures of bias.¹⁰¹

There are two significant challenges with relying on independent directors to enhance boards’ oversight of excessive risk taking: the amorphous contours of the definition of independence and the danger of undervaluing the contributions of inside directors. First, as noted, defining independence is difficult. State courts, federal regulators and self-regulatory organizations have adopted a variety of definitions for independence; and no uniform definition has emerged from existing regulations or jurisprudence.¹⁰² Failing to correctly identify the relevant attributes of independent directors undermines the benefits of appointing

96. See, e.g., Lisa M. Fairfax, *The Uneasy Case for the Inside Director*, 96 IOWA L. REV. 127, 131 (2010).

97. Donald C. Clarke, *Three Concepts of the Independent Director*, 32 DEL. J. CORP. L. 73, 78 (2007) (citing Investment Company Act (ICA) (codified as amended in relevant part at 15 U.S.C. § 80a-2(a)(19) (2000)); Securities Exchange Act of 1934 (SEA), Pub. L. No. 73-291, § 10A, 48 Stat. 881 (codified as amended at 15 U.S.C. § 78j-1(i)(3)); Transactions Between an Issuer and Its Officers and Directors, 17 C.F.R. § 240.16b-3(b)(3)(i) (2005)).

98. Fairfax, *supra* note 96, at 130.

99. *Id.* at 139.

100. Rodrigues, *supra* note 81, at 453.

101. See Clarke, *supra* note 97, at 78.

102. Prior to the adoption of the Dodd-Frank Act, the national securities exchanges had implemented requirements for companies who list securities on the exchanges to appoint independent directors to their boards and to certain board committees. The Sarbanes-Oxley Act introduced federal regulation mandating exchanges that require listed companies to create audit committees and to appoint only independent directors to the audit committees. The New York Stock Exchange and the NASDAQ had already adopted rules to this effect. The definition of independence that each exchange implemented emphasizes the absence of material financial ties but fails to consider the influence of cognitive biases. For a discussion of cognitive biases, see sources cited *infra* note 103. One state court opinion, however, carefully details the importance of structural and cognitive biases. *In re Oracle Corp. Derivative Litig.*, 824 A.2d 917, 938 (Del. Ch. 2003).

independent directors to the board and to critical board committees. Defining independence liberally permits the inclusion of directors who may be biased or may face the kinds of conflicts that appointing independent directors is intended to avoid.¹⁰³ Defining independence too narrowly unduly restricts the pool of director candidates.¹⁰⁴

103. A liberal definition of independence may, for example, emphasize a single issue, such as whether the director is interested or has a conflict of interest relating to an issue before the board. Defining independence generally in terms of a director's interest fails to consider the influence of cognitive biases on directors' decisions. While a director may not have a personal financial interest in a matter, other factors may limit the director's ability to offer an unbiased evaluation of the issue before the board. These include relationships with other board members or biases that arise because of the cognitive limits on the director's ability to evaluate important information in a timely manner. See Johnson, *supra* note 65 (exploring behavioral literature's evaluation of the structural and cognitive biases and concluding that cognitive biases limit the benefits of decision making in cohesive peer in-groups where, similar to corporate cultural environments, the institution that is the subject of the affiliation emphasizes cohesiveness and consensus).

Corporate boards are particularly susceptible to the pressures of structural dynamics and cognitive biases. Scotland M. Duncan, *The Empirics of Governance and Fraud*, 70 U. PITT. L. REV. 465, 476 (2009). There is a cultural tendency to disapprove of—or even preclude—confrontation and dissension. *Id.* While groups may generally arrive at better conclusions through their collaborative processes and rigorous debate, in the context of corporate boards, unspoken social and cultural cues may encourage group members to more readily acquiesce to and agree with the dominant perspective. *Id.* In board meetings, a more robust deliberative process may be discouraged, and thus, the benefits of rigorous debate severely curtailed. *Id.*

Several cognitive biases may influence boards' decision-making processes, including in-group bias, confirmation bias, overconfidence, and structural bias. See Michelle M. Harner, *Barriers to Effective Risk Management*, 40 SETON HALL L. REV. 1323, 1352–53 (2010); Antony Page, *Unconscious Bias and the Limits of Director Independence*, 2009 U. ILL. L. REV. 237, 251; Julian Velasco, *Structural Bias and the Need for Substantive Review*, 82 WASH. U. L. Q. 821, 855 (2004). In-group bias describes inclinations to evaluate the contributions or performance of one's own group members more favorably than the contributions or performance of others who are not members of this group. Christopher L. Aberson et al., *Ingroup Bias and Self-Esteem: A Meta-Analysis*, 4 PERSONALITY & SOC. PSYCHOL. REV. 157, 157 (2000). Influenced by in-group bias, for example, directors may view the contributions of their fellow directors less objectively. Page, *supra* at 251.

Directors may also be subject to confirmation bias—an inclination to look for and adopt information that confirms their intuitive beliefs. Harner, *supra* at 1352–53. Confirmation bias is an information processing bias; directors engage in selective information gathering. *Id.* Directors may interpret neutral information as confirming their beliefs and ignore information that challenges their instincts. See Douglas G. Baird & Robert K. Rasmussen, *The Prime Directive*, 75 U. CIN. L. REV. 921, 936 (2007). Moreover, confirmation bias may lead directors to defer to the opinions of executives and insiders because directors perceive the insiders as more informed and better able to evaluate strategic questions on behalf of the company. See Melanie B. Leslie, *The Wisdom of Crowds? Groupthink and Nonprofit Governance*, 62 FLA. L. REV. 1179, 1201 (2010).

In addition, board members may become overconfident in their judgments. See *id.* at 1183. Board members who are overconfident may be overly optimistic about their competence and their ability to objectively make fair, moral, unbiased, and well-informed decisions. See Donald C. Langevoort, *The Human Nature of Corporate Boards: Laws, Norms, and the Unintended Consequences of Independence and Accountability*, 89 GEO. L.J. 797, 803 (2001). Board members may also become overconfident about the capabilities of other board members or executives of the company. See *id.*; Stephen M. Bainbridge, *Why a Board? Group Decisionmaking in Corporate Governance*, 55 VAND. L. REV. 1, 11 (2002). Overestimation may distort directors' appreciation of their own cognitive limitations and prejudices and, consequently, lead the board to make unsound business decisions. See Langevoort, *supra*, at 803.

Structural bias also creates concerns regarding the influence of relational dynamics on the board. *Id.* at 811. Structural bias generally refers to a sense of empathy or collegiality created by a shared educational, professional, economic, or other social affiliation or tie. See Velasco, *supra* at 824; see

Second, evidence indicates that relying on independence as a tool to achieve better board decisions may underestimate the value of inside directors.¹⁰⁵ While the unbiased, dissenting voice of an independent director may improve decision making, there are important reasons to value the guidance that inside directors offer. After carefully considering the depth of knowledge and understanding that inside directors contribute to board decision-making processes, commentators question regulatory reliance on independent directors to improve board outcomes.¹⁰⁶

Independent directors must dedicate significant time to learn the business and monitor its operations. Independent directors serving on large public company boards must regularly review internally generated reports and training to enable them to become intimately familiar with the company's internal architecture, policies, procedures, and operations.¹⁰⁷ Independent directors may be unfamiliar with the daily affairs of a corporation, which, in turn, requires them to rely almost wholly on information that inside directors and executive officers provide.¹⁰⁸ Many commentators question whether outside directors' reliance on inside directors for guidance undermines independent directors' ability to evaluate information "independently."

The recently enacted corporate governance reforms' emphasis on independence may be misplaced if independent directors are not sufficiently expert in the mechanics of financial institutions' business risks and strategies.¹⁰⁹ Independence standards must seek to introduce criteria that move beyond financial or familiar interests—standards must ensure that directors are not overly dependent on executives for information regarding matters that are central to the operation of the business.

With respect to financial institution boards, independent directors must have reasonable sophistication and expertise navigating complex risk-management strategies. Independent directors who lack this skill set will be unable to serve financial institution boards or the risk-management committees of these boards effectively. The next Subsection explores the mechanics of risk management and illuminates the challenges that risk-management oversight poses for independent directors serving on financial institution boards.

also *In re Oracle Corp. Derivative Litig.*, 824 A.2d at 938. Structural bias may lead board members to defer to one another based on a perceived common cultural bond. See Velasco, *supra*, at 858–59. As a result of the influence of structural bias, board members may be persuaded to promote the interests of those with a shared affiliation above the interests of the corporation. See *id.* at 824.

104. See *In re Oracle Corp. Derivative Litig.*, 824 A.2d at 938.

105. Fairfax, *supra* note 96, at 176–81.

106. *Id.* at 179–81.

107. See *id.* at 161; see also Victor Brudney, *The Independent Director—Heavenly City or Potemkin Village?*, 95 HARV. L. REV. 597, 633 (1982); Clarke, *supra* note 97, at 78.

108. See Rodrigues, *supra* note 81, at 460 (“[Independent directors] rely on corporate officers and other employees for information and tend to defer to insiders’ management recommendations.”).

109. See *id.*

2. *Risk-Management Oversight*

Impartial oversight of risk management is critical not only to the integrity of financial institutions but also to the stability of broader financial markets. Financial institutions often adopt business models that provide complex lending, underwriting, and securitization arrangements.¹¹⁰ Financial institutions may have multiple business units that generate independent revenue streams by performing different financial services. For example, one business unit within a financial institution may serve as a market maker and trade securities on behalf of clients while another unit may trade securities for the financial institution's proprietary investment portfolio.¹¹¹ Other business units may originate loans or issue credit cards, while still another unit advises corporate clients on mergers, acquisitions, or restructuring.

Understanding risk management is important for all businesses. Financial institutions, however, face unique challenges as they attempt to quantify their exposure to risk. Financial institutions and other businesses in the financial services industry adopt policies and procedures to measure and mitigate risk. Commentators refer to these policies and procedures as enterprise-risk-management (ERM) programs.¹¹² Because financial institutions' business models and activities are complex, the mechanisms that these institutions use to understand and mitigate risk are also complex. Risk management describes the organizational processes that financial institutions adopt to identify, measure, and mitigate risk.¹¹³ ERM policies attempt to comprehensively measure risks. In recent years, financial institutions have heavily relied on two ERM methods that may pose a challenge for unsophisticated independent board members—quantitative risk models and derivatives.¹¹⁴

Risk modeling offers one of the most commonly adopted quantitative methods. Risk modeling calculates, for example, the potential losses that a portfolio may incur under certain stated assumptions. The Value-at-Risk (VaR) model, introduced in the 1980s, has gained significant popularity with financial institutions.¹¹⁵ VaR measures the potential loss

110. SAUNDERS & CORNETT, *supra* note 8, at 97–103.

111. *Id.* “Market making can involve either agency or principal transactions,” meaning the market maker can engage in proprietary transactions or transactions on behalf of clients. *Id.* at 100. Financial institutions also “maintain an inventory of financial instruments or commodities in order to satisfy clients orders to purchase or sell such instruments.” CARNELL ET AL., *supra* note 8, at 36–38. Financial institutions purchase illiquid assets from investors and hold the assets, using their proprietary portfolios to create a market for illiquid assets. SAUNDERS & CORNETT, *supra* note 8, at 100. Serving as market makers, financial intermediaries act as investors or dealers on behalf of clients for a fee or commission. Market makers offer a secondary market for illiquid assets. *Id.*

112. Johnson, *supra* note 68, at 66.

113. CHRISTOPHER L. CULP, *THE RISK MANAGEMENT PROCESS: BUSINESS STRATEGY AND TACTICS* 13–14 (2001).

114. Johnson, *supra* note 65, at 67–78.

115. Charles K. Whitehead, *Destructive Coordination*, 96 CORNELL L. REV. 323, 362 (2011).

in value of an asset or portfolio at a given confidence level over a specified period.¹¹⁶ Through their use of VaR, financial institutions are able to better predict future losses. While the earliest VaR models measured the risk of loss related to an individual portfolio, later models measure the cumulative risk of loss across a group of portfolios, multiple business divisions, or an entire firm.¹¹⁷

While VaR enables financial institutions to better predict any risk of loss, the model also has several limitations. First, VaR is a backward looking simulation model that predicts future performance based on how the market has historically performed.¹¹⁸ The model requires users to identify a historic reference point, which may be yesterday, a week ago, a month ago, or a year ago.¹¹⁹ The model assumes that the market will perform in the future as it has performed in the past. In reality, past performance is not indicative of future results, which may vary. There may be limited predictability as to the market's future performance. Unprecedented or unanticipated events may alter the future performance of markets. Financial institution boards that rely on VaR's results as gospel or who are influenced by inside directors or managers may, however, be unable or unwilling to challenge the model's predictions.

Moreover, the VaR model classifies potential risks as "likely;" other risks are classified as "rare" or "infrequent" or "less likely." The model focuses more on the former class of risks than the latter class.¹²⁰ Other quantitative models, such as Monte Carlo simulations¹²¹ and stress tests,¹²²

116. Harry Markowitz is credited with introducing one of the earliest quantitative models developed to measure portfolio risk. See HARRY M. MARKOWITZ, *PORTFOLIO SELECTION: EFFICIENT DIVERSIFICATION OF INVESTMENTS* (1959) [hereinafter MARKOWITZ, *EFFICIENT DIVERSIFICATION*]; Harry Markowitz, *Portfolio Selection*, 7 J. FIN. 77 (1952) [hereinafter Markowitz, *Portfolio Selection*]. In a seminal article published in the *Journal of Finance* in 1952, Markowitz offered a simple quantitative risk measuring model that theorists later adapted to address more complicated risk calculations. *Id.*; PHILIPPE JORION, *VALUE AT RISK: THE NEW BENCHMARK FOR MANAGING FINANCIAL RISK* 159–85 (3d ed. 2007).

117. Andreas Krause, *Exploring the Limitations of Value at Risk: How Good Is It in Practice?*, 4 J. RISK FIN. 19, 19 (2003) (discussing how companies estimate value at risk (VaR): "Originally VaR was intended to measure the risks in derivatives markets, but it became widely applied in financial institutions to measure all kinds of financial risks, primarily market and credit risks.").

118. See JORION, *supra* note 116, at 17–22.

119. See *id.*

120. Theorists refer to the low probability events that represent less frequent distributions and occur on the ends of the distribution curve as "tail" risks. David Einhorn & Aaron Brown, *Cover Story: Point/Counterpoint: Private Profits and Socialized Risk*, 42 GLOBAL ASS'N OF RISK PROF'LS, June–July 2008, at 11 (explaining VaR's shortcomings).

121. Monte Carlo simulations calculate the covariances, or correlations, among risks. See MICHEL CROUHY ET AL., *RISK MANAGEMENT* 198 (2001).

122. *Id.* A stress test enables financial institutions to examine their readiness or capacity to function under certain adverse market conditions. See BD. OF GOVERNORS OF THE FED. RESERVE SYS., *THE SUPERVISORY CAPITAL ASSESSMENT PROGRAM: DESIGN AND IMPLEMENTATION* (2009), available at <http://www.federalreserve.gov/newsevents/press/bcreg/bcreg20090424a1.pdf>. These models rely on individuals to identify appropriate hypothetical events which means human bias may influence the efficacy of the model. If managers at financial institutions perceive massive defaults on residential

improve upon VaR's weaknesses. Each of these approaches also faces noteworthy limitations. For example, Monte Carlo simulations and stress tests rely on adopters to propose the events that may influence changes in market prices and to identify correlations among risks.¹²³ Consequently, human error or intentional manipulation can undermine the value of these quantitative models.¹²⁴

Stress tests also face other significant limitations. Similar to backward looking simulation models, scenario stress tests analyze historically significant events to create the hypothetical events applied by the model. The incorporation of hypothetical events into scenario stress tests supplements VaR's back simulation analysis by offering a more comprehensive view of future risk exposure; these models, however, offer little or no indication of the impact of unprecedented events. Similar to VaR models, Monte Carlo simulations and stress tests fail to account for more elusive and perhaps more debilitating low-probability events. The utility of Monte Carlo simulations and stress tests may be significantly influenced by the creativity or the economic, social, and political forecasting abilities of the financial analysts who engineer the models.¹²⁵

Because financial institutions occupy such an important role in preserving the integrity of financial markets and the broader economy, it is important that their directors understand these models and their limitations; such an understanding would be a prerequisite and necessary for directors to execute their monitoring duties with sufficient expertise. If independent directors are unable to challenge the underlying assumptions regarding risk correlation or other complex issues that arise when considering quantitative models, then their role in governance within financial institutions may be compromised. Placing too much emphasis on independence may undermine efforts to appoint the most qualified candidates to the board or specific committees engaged in risk management. As a result, imposing independence requirements may lead to less qualified boards or appointing the least qualified board members to the most important board committees.

Recent reforms' focus on compensation policies and independent directors will fail to address concerns related to risk management. Many critics of the federal bailout argued that financial institution boards must

mortgages as so statistically improbable that it is not a scenario worth modeling, then the board or risk management committee may not stress test the business's portfolio against this type of risk. *See id.*

123. *See* N. Metropolis, *The Beginning of The Monte Carlo Method*, 1987 LOS ALAMOS SCI. 125 (Special Issue), available at <http://library.lanl.gov/la-pubs/00326866.pdf>.

124. The accuracy of the models depends significantly on the integrity of the adopter's technology and many financial institutions use proprietary software that codes data and indicates the relevance of data based on the likelihood of forecasted events. *See* BD. OF GOVERNORS OF THE FED. RESERVE SYS., *supra* note 122. Modeling the "distributions of each variable or the interactions between variables" is difficult, and the evaluations generated by the programs are limited." STEPHEN ROSS ET AL., *CORPORATE FINANCE* 276 (8th ed. 2008).

125. *See* JORION, *supra* note 116, at 371.

have been aware that the compensation structure in certain business units within financial institutions created incentives for executive officers to engage in excessive risk taking and to overlook quantitative models.¹²⁶ The executive compensation policies at financial institutions generally rewarded short-term risk taking that increased the company's equity share prices. In many publicly-traded companies, and most large financial institutions, incentive based executive compensation is awarded based on the appreciation of the company's equity share price.¹²⁷ Moreover, prior to the recent financial crisis, most financial institutions had a standing risk-management committee, appointed independent directors to a majority of the seats on the board, and appointed independent directors to all of the positions on the board's compensation committee. These boards comprised of a majority of independent directors underestimated the influence of the conflicts of interest that emerged between managers' self-interest in enhancing equity security prices and their decision-making processes regarding higher risk investment products. The failure of these well-structured boards or at least the independent directors on financial institution boards to gain a better understanding of the quantitative models suggests that more aggressive reforms are necessary.¹²⁸

The structural and board composition reforms adopted by financial institution boards prior to the recent crisis and the recently proposed financial market reforms are inadequate to address the complexities of modern financial products and risk modeling. Exploring the limitations of internal corporate governance reforms illuminates the challenges of relying on prudential regulation—internal board mechanics. The risk management challenges within financial markets are further amplified by the increasing prominence of financial institutions that are not subject to federal corporate governance reforms.

III. THE RISE OF SHADOW BANKING

Regulating banking in the modern era is more complex than in previous periods because of the pervasive role of the shadow banking system. Careful consideration of the recent financial crisis demonstrates that the shadow banking system—an alternative network of institutions and instruments connecting market participants to investors in credit and capital markets¹²⁹—creates new and disconcerting systemic risk threats.

126. See, e.g., Franklin A. Gevurtz, *The Role of Corporate Law in Preventing a Financial Crisis: Reflections on In re Citigroup Inc. Shareholder Derivative Litigation*, 23 MCGEORGE GLOBAL BUS. & DEV. L.J. 113, 113–15 (2010).

127. Bebchuk & Spamann, *supra* note 64, at 262–63.

128. See Xiongwei Ju & Neil D. Pearson, *Using Value-at-Risk to Control Risk Taking: How Wrong Can You Be?*, J. RISK, Jan. 1999, at 5.

129. Gerding, *supra* note 7, at 42–43.

As a result, this Part concludes that conventional approaches to managing risk within financial institutions and across the financial services industry are unlikely to address evolving systemic risk concerns.

A. *Systemic Risk: Fault Lines*

Financial markets provide an important infrastructure resource that facilitates the efficient and effective transfer of money and assets throughout the economy.¹³⁰ When an event disrupts financial markets, the resulting negative externalities¹³¹ may spill over and affect broad segments of the economy.¹³² For example, market disruptions that cause financial market intermediaries to limit lending activities can affect commercial and individual borrowers across the country and create uniquely significant consequences for traditional commercial banks. A “run” on the bank,¹³³ or a wave of panic among investors and depositors that leads them to fear that a traditional depository bank may become insolvent, offers a classic example of a market disruption.¹³⁴ When a run on the bank occurs, depositors concerned about the bank’s future solvency may demand that the bank return their cash deposits.¹³⁵ As economist Milton Friedman explains, a national market disruption may create “a contagion of fear” and lead to a series of bank failures.¹³⁶

Commentators use the term systemic risk to describe the concern that one systemically significant financial institution may become insolvent and initiate a cascade of losses or insolvencies across financial markets.¹³⁷ Systemic risk concerns arise because the banking industry is inextricably interconnected.¹³⁸ Traditional commercial banks hold deposit

130. See Johnson, *supra* note 1, at 182.

131. For a discussion of externalities and a classic illustration of externalities, see *supra* note 14.

132. Gerding, *supra* note 7, at 42–43.

133. See John C. Coffee, Jr., *Systemic Risk After Dodd-Frank: Contingent Capital and the Need for Regulatory Strategies Beyond Oversight*, 111 COLUM. L. REV. 795, 815 (2011); Jerry W. Markham, *The Subprime Crisis—A Test Match For The Bankers: Glass-Steagall vs. Gramm-Leach-Bliley*, 12 U. PA. J. BUS. L. 1081, 1113 (2010) (“[I]t was common to see depositors standing ‘in long queues with satchels and paper bags to take gold and currency away from the banks to store in mattresses and old shoeboxes.’”) (quoting WILLIAM E. LEUCHTENBURG, FRANKLIN D. ROOSEVELT AND THE NEW DEAL: 1932–1940, at 39 (1963)).

134. See Schwarcz, *supra* note 21, at 201–02.

135. See Markham, *supra* note 133, at 1113.

136. See MILTON FRIEDMAN & ANNA JACOBSON SCHWARTZ, *A MONETARY HISTORY OF THE UNITED STATES, 1867–1960*, at 308 (1963).

137. For a discussion of the various definitions of systemic risk, see Schwarcz, *supra* note 21, at 202; see also DAVIS, *supra* note 21, at 117; Acharya et al., *supra* note 21, at 284–89; George G. Kaufman, *Bank Failures, Systemic Risk, and Bank Regulation*, 16 CATO J. 17, 21 n.5 (1996); Kimberly D. Krawiec, *More Than Just “New Financial Bingo”: A Risk-Based Approach to Understanding Derivatives*, 23 J. CORP. L. 1, 47 (1997).

138. Arthur E. Wilmarth, Jr., *The Dark Side of Universal Banking: Financial Conglomerates and the Origins of the Subprime Financial Crisis*, 41 CONN. L. REV. 963, 996 (2009).

balances for other banks, lend to and borrow from each other, and make payments to one another through an interbank clearing system.¹³⁹

As a consequence of this interconnectedness, one financial institution's default on its obligations adversely affects the financial institution's trading partners, hindering their ability to meet their obligations and "so on down the chain of banks and beyond."¹⁴⁰ Systemic risk may also occur if an exogenous shock to the financial system causes widespread, contemporaneous losses across financial markets that trigger the collapse of one or more systemically significant financial institutions or a series of financial institutions.¹⁴¹

To mitigate the classic "run on the bank," regulatory efforts have historically focused on prudential measures such as boards' risk oversight, safeguarding financial institutions' solvency by imposing mandatory capital requirements,¹⁴² limiting the size or types of assets held by the bank, and limiting the classes of permissible transactions.¹⁴³ While regulators established these mandates, authorities delegated primary risk-management oversight to market participants.¹⁴⁴ Some commentators and regulators question the decision to permit market participants to internally regulate activities that contribute to systemic risk concerns; others tout the benefits of self-regulation.¹⁴⁵

Even if conventional financial institutions' self-interests and incentives encourage compliance with federal law, it is unclear that the emerging class of financial institutions described as shadow banking institutions will be similarly predisposed. As Part II explained, evidence demonstrates that focusing on financial institution boards' oversight of risk management may not overcome the most threatening systemic risk concerns. Thus, presuming that prudential regulation will sufficiently mitigate systemic risks among shadow banks seems unwise. In order to identify an appropriate regulatory approach for this class of financial

139. See Kaufman, *supra* note 137, at 20.

140. *Id.* at 21; see also Douglas W. Diamond & Philip H. Dybvig, *Bank Runs, Deposit Insurance, and Liquidity*, 91 J. POL. ECON. 401 (1983).

141. Farrokh Langdana, *Federal Reserve Policy from the Dot-Com Bubble to the "Subprime Mess": A Story of Two Ups and Two Downs*, 6 RUTGERS BUS. L.J. 56, 57 (2009).

142. See, e.g., 12 U.S.C. § 1831(o)(c)(1) (2006) (requiring federal bank regulators to establish capital requirements for supervised banks); Net Capital Requirements for Brokers or Dealers, 17 C.F.R. § 240.15c3-1 (2009).

143. See SCOTT & GELPERN, *supra* note 18, at 678.

144. See e.g., OFFICE OF THE COMPTROLLER OF THE CURRENCY, *THE DIRECTOR'S BOOK: THE ROLE OF A NATIONAL BANK DIRECTOR* 10 (1997).

145. See generally George J. Benston, *International Harmonization of Banking Regulations and Cooperation Among National Regulators: An Assessment*, 8 J. FIN. SERVICES RES. 205, 208 (1994); Roberta Romano, *Against Financial Regulation Harmonization: A Comment* (Yale Law & Economics Research Paper No. 414, 2010), available at <http://ssrn.com/abstract=1697348>; Roberta Romano, *Regulating in the Dark* (Yale Law & Economics Research Paper No. 442, 2012), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1974148.

institutions, the next Section examines the contours of this nascent universe of financial institutions and financial products.

B. *Shadow Banking: New Fault Lines Revealed*

While traditional commercial deposit banks occupy a primary role in the efficient flow of credit and capital markets and payment systems, the shadow banking system provides increasingly competitive alternative financial products through a substitute banking system.¹⁴⁶ Several classes of shadow banking institutions¹⁴⁷ offer alternative, private capital and credit market services that mirror traditional commercial deposit banking services.¹⁴⁸ Not formally organized as banks, shadow banking institutions perform traditional banking functions, such as credit intermediation, pooling, and structuring.¹⁴⁹ These services connect borrowers and lenders and provide investors with products that increase portfolio diversification. Unlike traditional banking institutions, however, shadow banking institutions¹⁵⁰ and shadow banking instruments comprise a network of financial products and facilitate complex transactions intentionally structured to avoid the rigorous requirements of federal regulation.¹⁵¹ This type of regulatory arbitrage and a spirit of deregulation fueled the rise of the shadow banking system.¹⁵² Legal and financial advisors who determined the organizational structure of shadow banking institutions and the financial product engineers who developed shadow banking instruments intentionally designed the financial products and institutions to evade the purview of federal regulation.

146. Paul Krugman, *Out of the Shadows*, N.Y. TIMES, June 19, 2009, at A27 (describing the shadow banking system as a “parallel financial system” of “largely unregulated institutions”).

147. See ZOLTAN POZSAR ET AL., FEDERAL RESERVE BANK OF NEW YORK STAFF REPORTS, SHADOW BANKING (2010), available at http://www.ny.frb.org/research/staff_reports/sr458.pdf (describing shadow banking institutions as limited purpose finance companies, structured investment vehicles, credit hedge funds, money market mutual funds, securities lenders, and government-sponsored enterprises).

148. Michael S. Barr, *The Financial Crisis and the Path of Reform*, 29 YALE J. ON REG. 91, 95–99 (2012).

149. See Kenneth W. Dam, *The Subprime Crisis and Financial Regulation: International and Comparative Perspectives*, 10 CHI. J. INT’L L. 581, 604–06 (2010).

150. *Id.*

151. Gerding, *supra* note 9, at 42–43. For a discussion of complex financial products, see Dan Awrey, *Complexity, Innovation and the Regulation of Modern Financial Markets* (Oxford Legal Studies Research Paper No. 49/2011), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1916649.

152. See Fleischer, *supra* note 7, at 240. Regulatory arbitrage also encompasses forum shopping for the regulator with the least restrictive regulatory guidelines. *Id.* In the banking industry, for example, if a business obtained a charter to become a “bank,” then the business became subject to more rigorous regulatory oversight, more stringent capital requirements, and more robust supervision. Therefore, when counseling a business about the advantages and disadvantages of becoming a legal entity organized as a “bank,” lawyers would describe the regulatory drawbacks. Advisors might even suggest that the entity organize as an investment bank to evade the more exacting regulatory requirements. For a discussion of regulatory arbitrage in the banking industry, see Barr, *supra* note 148, at 93–95.

Critics describe the instruments associated with the shadow banking system as weapons of mass destruction.¹⁵³ In the post-crisis period, President Barack Obama cautioned shadow banking market participants to submit to regulation.¹⁵⁴ The shadow banking system's services do, however, engender noteworthy benefits. Financial products originating in the network of the shadow banking system facilitate price discovery for illiquid credit products, enhance liquidity, and reduce the price for hedging risk.¹⁵⁵ The financial products developed in the shadow banking system reallocate credit risk in a manner that reduces individual market participants' exposure to credit risk.

Credit intermediation strategies illustrate the costs and benefits of the instruments and transactions that the shadow banking system facilitates. Through credit intermediation, the shadow banking system creates credit substitutes that enable market participants to transfer credit and default risk on debt instruments to counterparties.¹⁵⁶ Credit intermediation transforms the economics of traditional credit products by altering the maturity, credit quality, and liquidity of the product.¹⁵⁷

153. See, e.g., Lynn A. Stout, *Why the Law Hates Speculators: Regulation and Private Ordering in the Market for OTC Derivatives*, 48 DUKE L.J. 701, 705 (1999); Buffet Warns on Investment 'Time Bomb', BBC NEWS (Mar. 4, 2003), <http://news.bbc.co.uk/2/hi/2817995.stm>. But see Romano, *supra* note 64, at 1529.

154. Simon Johnson & James Kwak, Editorial, *To Battle Wall Street, Obama Should Channel Teddy Roosevelt*, WASH. POST, Apr. 4, 2010, <http://www.washingtonpost.com/wp-dyn/content/article/2010/04/02/AR2010040201523.html> (quoting President Barack Obama as stating "[m]y administration is the only thing between you and the pitchforks").

155. Timothy E. Lynch, *Gambling by Another Name?: The Challenge of Purely Speculative Derivatives*, 17 STAN. J.L. BUS. & FIN. 67, 116–19 (2011).

156. The term counterparty refers to each of the two parties to a bilateral contract. In commercial arrangements, contracts typically involve a buyer and a seller; derivatives contracts employ the lexicon of traditional commercial contracts. See Johnson, *supra* note 1, at 190–96. In a derivatives agreement the counterparty described as the buyer generally owns an asset and, therefore, faces risk that the asset may decline in value. When the asset is a debt instrument, such as a loan or a debt security, the risk is described as default risk—or the risk that the borrower who entered into the loan or issued the debt security will default on its principal and interest payment obligations. *Id.* The buyer in the derivatives contract seeks protection against the default risk and the seller agrees to cover some percentage or all of the loss that the buyer may experience if the issuer defaults on the terms of the underlying debt instrument. *Id.* Because the buyer will now look to the seller if there is a default, the buyer's ability to mitigate its risk will rest on the credit of its counterparty, the seller. *Id.* We refer to the risk that the counterparty will be unable to satisfy its obligations under the derivatives agreement as counterparty risk or credit risk. *Id.* at 200.

157. Maturity transformation alters the maturity—or length—of a loan from the date that the creditor originates the loan to the date of the loan's maturity (maturity transformation). See Johnson, *supra* note 1, at 207. Credit quality transformation enhances the credit quality of financial assets by pooling debt products with different credit ratings into a single financial instrument that likely enjoys a stronger credit rating than some of the underlying debt products in the pool. Liquidity transformation refers to the conversion of illiquid assets into liquid assets. POZSAR ET AL., *supra* note 147, at 8; see also Karl S. Okamoto, *After the Bailout: Regulating Systemic Moral Hazard*, 57 UCLA L. REV. 183, 201–02 (2009).

C. The Securitization Puzzle

The adoption of securitization products and processes illustrates one application of the economic principles of credit intermediation. The exponential growth in the use of securitization and the development of a new class of derivatives—credit derivatives—used to structure securitized transactions illustrate the burgeoning influence of credit intermediation in recent years.¹⁵⁸

The rise of securitization during the decades leading to the recent economic crisis demonstrates how traditional banking institutions and shadow banking entities became deeply interconnected. Securitization typically begins with the organization of a special investment vehicle (SIV).¹⁵⁹ Underwriters create SIVs to acquire a diverse array of debt instruments, such as corporate loans or residential mortgage loans.¹⁶⁰ To fund the acquisition, the SIV issues securities to investors.¹⁶¹ Consequently, the SIV's investors indirectly own the pool of the debt obligations.

SIVs were not initially attractive to conventional banking institutions. Government entities sponsored the earliest securitization deals and structured the transactions by issuing pass-through certificates and investing in long-term securities that offered exposure to a single class of homogenous debt assets.¹⁶² The early transactions were also subject to both prepayment risk and interest-rate risk.¹⁶³

In the late 1970s, in response to market demands for investment opportunities pooling heterogeneous debt assets, financial intermediaries in the shadow banking system began to structure private-label securitization.¹⁶⁴ The SIVs in the private-label securitizations purchased mortgages or mortgage-backed securities (MBS) from a diverse group of financial institutions. Private-label securitizations were not inhibited by the regulations that circumscribed transactions engineered by government-sponsored entities.¹⁶⁵

158. Johnson, *supra* note 1, at 191.

159. Structured or special investment vehicles are generally independent tax-exempt limited liability companies or trusts. See Judge, *supra* note 7, at 699–700; Okamoto, *supra* note 157, at 200; Wilmarth, *supra* note 138, at 1033.

160. Johnson, *supra* note 68, at 76.

161. *Id.*

162. See Wilmarth, *supra* note 138, at 986. These securitizations were not particularly attractive to investors “because they were long-term securities that were subject to both prepayment risk and interest rate risk.” *Id.*

163. Schwarcz, *supra* note 2, at 216 (defining prepayment risk as “the risk that the borrower might prepay the loan balance at any time, thereby jeopardizing the asset's anticipated return on investment”).

164. Judge, *supra* note 7, at 659.

165. Michael Simkovic, *Competition and Crisis in Mortgage Securitization*, 88 IND. L.J. 213, 263–64 (2013).

To further diversify investment opportunities, shadow banking institutions structured private-label transactions to permit investors to acquire exposure to a designated segment or tranche of the collateralized SIV.¹⁶⁶ The segments—described as senior, mezzanine, and junior tranches—each offered distinct ownership and economic interests.¹⁶⁷ The tranches imposed a waterfall-like distribution scheme on cash-flow rights and exposure to risk of loss, permitting investors to invest in the tranche that correlated to their risk preferences.¹⁶⁸ The tranches received income from the cash flows associated with debtors' principal and interest payments on the debt obligations (mortgage, corporate loan, etc.) owned by the SIV; a debt servicing firm collected the revenues and distributed the income to the SIV.¹⁶⁹ In addition to distinct ownership and economic interests, the terms in an SIV's operating agreement often required junior and mezzanine tranches to absorb initial losses and permitted senior tranches to absorb losses only after each of the subordinate tranches incurred requisite losses.¹⁷⁰ In the event of a bankruptcy, senior and super-senior tranches had priority in the distribution of collateral over junior tranches' claims.¹⁷¹

While government-sponsored SIVs attracted little attention, both traditional financial institutions and shadow banking institutions had several reasons to invest in SIVs that acquired private-label MBS and other collateralized debt obligations (CDOs). Private-label transactions offered the benefits of credit-risk exposure without requiring balance sheet disclosure.¹⁷² As discussed in Section A, regulatory guidelines re-

166. Dam, *supra* note 149, at 613.

167. *Id.* at 614 (“The middle tranches are commonly called ‘mezzanine tranches’ and the lowest tranches ‘equity tranches,’ the latter by analogy to equity investors who receive dividends only when all creditors’ claims are satisfied.”).

168. *Id.* at 613–14 (“This is possible through application of the ‘waterfall’ principle. All of the interest receipts for all of the tranches are collected, and then are transferred to the highest tranche investors first to the extent needed to satisfy their contractual claims to principal and interest. Only when all of the highest tranche investors are paid is any of the interest income received on behalf of the next highest tranche. This procedure is then followed on down the tranches—hence, the analogy to waterfalls.”).

169. Mortgage-backed securities (MBSs) are asset-backed securities whose cash flows are backed by the principal and interest payments from a pool of mortgage loans. Johnson, *supra* note 1, at 76; see also Steven L. Schwarcz, *Protecting Financial Markets: Lessons from the Subprime Mortgage Meltdown*, 93 MINN. L. REV. 373, 375–76 (2008).

170. See Judge, *supra* note 7, at 673; William K. Sjostrom, Jr., *The AIG Bailout*, 66 WASH. & LEE L. REV. 943, 953–54 (2009); see also Efraim Benmelech and Jennifer Dlugosz, *The Alchemy of CDO Credit Ratings 5* (NBER Working Paper No. 14878, 2009), available at <http://www.nber.org/papers/w14878> (“The defining feature of CDOs and CLOs is their multi-tiered liability structure CDOs and CLOs issue multiple classes of financial claims with differing levels of seniority against [a] diversified pool of assets. When assets in the collateral pool miss payments or default, subordinate tranches absorb losses first. More senior tranches only suffer losses once the cushion below them has been depleted.”).

171. See Dam, *supra* note 149, at 613–14; Charles K. Whitehead, *Reframing Financial Regulation*, 90 B.U. L. REV. 1, 26–28 (2010); Gillian Tett & Paul J. Davies, *Out of the Shadows: How Banking's Hidden System Broke Down*, FIN. TIMES, Dec. 16, 2007, at C1.

172. See *supra* Part III.A.

quire traditional banks to disclose credit risk exposure on their balance sheets and to supplement their capital reserves based on any increased credit risk exposure. The SIV's portfolio of CDOs allowed investors to gain debt exposure without having to disclose the risk related to the debt exposure on their balance sheets.¹⁷³ These "off-balance sheet arrangements" grew to constitute a sizable proportion of transactions in the financial system. As of the beginning of the crisis, the New York Federal Reserve Bank estimated that "the combined assets of all the SIVs and similar vehicles came to \$2.2 trillion, while hedge funds controlled another \$1.8 trillion, and the five [largest investment banks] had \$4 trillion on their balance sheets."¹⁷⁴

To further limit their CDO risk exposure, market participants entered into credit default swap agreements (CDS). Investors entered into CDS agreements to obtain insurance-like coverage for their CDO investments. In simplest terms, a CDS agreement is a private bilateral arrangement that serves as a market-based guarantee, protecting the CDS buyer from credit risks related to a debtor's default on principal and interest payment obligations on a loan or a note.¹⁷⁵ In exchange for agreeing to offer credit protection, a CDS seller receives a periodic premium based on the nominal amount of the total debt obligation covered by the CDS agreement.¹⁷⁶ CDOs and CDSs, described collectively as credit derivatives, created a new species in the derivatives taxonomy.¹⁷⁷ For CDO investors, CDSs were the final piece to the securitization puzzle.

Initially, market participants and regulators touted the benefits of securitization. According to advocates, securitization reduced risk by distributing the effect of a borrower's default on its debt obligations across a group of investors.¹⁷⁸ Securitization transferred credit risk from a single lender to a group of creditors, reducing the probability that a single debtor's default or a series of debtors' defaults would bankrupt an individual lender. Disaggregating risk, advocates posited, reduced the threat of systemic risk in financial markets.¹⁷⁹

173. See Dam, *supra* note 149, at 624–26 (explaining that SIVs allowed traditional and shadow banking financial institutions to engage in lending and investing arrangements and account for the transactions as off-balance sheet transactions).

174. GILLIAN TETT, *FOOL'S GOLD: HOW THE BOLD DREAM OF A SMALL TRIBE AT J.P. MORGAN WAS CORRUPTED BY WALL STREET GREED AND UNLEASHED A CATASTROPHE* 225 (2009); see also Timothy F. Geithner, President & Chief Exec. Officer, Fed. Reserve Bank of N.Y., Reducing Systemic Risk in a Dynamic Financial System: Remarks at The Economic Club of New York, New York City (June 9, 2008), available at <http://www.newyorkfed.org/newsevents/speeches/2008/tfg080609.html>.

175. See Johnson, *supra* note 1, at 194.

176. *Id.*

177. Derivatives are traditionally bilateral agreements between two counterparties and their value is derived from an underlying asset identified in the agreement. See Romano, *supra* note 1, at 2, 6, 49. There are four classes of derivatives—futures, forwards, options, and swaps.

178. See Johnson, *supra* note 1, at 171.

179. *Id.* at 200.

The benefits of securitization proved illusory. In a careful analysis of the history of securitization, Katherine Judge argues that the modern use and expansion of securitization were critical factors in the development of the events that precipitated the recent financial crisis.¹⁸⁰ While the reallocation of credit risk appeared to create positive benefits for creditors, commentators contend that the demand for subprime mortgages to feed the engine of production and distribution of CDOs created incentives for lenders to engage in predatory lending.¹⁸¹

D. The Systemic Risk Implications of Self-Regulated Shadow Banking Institutions and Instruments

The near failure of Long-Term Capital Management (LTCM) and American Insurance Group, Inc. (AIG) poignantly illustrates the challenges that the rise of the shadow banking system creates, the dangers of regulatory arbitrage in the shadow banking system, and the systemic risk concerns that emerge as shadow banks become more significant market participants. Both LTCM and AIG experienced sharp declines in the market value of their derivatives positions followed by accelerated liquidity and solvency crises.¹⁸² Both firms employed the most current risk-management technologies, including the most recently developed quantitative risk models.¹⁸³ Failed risk-management strategies at LTCM and AIG created the threat of far reaching systemic risk and moral hazard concerns.¹⁸⁴ Their similar fates demonstrate an inherent shortcoming in both traditional regulatory models.

Long-Term Capital Management. LTCM's decline marked one of the most legendary examples of a risk management failure at a firm operating in a deregulated market. In 1998, LTCM—a hedge fund founded by a uniquely sophisticated group of banking professionals and academics—suffered staggering losses.¹⁸⁵ LTCM suffered sizeable losses when

180. See Judge, *supra* note 7, at 102–03; Lynn A. Stout, *Derivatives and the Legal Origin of the 2008 Credit Crisis*, 1 HARV. BUS. L. REV. 1 (2011).

181. FIN. CRISIS INQUIRY COMM'N, FINANCIAL CRISIS INQUIRY REPORT: FINAL REPORT OF THE NATIONAL COMMISSION ON THE CAUSES OF THE FINANCIAL AND ECONOMIC CRISIS IN THE UNITED STATES, at xxiii–xxiv (2011) [hereinafter FCIC REPORT], available at http://fcic-static.law.stanford.edu/cdn_media/fcic-reports/fcic_final_report_full.pdf; see also Brooksley Born, *Foreword: Deregulation: A Major Cause of the Financial Crisis*, 5 HARV. L. & POL'Y REV. 231, 235 (2011).

182. See Johnson, *supra* note 1, at 215–16, 223.

183. *Id.* at 69, 215; see also ROGER LOWENSTEIN, WHEN GENIUS FAILED: THE RISE AND FALL OF LONG-TERM CAPITAL MANAGEMENT 75–76 (2000).

184. Okamoto, *supra* note 157, at 204–05.

185. Until the adoption of recent legislation, the hedge fund industry generally operated beyond the ambit of federal regulators' jurisdiction. In the early 1990s, John Meriwether, a successful bond and derivatives trader left his position at a celebrated investment bank—Salomon Brothers—and founded Long-Term Capital Management (LTCM). JORION, *supra* note 116, at 349. To execute innovative, edgy derivatives trades and other trading strategies at the newly-founded hedge fund, Meriwether recruited the most highly qualified quantitative strategists and a bevy of academics from the most prestigious universities, including Nobel laureates Robert Merton and Myron Scholes.

Russia defaulted on its principal and interest obligations under certain sovereign debt arrangements. Ironically, LTCM was well diversified and had entered into complex derivatives positions as part of the firm's risk-management strategy to avert the specific market decline that Russia's default created.¹⁸⁶ More significantly, LTCM counted among its founders, directors, and executives the Nobel laureates who engineered the most significant advances in risk and asset pricing models designed to predict such events.¹⁸⁷

American International Group. More recently, AIG's near collapse offers an infamous example of the rising demand for securitizations and the greed that fueled poor risk management calculations in the period leading to the recent crisis.¹⁸⁸ AIG suffered debilitating losses on its \$400 billion CDS portfolio, thrusting the firm into a liquidity crisis that threatened the company's solvency.¹⁸⁹ AIG agreed to act as a protection seller (insurer) for nearly the entire value of its CDS portfolio.¹⁹⁰ Because risk model engineers perceived a decline in the value of the CDO investments insured by the CDS portfolio as a *low risk* probability, AIG's public filings similarly underestimated the firm's exposure¹⁹¹

Consequently, in late 2007, as defaults escalated on the subprime mortgages in the CDOs underlying AIG's CDS portfolio, the company's CDS counterparties exercised their rights under the agreements and demanded that AIG place additional collateral in reserve accounts to cover the insurance firm's potential risk of loss.¹⁹² The collateral demands alone had the potential to deplete the firm's reserves and operating resources. The threat of AIG's collapse prompted the government to extend AIG a federally-sponsored loan.¹⁹³

LTCM and AIG's narratives underscore two significant observations. First, commentators have identified an increasing degree of intimacy, an interconnected web of counterparties, among traditional bank-

LOWENSTEIN, *supra* note 184, at 11, 28–31. After enjoying years of extraordinary returns, including a \$2.7 billion capital distribution to shareholders in 1997, the fund collapsed. Evaluation of the trading decisions preceding the firm's collapse revealed losses of over \$4.6 billion, including over \$1.6 billion in losses related to the firm's derivatives—namely, its swaps portfolio. *Id.* at 155, 234.

186. *Id.* at 42, 78–79.

187. *Id.* at 31–32, 116.

188. See Johnson, *supra* note 1, at 215–16.

189. The total amount of AIG's portfolio is conveyed as the notional value. “The notional value of a credit default swap is generally only a fraction of the full face value of the debt obligation.” Johnson, *supra* note 1, at 215 n.246.

190. *Id.* at 215.

191. See Sjostrom, *supra* note 171 at 953–56; see also AM. INT'L GRP. INC., 2007 ANNUAL REPORT (FORM 10-K) 124 (2007) [hereinafter AIG '07 ANNUAL REPORT], available at <http://www.sec.gov/Archives/edgar/data/5272/000095012307003026/y27490e10vk.htm>.

192. Sjostrom, *supra* note 171, at 959; see also Kenneth Ayotte & David A. Skeel, Jr., *Bankruptcy or Bailouts?*, 35 J. CORP. L. 469, 475 (2010); Kristin N. Johnson, *Clearinghouse Governance: Moving Beyond Cosmetic Reform*, 77 BROOK. L. REV. 681, 690 (2012).

193. Steven M. Davidoff & David Zaring, *Regulation by Deal: The Government's Response to the Financial Crisis*, 61 ADMIN. L. REV. 463, 495–500 (2009); see also Sjostrom, *supra* note 171, at 964.

ing institutions and shadow banking institutions that provide quasi-banking services in financial markets.¹⁹⁴ The interlocking contractual obligations among financial market participants ensures that the default of systemically significant financial institutions in the chain triggers the threat of systemic risk—a series of defaults or a domino effect of pervasive losses across the financial markets industry.¹⁹⁵

As LTCM stood on the brink of collapse, the Board of Governors of the Federal Reserve intervened to ensure an orderly liquidation—inviting creditors, equity holders, managers, and fourteen prominent banks to the negotiating table to ensure an orderly dissolution of the fund and resolution of unsettled trades.¹⁹⁶ What prompted the extraordinary public-private collaboration to resolve a market failure instigated by a private hedge fund's risk management failure?

LTCM had significant trading relationships with most of the largest investment and commercial banks on Wall Street, creating an intricately interconnected web of contractual relationships.¹⁹⁷ J.P. Morgan, for example, would have suffered \$3.2 billion in losses if LTCM defaulted on its trading obligations. It became apparent that the firm would be unable to satisfy its contractual obligations with trading partners. The Federal Reserve recognized that relying solely on the market-based solution of contract enforcement rendered markets vulnerable to systemic risks. As the liquidity provider of last resort, the Federal Reserve may have had to use federal funds to buttress LTCM's commercial banking counterparties.¹⁹⁸

AIG's counterparties also included traditional commercial deposit banks as well as shadow banking entities.¹⁹⁹ While advocates had praised credit derivatives for broadly distributing risk across financial markets,

194. Seema G. Sharma, *Over-the-Counter Derivatives: A New Era of Financial Regulation*, 17 L. & BUS. REV. AM. 279, 290 (2011); Gerding, *supra* note 7, at 43.

195. See DAVIS, *supra* note 21, at 117 (defining systemic risk as “a disturbance in financial markets which entails unanticipated changes in prices and quantities in credit or asset markets, which lead to a danger of failure of financial firms, and which in turn threatens to spread so as to disrupt the payments mechanism and capacity of the financial system to allocate capital”); Acharya et al., *supra* note 21, at 284–89; Schwarcz, *supra* note 21, at 198–204 (adopting the following as a working definition of systemic risk: “the risk that (i) an economic shock such as market or institutional failure triggers (through a panic or otherwise) either (X) the failure of a chain of markets or institutions or (Y) a chain of significant losses to financial institutions, (ii) resulting in increases in the cost of capital or decreases in its availability, often evidenced by substantial financial-market price volatility”).

196. See JORION, *supra* note 116, at 352; LOWENSTEIN, *supra* note 184, at 201.

197. LOWENSTEIN, *supra* note 184, at 201.

198. William McDonough, President of the New York Federal Reserve, and Former Chairman of the Federal Reserve, Alan Greenspan, testified before Congressional committees, indicating that the arrangement was a purely private solution. See *Testimony of Alan Greenspan, Former Chairman of The Federal Reserve: Private-Sector Refinancing of the Large Hedge Fund, Long-Term Capital Management, before the Comm. on Banking & Fins. Servs.*, U.S. House of Representatives (2008), available at <http://www.federalreserve.gov/boarddocs/testimony/1998/19981001.htm>. The central bankers were indisputably significant in brokering a solution that reinforced investor confidence in the financial markets and ameliorated threats of systemic risk.

199. See Coffee, Jr., *supra* note 133, at 816; see also Johnson, *supra* note 1, at 215–218.

the details of AIG's credit derivatives portfolio suggest that credit risk was markedly concentrated among a small circle of traditional banking and shadow banking institutions.²⁰⁰ Thus, rather than mitigating systemic risk, the credit derivatives market appears to have concentrated risks. AIG's decline demonstrates that risks are concentrated among the very businesses in the conventional banking industry that prudential risk regulation adopted prior to the crisis had aimed to address.

AIG required a federal loan of \$85 billion to close out their obligations to counterparties under derivatives contracts; AIG continued borrowing from the government until the government's total investment in the firm reached over \$185 billion.²⁰¹ Several conventional banking institutions and shadow banking institutions received distributions as a result of the AIG bailout.²⁰²

Second, the interconnected nature of the traditional commercial deposit banking industry and the quasi or shadow banking industry perpetuates moral hazard concerns. As the near collapse of LTCM and AIG illustrate, conventional financial institutions and shadow banking institutions' use of nascent, unregulated financial products may bind the fate of many different types of market participants in the global financial system.²⁰³ Increasingly, nascent financial products connect regulated and unregulated financial institutions in ways that create important systemic risk concerns. Consequently, effective post-crisis reforms must address the interconnected relationships that characterize contemporary financial markets.

Prior to and following the near collapse of LTCM and AIG, advocates of deregulation argued that regulation of hedge funds and the OTC derivatives was unnecessary; proponents of deregulation contended that hedge funds were sophisticated businesses dealing in complex transactions with sophisticated counterparties.²⁰⁴ Setting aside the frequently

200. Colleen Baker, *The Federal Reserve as Last Resort*, 46 U. MICH. J.L. REFORM 69, 95–96 (2012); see also Johnson, *supra* note 1, at 213 (noting that “the concentration within the market and the interconnectedness of contractual arrangements increases the risk that one market participant, such as AIG, might become insolvent and trigger a domino effect of losses”).

201. Johnson, *supra* note 1, at 172; Dealbook, *A.I.G. Borrows Another \$20.9 Billion From the Fed*, N.Y. TIMES (Oct. 30, 2008, 5:22 PM), <http://dealbook.nytimes.com/2008/10/30/aig-borrows-another-209-billion-from-the-fed/>; Matthew Karnitschnig et al., *U.S. to Take Over AIG in \$85 Billion Bailout; Central Banks Inject Cash as Credit Dries Up; Emergency Loan Effectively Gives Government Control of Insurer; Historic Move Would Cap 10 Days That Reshaped U.S. Finance*, WALL ST. J., Sept. 17, 2008, at A1; Mary Williams Walsh, *A.I.G. Lists Banks It Paid with U.S. Bailout Funds*, N.Y. TIMES, Mar. 15, 2009, at A1.

202. Walsh, *supra* note 203, at A1.

203. See *supra* note 196 and accompanying text.

204. During the legislative debates, advocates for deregulation poignantly articulated a commonly offered rationale for delegating regulatory authority to private market participants—sophisticated market participants' engaging in bilateral contracts do not require federal regulatory oversight. According to proponents of deregulation, self-preservation and reputational integrity created incentives for market participants to adopt rigorous risk management systems. The advocates of deregulation presumed that employees, executives and directors of the businesses engaging in the credit default

debated issue of market participants' sophistication, the argument in favor of delegating primary regulatory authority over risk management to financial institutions' boards is deeply misguided.

Federal regulations reflect the presumption that individual financial firms' interests align with regulatory efforts to limit the externalities that a federal bailout engenders and to mitigate the likelihood that federal financial intervention will be necessary to stabilize financial markets. Shadow banking institutions' incentives may not align with federal presumptions. Shadow banks may fail to diligently monitor their risk exposure because they believe that the same government intervention employed to prevent LTCM and AIG's insolvency will be available to them. Shadow banking institutions may assume that the federal government will intervene to prevent the insolvency of a systemically significant shadow banking institution or a series of shadow banking institutions.

Effective reforms anticipate both the endogenous shocks that internal risk management failures create as well as the exogenous shocks that market activity engenders. Addressing the systemic risk and moral hazard concerns that the shadow banking system creates requires more carefully tailored reforms. Part IV concludes that the rise of the shadow banking system illustrates the need to move beyond traditional corporate governance and prudential regulatory approaches.

IV. AN ALTERNATIVE APPROACH

As Part I explained, prudential regulation emphasizes the effectiveness of monitoring financial institutions' internal risk exposure. Parts II and III demonstrate that relying on prudential regulation may lead to a perilous gap in the financial market's regulation. Because systemic risks may result from a financial institution's own risk management decisions (endogenous risk) or the risk management decisions of other actors in financial markets (exogenous risk), concentrating on financial institution boards' risk monitoring oversight efforts is simply shortsighted. While recently adopted corporate governance reforms enhance the effectiveness of regulated or conventional financial institutions' ability to assess their internal risk-management approaches and executives' and employees' risk taking activities, these reforms generally fail to address exogenous systemic risk concerns that shadow banking institutions engender.

Macroprudential regulation fills this risk oversight gap by addressing endogenous and exogenous events that create moral hazard and sys-

swap markets were adequately informed regarding the mechanics of the instruments, that shareholders who owned the businesses were advocating in favor of transactions that preserve the long-term value of the businesses, and that the businesses risk management policies and practices were sufficient to detect debilitating exposure in their derivatives portfolios.

temic risk concerns.²⁰⁵ Macroprudential regulation addresses many of the weaknesses of prudential policy.²⁰⁶ Macroprudential regulation expands the ambit of regulators' focus beyond the boards of regulated financial institutions. Macroprudential policies address individual financial institutions' concerns regarding solvency, as well as the exogenous shocks to the financial system.²⁰⁷ Unlike prudential regulation that focuses on the gatekeeping role of financial institution boards, macroprudential regulation considers endogenous and exogenous risks or the internal and external risks to financial markets.²⁰⁸

As Part III notes, AIG's credit default swap counterparties carefully investigated AIG's financial condition in the period leading to the company's near collapse and concluded that there was limited evidence of AIG's devastating risk exposure.²⁰⁹ Neither the internal risk management policies that AIG's board adopted nor the risk management policies adopted by the counterparties' boards were sufficient to identify the catastrophic risk exposure AIG assumed.²¹⁰ Moreover, the lack of transparency in the market for credit default swaps—a shadow banking instrument—ensured that the counterparties would not discover AIG's deteriorating financial condition until the firm's default was imminent.²¹¹

Focusing on the safety and soundness of the financial system, macroprudential regulation centers on two factors. First, macroprudential policy examines the interconnectedness among regulated and shadow banking financial institutions.²¹² Conventional, regulated depository banks, investment banks, bank-holding companies and broker-dealers are deeply engaged in contractual relationships with shadow banking institutions and frequently the users of shadow banking instruments.²¹³ The fate of the two categories of financial institutions are intimately intertwined because they are counterparties in financial arrangements, rely on

205. Galati & Moessner, *supra* note 41, at 3–7; *see also* GRP. OF THIRTY, *supra* note 37, at 39.

206. Persaud, *supra* note 41, at 1 (“The solution to the crisis is not more regulation, though more comprehensive regulation may be required in some areas. Instead, it is better regulation—in particular, regulation with a greater macroprudential orientation.”); *see also* Galati & Moessner, *supra* note 41, at 4 (“Until recently, only limited research and analytical tools was available to inform decisions on a macroprudential policy framework. In the wake of the financial crisis, however, macroprudential policy has attracted considerable attention among researchers, and the research literature is now growing fast.”).

207. Piet Clement, *The Term “Macroprudential”: Origins and Evolution*, BIS QUARTERLY REVIEW, Mar. 2010, at 63–64; *see* Galati & Moessner, *supra* note 41, at 7.

208. Persaud, *supra* note 41, at 2.

209. *See* Michael Simkovic, *Secret Liens and the Financial Crisis of 2008*, 83 AM. BANKR. L.J. 253, 284–88 (2009) (showing that even highly sophisticated investment banks failed to accurately judge AIG's mortgage risk exposures); *see also* Johnson, *supra* note 1, at 172–73.

210. *See* Elizabeth F. Brown, *The Development of International Norms for Insurance Regulation*, 34 BROOK. J. INT'L L. 953, 969–70 (2009).

211. *See* Simkovic, *supra* note 211, at 284–88.

212. *See* GRP. OF THIRTY, *supra* note 37, at 39.

213. *See supra* notes 157–172 and accompanying text.

the same critical market utilities, use similar quantitative models and risk metrics, and have correlated exposure to certain assets.²¹⁴

Increased interconnectedness and common exposure to risk has left financial institutions equally susceptible to endogenous and exogenous shocks. A complex network of economic and behavioral connections binds these two categories of financial institutions. Consequently, the deterioration of a systemically significant regulated or shadow banking financial institution or a series of significant financial institution failures may trigger a rapid deterioration across financial markets.²¹⁵ According to theorists, macroprudential policy aims to reduce systemic risk “by explicitly addressing the interlinkages between, and common exposures of, all financial institutions, and the procyclicality of the financial system.”²¹⁶

For evidence that macroprudential regulation will enhance the resilience of the financial system to endogenous and exogenous shocks, academics and regulators must explore the usage, implementation, and effectiveness of macroprudential tools. Macroprudential policies mitigate the herding associated with prudential policies by encouraging greater transparency in the relationships among conventional and shadow banking institutions.²¹⁷ With increased information regarding the risk management decisions of conventional and shadow banking institutions, regulators can identify areas of correlated risk exposure that individual market participants, focusing solely on their individual portfolios and balance sheets, cannot identify.²¹⁸

Macroprudential regulation encourages the use of quantitative models or stress tests that measure risk exposure across the financial markets to enable regulators to effectively calibrate capital requirements. In addition, macroprudential policy can counteract procyclicality or the negative consequences that prudential policies may cause by imposing heightened capital standards in a declining market.²¹⁹ To overcome prudential regulation’s inherent bias toward procyclicality, macroprudential policy adopts “through-the-cycle tools,” including a flexible approach to capital requirements that ensures that individual institutions are better prepared for an unexpected shock.²²⁰ By exploring macroprudential policy, “[c]apital requirements could be increased in boom times through

214. See GRP. OF THIRTY, *supra* note 37, at 28.

215. See *supra* notes 140–41 and accompanying text.

216. See, e.g., Galati & Moessner, *supra* note 41, at 7.

217. See GRP. OF THIRTY, *supra* note 37, at 28.

218. *Id.*

219. *Id.* at 44. If regulation requires market participants to comply with heightened capital adequacy standards in a declining market, the market participants may respond by refusing to lend, leading to a contraction in credit markets. A macroprudential approach attempts to anticipate this concern by requiring heightened capital standards in strongly performing markets. The greater reserves or higher quality of capital mitigates the likelihood that a financial institution will experience solvency concerns thereafter if markets begin to decline.

220. *Id.* at 23.

techniques such as dynamic provisioning, and capital buffers could be funded in boom times to moderate procyclical activities or create a fund to serve during economic downturns.”²²¹ Macroprudential tools may reduce incentives to adopt excessive leverage during periods of prosperity and deleveraging during economic downturns.²²²

The development of institutional architecture designed to implement macroprudential regulation is one of the Dodd-Frank Act’s most significant accomplishments. The Dodd-Frank Act introduces several mechanisms that will facilitate the introduction of macroprudential policy. The creation of the Financial Stability Oversight Council (FSOC) is consistent with macroprudential principles that encourage the integration of various regulatory agencies’ oversight; macroprudential policy invites regulatory agencies to discuss the similarities, differences, and gaps among their individual regulatory approaches.²²³ In addition, the Dodd-Frank Act creates an Office of Financial Research that will provide critical information regarding risks that emerge within specific sectors of financial markets.²²⁴ The Office of Financial Research will also enable the government to ferret out systemic risks in unregulated areas within financial markets.²²⁵

There are already efforts to hinder initial steps to implement macroprudential policy. Establishing an agenda for FSOC and the Office of Financial Research requires significant capital and human re-

221. *Id.*

222. *Id.* at 44.

223. See Dodd-Frank Wall Street Reform and Consumer Protection Act, Pub. L. No. 111–203, § 111(a), 124 Stat. 1376, 1392 (2010) (codified as amended in scattered sections of 7, 12, 15, 18, 22, 31, 42 U.S.C.) (establishing the Financial Stability Oversight Council); Brett McDonnell & Daniel Schwarcz, *Regulatory Contrarians*, 89 N.C. L. REV. 1629, 1674–75 (2011); Schooner, *supra* note 17, at 998–99 (“Among many duties enumerated under Section 112(a)(2) of the Dodd-Frank Act, the Council shall require Federal Reserve supervision of systemically significant nonbank financial companies (hereinafter ‘systemic nonbank financial companies’) and make recommendations to the Federal Reserve regarding the imposition of heightened prudential standards on systemic nonbank financial companies and large, interconnected bank holding companies. The Council may determine that systemic nonbank financial holding companies should be subjected to Federal Reserve heightened supervision if ‘material financial distress at the U.S. nonbank financial company, or the nature, scope, size, scale, concentration, interconnectedness, or mix of activities of the U.S. nonbank financial company, could pose a threat to the financial stability of the United States.’”).

224. Dodd-Frank Act § 152(a) (codified as amended at 12 U.S.C. § 5342) (establishing the Office of Financial Research); McDonnell & Schwarcz, *supra* note 225, at 1670; Jennifer Taub, *Great Expectations for the Office of Financial Research* (Vt. Law Sch., Working Paper No. 11–15, 2011), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1784298; see also OFFICE OF FIN. RESEARCH, DEP’T OF THE TREASURY, 2012 ANNUAL REPORT 1–5, 59–64 (2012), available at http://www.treasury.gov/initiatives/wsr/ofr/Documents/OFR_Annual_Report_071912_Final.pdf; OFFICE OF FIN. RESEARCH, DEP’T OF THE TREASURY, STRATEGIC FRAMEWORK (2012), available at <http://www.treasury.gov/initiatives/wsr/ofr/Documents/OFRStrategicFramework.pdf>.

225. Ann Graham, *Bringing to Heel the Elephants in the Economy: The Case for Ending “Too Big To Fail,”* 8 PIERCE L. REV. 117, 140 (2010); see Ben S. Bernanke, Chairman, Bd. of Governors of the Fed. Reserve Sys., Financial Regulation and Supervision After the Crisis: The Role of the Federal Reserve, Address at the Federal Reserve Bank of Boston 54th Economic Conference (Oct. 23, 2009), available at <http://www.federalreserve.gov/newsevents/speech/bernanke20091023a.htm>.

source commitments. Lack of resources frequently diminishes the effectiveness of regulatory efforts. Regulatory fatigue may overcome enthusiasm to initiate a macroprudential approach. Moreover, market participants may persuade regulators that the concerns that instigated the recent crisis no longer pose the same degree of danger. Changes in political authority may further dampen the likelihood that macroprudential reforms will take root.

To ensure macroprudential regulation's success, Congress should endow these institutions with at least short-term financial commitments. With proper resources, fledgling macroprudential institutions, such as FSOC and the Office of Financial Research may have an opportunity to demonstrate their value. This kind of financial commitment is, in fact, an investment in efforts to prevent the catastrophic losses that accompany systemic risks.

V. CONCLUSION

Recent changes in the contours of the financial services industry suggest that regulation must extend beyond prudential oversight. Relying on financial institution boards to monitor compliance with capital adequacy requirements or to supervise use of quantitative risk models is simply an insufficient response to evolving systemic risk concerns. A failure to regulate conventional deposit banks, investment banks, bank holding companies, and broker-dealers' use of shadow banking instruments or the risk exposure engendered by contractual relationships between conventional financial institutions and shadow banks may limit the effectiveness of regulatory reform. The rise of the shadow banking system precludes regulators from focusing solely on internal risk management practices.

Macroprudential regulation responds to these concerns by balancing regulatory oversight of internal and external catalysts that create systemic risks. Without limiting its focus to a particular group of businesses or financial products, macroprudential regulation addresses the risks that occur across the financial system.²²⁶ Consequently, a macroprudential regulatory approach encourages regulators to consider reforms that enhance financial institutions' prudential oversight while contemporaneously imposing broader market reforms that reach the less regulated financial institutions and financial products that exist in financial markets.

226. Galati & Moessner, *supra* note 41.