

2010

New Governance, Financial Regulation, and Challenges to Legitimacy: The Example of the Internal Models Approach to Capital Adequacy

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Recommended Citation

63 Admin. L. Rev. 783 (2010).

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NEW GOVERNANCE, FINANCIAL REGULATION, AND CHALLENGES TO LEGITIMACY: THE EXAMPLE OF THE INTERNAL MODELS APPROACH TO CAPITAL ADEQUACY REGULATION

ROBERT F. WEBER*

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INTRODUCTION

This Article considers the application of “new governance” theory and scholarship to financial regulatory reform by examining the recent trend of incorporating proprietary internal risk models into capital adequacy

regulatory regimes.¹ In the aftermath of the subprime credit crisis, recent academic and policy debate about the regulation and supervision² of financial institutions has rightly focused on potential solutions to the manifold conflicts of interest and regulatory lacunae that exist in our current system. While most of these proposals concern the situs and scope of regulation, this Article contends that theoretical scrutiny of the methodologies and tools by which financial institutions are regulated—especially the “modes of interaction”³ between financial firms, their regulators, and other nonstate stakeholders—is relatively underemphasized in financial regulation legal scholarship. In recent years, political and socio-legal scholars have contributed to a rich new governance literature regarding the evolving methodologies and tools of governance. By focusing on these modes of interaction and tools as primary units of inquiry, this new governance scholarship offers important insights into the causes and potential remedies of regulatory dysfunction, as well as the dangers associated with increased involvement of regulatees and other nonstate actors in regulatory processes.

The central tenet of new governance literature posits that traditional command-and-control, top-down regulation has been supplanted, to varying degrees, by new forms of collaborative and polycentric governance, often involving dynamic cooperation between the public sector (formerly the “governors”) and the private sector (formerly the “governed”), and often characterized by an increased participation in governance by third-party nonstate actors. These new hybrid forms of managing events in social systems (including the financial system) have emerged in parallel with

1. Capital adequacy regimes are comprised of the legislative and regulatory rules requiring regulated financial firms to maintain levels of capital relative to assets (with appropriate adjustments) to foster the safety and soundness of institutions and the financial system.

2. For an explanation of the difference between “regulation” and “supervision” in the financial regulatory context, see generally R.M. PECCHIOLI, *PRUDENTIAL SUPERVISION IN BANKING* (1987). To avoid confounding the terminology used in Parts I–V with the more general discussion of regulation in Part V, I have adopted regulation to refer to both supervision and regulation, recognizing that certain liberties were taken with these otherwise distinct terms.

3. See Miriam H. Baer, *Governing Corporate Compliance*, 50 B.C. L. REV. 949, 952-54 (2009), available at http://www.bc.edu/content/dam/files/schools/law/bclawreview/pdf?50_4/02_baer.pdf (discussing new governance in the context of deferred prosecution agreements); Saule Omarova & Adam Feibelman, *Risks, Rules, and Institutions: A Process for Reforming Financial Regulation*, 39 U. MEM. L. REV. 881, 920 (2009) (“[T]he ultimate goal is broader than formulating policy priorities or outlining the contours of substantive[] rules governing the conduct of private market participants. It is equally important to identify the most effective and efficient modes of interaction between the regulators and the regulated, which may vary across different segments of the financial services sector.”).

the attenuation of traditional state power and the increasing complexity of postmodern forms of life and social organization. New governance scholars have not attempted to apply their analysis to financial regulation, and scholars of financial regulation⁴ have not yet appreciated the rich insights that new governance theory offers to their field.⁵

The internal models approach to capital adequacy regulation should be considered a new governance technique because, by incorporating regulated institutions' internal capital models in the capital adequacy regime, it seeks to bridge intractable information asymmetries resulting from the complexity and dynamism of contemporary financial institutions. Despite its manifold advantages as a new governance tool in a highly complex and dynamic regulated field, the internal models approach falls into traps familiar to new governance reforms that render it susceptible to literal and softer forms of agency capture, thereby compromising its democratic legitimacy and effectiveness.

The example of the internal models approach is instructive: it represents a new governance initiative that, while credibly seeking to accommodate burgeoning complexity and overcome the ineffectiveness of traditional

4. There are important exceptions to this general observation. *See, e.g.*, William H. Simon, *Optimization and Its Discontents in Regulatory Design: Bank Regulation as an Example* 14–17 (Columbia Law Sch. Pub. Law & Legal Theory Working Paper Group, Paper No. 9180, 2009), available at http://lsr.nellco.org/columbia_pllt/9180 (contrasting the law and economics “optimization” perspective on regulation with a new governance, or “managerialist,” perspective that takes into account dynamic goals, such as achieving safety and soundness in the banking sector, which require constant self-assessment and learning, as well as consideration of complex sets of signals); Cristie L. Ford, *New Governance in the Teeth of Human Frailty: Lessons from Financial Regulation*, 2010 WISC. L. REV. (forthcoming 2010) (manuscript at 108–29 on file with author), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1525645 [hereinafter Ford, *New Governance in the Teeth of Human Frailty*] (presenting three narratives of the subprime financial crisis to illustrate how new governance principles might have improved financial regulation); Kenneth A. Bamberger, *Technologies of Compliance: Risk and Regulation in a Digital Age*, 88 TEX. L. REV. 669, 729–39 (2010) (advocating for a new governance-style “dynamic model of regulation” that recognizes that “purely top-down regulatory solutions are ill fitted to risk management and unchanneled bottom-up solutions fall short of public goals”); Cristie L. Ford, *New Governance, Compliance, and Principles-Based Securities Regulation*, 45 AM. BUS. L.J. 1, 27 (2008) (analyzing recent securities regulation reforms in British Columbia as a new governance initiative that “requires the regulator to define broad themes, to articulate them on a flexible and dynamic basis, to accept input from the ground level of regulated entities, and to effectively manage varied incoming information from industry actors”).

5. Much of the debate about financial regulatory technologies has revolved around the juxtaposition of so-called “principles-based” and “rules-based” regulation. In Part V.A.3, this Article draws on recent scholarship arguing that the principles–rules binary distinction does little to advance our understanding of financial regulation, and argues instead in favor of a focus on new governance.

capital adequacy regulation, falls victim to complications that undermine its regulatory objective. Capital adequacy regulation aims to minimize social costs associated with financial institution insolvencies. It achieves that goal by fostering a loss buffer with reasonable confidence and imposing a risk tax in the form of a capital charge for riskier business lines. A premise of this Article is that since at least the early 1970s, when major powers jettisoned the Bretton Woods financial system, the global financial system has been positioned in a complexity paradigm in which innovation, competition, globalization, technology, and consolidation operate, sometimes interactively, to ratchet up the system's complexity. This process accelerated in the 1990s as advances in theoretical finance and computer technologies combined to create a "new financial code"⁶ embodied in value-at-risk (VaR) and economic capital models. Since the effectiveness of capital adequacy regulation depends on the ability to secure a loss buffer and impose a risk tax, this complexity paradigm, which entails a dynamic and proliferating risk profile, presents a structural dilemma for regulators. In response to this dilemma, in recent years financial regulators have sought to incorporate the new financial code (in the form of internal models) into capital adequacy regimes as a means of bridging the informational chasm between the actual risk profile of regulated firms and the regulators charged with minimizing the social costs incurred if those risks materialize.

My hope is that this Article, by analyzing a financial regulatory technology as a response to complexity from a new governance perspective, will prompt a deeper appreciation for new governance theory within financial regulation scholarship. New governance theory offers notable insights into the regulation of social systems dominated by complexity and dynamism, as with the contemporary financial system. By analyzing the complex financial system according to a new governance framework, scholars and policymakers will likely be able to (1) improve their diagnosis of sources of regulatory dysfunction, including those in connection with the recent subprime credit crisis; (2) propose reforms that will better conduce the public goals of financial regulation; and (3) deepen their understanding of the normative challenges to democratic legitimacy that are implicated when regulators seek to govern complexity through increased involvement of nonstate actors in the regulatory process. Future new governance inquiries into financial regulatory reform must focus on this legitimacy challenge and safeguard against the possibility that in the rush to bridge information asymmetries inherent in complex markets, policymakers might

6. I owe this phrase to Erik Gerding. See generally Erik F. Gerding, *Code, Crash, and Open Source: The Outsourcing of Financial Regulation to Risk Models and the Global Financial Crisis*, 84 WASH. L. REV. 127 (2009).

adopt a reform that creates more problems than it solves. This Article argues that this possibility materialized when financial regulators adopted the internal models approach. Sometimes, new governance theory will demonstrate how regulatory tools may be deployed to regulate complexity and dynamism more effectively; at other times, it will elucidate flaws with those tools. Because new governance theory focuses attention on these problems, it must remain open to a critique of complexity itself.

Part I explains the critical public regulatory role of capital adequacy regulation. Part II.A summarizes the genealogy of capital adequacy regulation for banks. Part II.B discusses the formation of the Basel Committee on Banking Regulations and Supervisory Practices (Basel Committee) as the international bank regulatory policy coordinator and its three central achievements: the initial Basel Accord of 1988, the substantial market risk amendments of 1996 (later amended in 2005), and Basel II. This Part also traces how the Basel Committee adopted internal models approaches as a means of more closely calibrating capital requirements to the actual risk profiles of regulated banks, which had become increasingly complex in the 1990s, in large part due to the development of a new financial code, including risk modeling technologies. Parts III and IV, briefly address how the ascendancy of this “Basel Brand” of regulation led to the Securities Exchange Commission’s (SEC’s) Consolidated Supervised Entities (CSE) Program for broker-dealers and the European Union’s (E.U.’s) proposed Solvency II regime for insurance companies.

Part V provides an overview of new governance theory and situates the use of internal models by financial regulators within the new governance literature. In particular, the discussion focuses on three attributes of new governance tools that are relevant to the internal models approach: increased participation by nonstate stakeholders, the retention by public regulators of a “benign big gun,” and dynamic and flexible lawmaking. In the process, the Article describes certain normative challenges posed by new governance initiatives. Finally, the Article (1) explains why the internal approach to capital adequacy regulation should be considered a new governance initiative; (2) shows how it poses normative problems typical of new governance initiatives that threaten its democratic legitimacy, expose it to risks of literal and soft capture, and ultimately undermine its effectiveness; and (3) evaluates its mandatory disclosure regime as a promising, but incomplete, solution to the central challenge to legitimacy.

I. THE IMPORTANCE OF CAPITAL ADEQUACY REGULATION OF FINANCIAL INSTITUTIONS

This Part explains the role of financial institutions, their inherent instability, and the role of capital adequacy regulation in achieving the

policy goals of consumer protection and systemic stability. Regulators require that regulated financial institutions maintain capital at specified levels. Regulators impose these capital requirements to ensure that firms have an available “cushion” or buffer to absorb unexpected losses without threatening the ability of the institution to satisfy claims of depositors (in the case of banks), insurance policyholders (in the case of insurers), or clients (in the case of broker-dealers), or the systemic integrity of the financial system. In its simplest form, the capital requirement consists of a minimum ratio of capital—defined to include equity (assets minus liabilities) and in some cases other add-ons thought to possess equity-like features, such as subordinated debt—to assets. Thus, as a firm’s equity declines, so does its capital ratio, which may result in noncompliance with the capital adequacy regime and a need to raise new capital.

Financial systems perform essential functions in a market economy, such as transforming savings into productive capital, providing information about users of capital, performing capital allocation functions, providing payment and funds transfer services, reducing agency costs by overseeing management, and efficiently spreading and pooling risk through derivatives and securitization. Finance is “the oil that lubricates the wheels of commerce.”⁷ These ends of finance can be frustrated by exogenous factors and even by the financial system’s internal operation.⁸ Financial institutions may also be controlled by rent-seeking constituencies, as evidenced recently when investment bank personnel “earned” tens of millions of dollars of income for their roles in securitizing collateral pools of subprime mortgages.⁹ While the optimal prevalence and complexity of the financial sector in a market economy is a matter very much up for debate,¹⁰

7. BENJAMIN J. COHEN, IN WHOSE INTEREST? INTERNATIONAL BANKING AND AMERICAN FOREIGN POLICY 299 (1986).

8. See generally Charles R.P. Pouncy, *Contemporary Financial Innovation: Orthodoxy and Alternatives*, 51 SMU L. REV. 505 (1998).

9. Cf. Luigi Zingales, *The Future of Securities Regulation 2* (Chi. Booth Sch. of Bus., Working Paper No. 08-27, 2009), available at <http://ssrn.com/abstract=1319648> (addressing the perception that the 2007–2008 financial woes stemmed from managers taking excessive risk without threat of accountability).

10. In the United States, finance has benefited from an increasing fraction of economic growth. See Martin Wolf, *Why Is It So Hard to Keep the Financial Sector Caged?*, FIN. TIMES, Feb. 5, 2008, <http://www.ft.com/cms/s/0/9987c5c4-d41f-11dc-a8c6-0000779fd2ac.html> (“The US itself looks almost like a giant hedge fund. The profits of financial companies jumped from below 5 per cent of total corporate profits, after tax, in 1982 to 41 per cent in 2007, even though their share of corporate value added only rose from 8 to 16 per cent.”). In order to determine whether the financial sector has outgrown its utility, policymakers should ask “what fraction of the economy’s total returns to productively invested capital is absorbed up front by the financial industry as the costs of allocating that capital.” Benjamin M. Friedman, *The Failure of the Economy & the Economists*, N.Y. REV. OF BOOKS, May 28, 2009, at

the critical role of a functioning financial sector is not.

The structural dilemma of all firms operating in this sector is the asset-liability mismatch: the basic conflict between guaranteeing a return of capital (e.g., insurance claims, interest on deposits) while also putting that capital at risk. This tension is omnipresent and engenders fragility in the financial system. Currently, capital adequacy regulation is the chief method regulators employ to foster the continuous healthy operation of the financial sector.¹¹ Regulators impose minimum capital requirements to counteract the tendency for financial firm insolvencies to result in two categories of negative externalities: first, bailout costs to taxpayers resulting from the moral hazard effects of government safety nets and second, systemic losses to the broader economy from systemic risks that build up in the financial sector.

Bailout costs result when taxpayers foot the bill for public expenditures to fund government safety nets. When a nonfinancial firm maintains a capital buffer, it signals its financial health and ability to pay creditors as debts come due, and thereby reduces its cost of capital. Under such circumstances, creditors lacking recourse to assets or a third-party

42. Friedman correctly laments that this is a question “which no one seems interested in addressing.” *Id.* Professor Dirk Bezemer has recently made a similar point, acknowledging the critical role of finance, but noting the dangers of “financializing” the economy. See Dirk J. Bezemer, “No One Saw This Coming”: *Understanding Financial Crisis Through Accounting Models* 16 (Munich Pers. RePEc Archive, Working Paper No. 15892, 2009) (“Financial innovation . . . serves the real economy’s need, in that it boosts real-sector productivity and its ability to service its increased debts. But it also opens up the possibility of a *sustained* drain of liquidity from the real to the [financial] sector, so inflating asset prices—a credit bubble, or harmful ‘financialization’ of the economy.”). Under Bezemer’s “financialization” scenario, debt levels increase steadily, eventually using financial assets as collateral for new borrowings, and in the process the fraction of an economy’s total returns are absorbed up front by the financial sector. The real economy (government, households, and firms) will ultimately have to service the debt since debt backed by capital gains in financial assets cannot expand infinitely. *Id.* At a certain point in the cycle, the debt service burden increases to the point that the financial system becomes extractive to, rather than supportive of, the real economy. *Id.* In Bezemer’s terms, there emerged a “growing imbalance in the flow of funds between the real and financial sectors” and by analyzing the macro flows of funds from an accounting perspective reveals the “extent to which the economy had grown dependent on asset price gains.” *Id.* at 17.

11. This is not a necessary state of affairs. It is also possible to promote solvency through directly regulating the extension of credit. For instance, had U.S. federal banking regulators not removed loan-to-value (LTV) minimums on home mortgage loans extended by federally regulated banks, credit flow into the subprime housing sector would have been cut off at the spigot and the credit crisis would have been averted. Consider in this context the experience of the comparatively salubrious Canadian banking sector during the 2008 credit crisis: Canada had a requirement that any mortgage loan with an 80% or greater LTV ratio had to be privately insured.

guarantee would be expected to price credit according to, among other factors such as loan indenture covenants, the amount of equity capital a debtor firm maintains; the greater the equity capitalization, the lower the costs of financial distress.¹² This dynamic, which is routine in other industries, is inapposite in the financial context because of the taxpayer-funded safety net financial institutions receive in the form of *de jure* government safety nets (e.g., state insurance guarantee funds, Federal Deposit Insurance Corporation (FDIC) insurance) and *de facto* too-big-to-fail support (e.g., support for holding companies such as American International Group (AIG), Citigroup, Bear Stearns). Creditors, knowing there is at least a partial backstop guarantee from government, lack incentives to properly monitor risk and price credit accordingly. Since private parties lack incentives to monitor the use of the firm's capital, levels of risk should outpace socially optimal levels, especially during times of stress. The rationale of capital adequacy regulation, then, is to ensure through public regulation that financial institutions enjoying government safety nets are subject to the discipline that capital markets and counterparties would normally impose but do not impose because of moral hazard.¹³ Safety and soundness are achieved through an enforced capital requirement serving as a proxy for market forces.¹⁴ In this respect, we can

12. See RICHARD A. BREALEY & STEWART C. MYERS, PRINCIPLES OF CORPORATE FINANCE 497–510 (2003) (describing the various costs of financial distress).

13. See RICHARD SCOTT CARNELL ET AL., THE LAW OF BANKING AND FINANCIAL INSTITUTIONS 309 (4th ed., 2009) (“By inhibiting market discipline of banks, deposit insurance creates incentives for excessive risk-taking and impels the government to protect the taxpayers through safety-and-soundness [i.e., capital] regulation.”); JEAN-CHARLES ROCHET, WHY ARE THERE SO MANY BANKING CRISES? THE POLITICS AND POLICY OF BANK REGULATION 1 (2008) (“The two main components of this public intervention [into the banking market] are on the one hand the financial safety nets (composed essentially of deposit insurance systems and emergency liquidity assistance provided to commercial banks by the central bank) and on the other hand the prudential regulation systems, consisting mainly of capital adequacy (and liquidity) requirements, and exit rules, establishing what supervisory authorities should do when they close down a commercial bank.”).

14. Theoretically, the government could, as an effective guarantor of deposits and many debts, price its guarantee and secure covenant protections in a negotiation with each financial institution availing itself of a government safety net protection. Under normal circumstances, this is precisely what private creditors negotiate in credit documentation. However, because lender-of-last-resort facilities are provided in exigent circumstances when (1) the government, due to systemic risks or political realities, has little credible exit threat, and (2) no private market otherwise exists to perform a “market check” for the government credit, it is impractical to price the government's extension of credit at the moment such pricing would be required. A far more sensible approach is embodied in the current state of affairs; it is better to set the rules of the game *ex ante* so as to minimize the likelihood of recourse to the safety net. Cf. DANIEL K. TARULLO, BANKING ON BASEL: THE FUTURE OF INTERNATIONAL FINANCIAL REGULATION 20 (2008) (noting that when extending discount

think of bank capital as a partial collateralization of the claims of bank creditors and, more importantly, future taxpayers that might be forced to bail out financial institutions.

The insolvency of a large financial institution might also pose systemic risks to the financial system due to the lack of adequate incentives for any particular market counterparty/creditor to mind the systemic risk that can build up. Knock-on effects from a systemically significant insolvency can threaten to paralyze the entire sector, which in turn can plunge an economy into a deep recession.¹⁵ Moreover, unlike other industries where insufficiently capitalized businesses can be broken up into their constituent assets and put to more efficient uses, a rash of insolvencies (or a series of defaults) in the financial sector can threaten to spur a systemic contagion that can freeze up credit formation and, as a result, economic growth. For instance, in the normal course of operation a bank obtains and processes extensive borrower-specific data and monitoring experience that is lost when the bank fails.¹⁶ The loss of this data and experience may result in a lack of availability of willing lenders to finance the borrower's continued activities. Another systemic cost of financial insolvency is the threat to the integrity of the payments system, which can cause the cessation of inter-bank transfers and prevent the efficient flow of capital resources and international trade.¹⁷ More recently, we witnessed that the absence of capital behind AIG's positions in the collateral default swap market exposed several systemically important counterparties to massive losses that were avoided only through government intervention. Again, with systemic risks as with moral hazards, the government steps in to provide *in extremis* capital at the expense of taxpayers.

Practically speaking, capital requirements foster solvency by (1) ensuring that regulated firms have a capital buffer to absorb unexpected losses and

window credit, the central bank "may believe it has little practical choice, in either financial or political terms, but to provide the credit needed to keep [a] bank afloat").

15. See Abdul Abiad et al., *What's the Damage? Medium-Term Output Dynamics After Banking Crises* 7 (Int'l Monetary Fund, Working Paper No. 09/245, 2009), available at <http://www.imf.org/external/pubs/ft/wp/2009/wp09245.pdf> ("The medium-term output losses following banking crises are substantial: seven years after the crisis, output has declined relative to trend by close to 10 percent on average."); CHARLES GOODHART ET AL., FINANCIAL REGULATION: WHY, HOW AND WHERE NOW? 1 (1998) (summarizing an International Monetary Fund (IMF) study finding a correlation between banking sector problems and sizeable reductions in gross domestic product).

16. See Ben S. Bernanke, *Nonmonetary Effects of the Financial Crisis in the Propagation of the Great Depression*, 73 AM. ECON. REV. 257, 257 (1983).

17. See Richard Herring & Til Schuermann, *Capital Regulation for Position Risk in Banks, Securities Firms, and Insurance Companies*, in CAPITAL ADEQUACY BEYOND BASEL: BANKING, SECURITIES, INSURANCE 15, 19 (Hal S. Scott ed., 2005).

(2) imposing a de facto risk tax¹⁸ on financial institutions to provide a disincentive to engage in excessive risk-taking on all of its borrowed capital.¹⁹ From the viewpoint of regulated firms, in most cases²⁰ minimum regulatory capital requirements constitute risk taxes because they restrict the bank's ability to make profits. If a bank is required to hold capital against a risky asset portfolio, it is obviously not able to deploy that capital to seek returns. Its profit opportunity set is limited vis-à-vis its profit opportunity set absent regulatory capital requirements. Where firms perceive their capital requirements to be excessive, they will seek to engage in capital arbitrage by deploying capital in risky pursuits that are less burdened by the regulatory capital adequacy framework.²¹

18. A minimum capital requirement will operate as a risk tax if the following assumptions obtain: (1) an imperfectly elastic supply of equity finance, and (2) temporal limitations for accumulating retained earnings as equity. In such a scenario, an institution will likely be required to reduce its risk-weighted assets to maintain acceptable capital ratios, foregoing returns. See, e.g., Sun Bae Kim & Ramon Moreno, *Stock Prices and Bank Lending Behavior in Japan*, 1 ECON. REV. FED. RES. BANK S.F. 31, 33–34 (1994).

19. Other policy justifications for capital regulation are of comparatively less importance, such as ensuring available capital for expansion into new activities, or are derivative of the enumerated factors above, such as protecting government deposit insurance funds and counteracting the moral hazard occasioned by these government safety nets. See TARULLO, *supra* note 14, at 16 n.3.

20. The “most cases” qualification is necessary to address cases when capital market expectations for capital reserves exceed minimum regulatory capital requirements. Capital markets might require that a firm hold capital in order to respond quickly to acquisition opportunities or market expansion, or to weather an expected downturn in asset values.

21. An example of this phenomenon is the proliferation of off-balance sheet liabilities such as asset-backed commercial paper conduits (ABCPCs) and structured investment vehicles (SIVs), sponsored by major international banks predominantly from 2004 to 2008. Banks established ABCPCs as off-balance sheet entities funded with minimal equity and large issues of commercial paper. In order to secure low funding costs, sponsoring banks would offer contingent recourse to their balance sheets in favor of the commercial paper investors in the form of liquidity or credit enhancement. The ABCPCs and SIVs would invest the proceeds from the commercial paper issuances in asset-backed securities, especially those backed by residential mortgages. The contingent commitments to the ABCPCs and SIVs carried a capital charge of 0.8%—one-tenth of the 8% capital charge required if the asset-backed paper were held on the banks' own balance sheets. Eventually, the market value of the assets collapsed, the ABCPCs and SIVs were unable to roll over their commercial paper funding, and the investors looked to the contingent commitments of the banks. In September 2008, the Federal Reserve guaranteed investments in money market mutual funds, which were the principal funding entities of ABCPCs. Given the severity of the financial markets crisis, the Federal Reserve determined that it was necessary to, in effect, backstop with taxpayer funds a pure capital regulation arbitrage play! For a succinct summary of the rise and fall of the ABCPC industry, see Viral V. Acharya & Philipp Schnabl, *How Banks Played the Leverage “Game,”* in RESTORING FINANCIAL STABILITY: HOW TO REPAIR A FAILED SYSTEM 83, 83–100 (Viral V. Acharya & Matthew Richardson eds., 2009) [hereinafter RESTORING FINANCIAL STABILITY].

Because capital promotes solvency and also limits profitability, regulators seek to set the capital requirement at a level that balances the need for prudent risk management with the need for firms to be competitive in the marketplace. Stated more technically, the tradeoff is between the marginal social benefit of reducing the risk of the negative externalities from financial institution failures (such as bailout costs and systemic risks) and the marginal social cost of reduced output and productivity due to the regulator-imposed reduction in the volume of finance provided to consumers and businesses.²² Of course, achieving the optimal balance between these countervailing considerations is only a theoretical possibility. Because the social benefits and costs are likely impossible to quantify and the periodicity of examinations has normally limited information gathering, regulators historically have resorted to uniform minimum capital levels to achieve this balance.

This uniform-rules-of-general-application approach, however, suffers from a lack of risk sensitivity, which compromises the balance and exacerbates the inherent arbitrage threat. Even if the capital adequacy rules are formulated precisely and at the optimal level of generality at time T_1 , the limits of human foresight inhibit the extent to which those rules will achieve the regulatory objective at time T_2 .²³ The resulting mismatch between regulatory tools and regulatory objective is widest in highly dynamic industries such as financial services. Each successive period of financial innovation increases the complexity of the financial sector and, with it, the breadth and depth of risks facing regulated firms. As a result, regulator-regulatee information asymmetries widen and prevent regulators from exercising supervision over this new complexity. The major structural reforms in the capital adequacy regulatory regimes discussed below have occurred in response to periods of increasing complexity in the financial industry and a perceived dearth of effective risk sensitivity. In recent years financial innovation has overwhelmed capital adequacy regulatory systems and regulators have attempted to bridge the resulting informational gap by incorporating sophisticated, internally-generated, proprietary risk management and risk estimation models into the capital adequacy regulatory regime. Put another way, financial institutions have become too complicated for non-insiders to acquire the information necessary for effective regulation, and regulators have turned to insiders to mine the data.

22. See TARULLO, *supra* note 14, at 23–27; Anthony M. Santomero & Ronald D. Watson, *Determining an Optimal Capital Standard for the Banking Industry*, 32 J. FIN. 1267, 1270–72 (1977).

23. See JULIA BLACK, *RULES AND REGULATORS* 7–11 (1997) (discussing how rules are inherently indeterminate and almost always over- or under-inclusive).

While this Article portrays capital adequacy reform as a reactive process, with regulators responding to the complexity paradigm, regulators need not assume such a posture regarding complexity. Complexity results from the dynamic interaction of technology, competition, and rent-seeking forces with regulation, which sets the rules under which the other factors operate.²⁴ Regulation is both constitutive of, and responsive to, complexity. Such policy-created market conditions include, among countless others, globalized capital markets (e.g., removal of capital controls in late 1970s); cross-sectoral consolidation (e.g., repeal of Glass–Steagall encouraged formation of one-stop-shop financial bazaars like Citigroup and AIG); arbitrage (e.g., initial Basel Accord’s differential treatment of off-balance sheet exposures fueled securitization of mortgages); increased intersectoral competition (e.g., interest rate deregulation in early 1980s allowed banks to compete aggressively in deposit-like markets with nonbank institutions); credit expansion (e.g., abandonment of Federal Reserve margin requirements removed check on bubbles in housing and consumer finance); financial product deregulation (e.g., authorizing banks to offer adjustable rate mortgages enabled banks to offer complex loans that many homebuyers could not understand); and shifts to riskier lines of business (e.g., permitting banks to engage in the securitizations and derivatives business in the 1990s). Thus, to a large degree, the complexity paradigm qua regulatory dilemma is a creation of earlier decisions by the same regulators that now struggle to regulate it. Therefore, an alternative solution to regulating the complexity paradigm is to cut off the head of the monster: that is, to use state power to enforce simplicity.²⁵ By reducing the complexity, the regulator could narrow the inherent mismatch between *ex*

24. See Philip Stephens, *Cut the Banks (and Bonuses) Down to Size*, FIN. TIMES, Sept. 1, 2009, at 11 (“Activity for the sake of it—a characteristic of bloated and ever more complex wholesale financial markets—serves only those who manage to extract large profits from the enterprise.”).

25. A neoclassical economic critique of enforced simplicity would emphasize that complexity develops when market participants harness technology to meet counterparty and customer expectations or to circumvent the effect of regulatory business restraints not demanded by counterparties (i.e., arbitrage). The former is benign, and the latter would only be exacerbated by enforced simplicity. Thus, according to this view, technology is instrumental to, rather than constitutive of, financial innovation and complexity. While on its own that principle is unobjectionable, a vulgar neoclassical position sometimes overstates the case and fails to appreciate how dynamic and unpredictable technology can expose financial markets to shocks. However, the neoclassical reminder of arbitrage serves as a useful reminder that any attempts to enforce simplicity are bound to struggle with the arbitrage problem. See, e.g., Ronald H. Coase, *The Problem of Social Cost*, 3 J.L. & ECON. 1, 6–8, 15–19 (1960) (theorizing that, absent transaction costs, market actors can “transfer and recombine” legal rights to achieve a desired ultimate result irrespective of the initial allocation of legal rights).

ante regulatory rules and regulatory objectives.²⁶ A credible case may be made that such a “narrow banking” or “utility banking” approach is desirable for banks receiving the benefit of public insurance and lender of last resort support.²⁷ These important complexity-related topics are beyond the scope of this Article, except to the extent that shedding light on inherent limitations of new governance techniques causes policymakers and regulators to question whether public goals of finance (e.g., credit formation, economic stability, monetary policy transmission, risk allocation) are better achieved by limiting complexity rather than accommodating it *ex post* via new governance.

II. BANKS AND THE BASEL COMMITTEE

Traditionally, the business of banking has consisted of performing the intermediary role of directing funds from entities with surplus (capital surplus savers) to entities in need of funds (capital deficit borrowers), pocketing a spread along the way. Fractional reserve banking permits banks to maintain only a fraction of their depositors’ funds as reserves on hand (i.e., cash in vault). They can then put the nonreserved funds to productive use by lending to businesses and consumers. Banks’ asset-liability mismatch results from their short-term deposit liabilities and their long-term loan assets that are vulnerable to interest rate risk, credit risk, call risk, operational risk, liquidity risk, foreign exchange risk, and macroeconomic risk.²⁸ This fragility transforms into instability when a bank’s depositors begin to perceive, or even fear, that a bank is suffering losses in these longer-term assets. Thus, a positive feedback mechanism may be generated whereby investors withdrawing money on Monday cause more investors to withdraw money on Tuesday, and so forth. Often, due to the opacity of banks’ asset portfolios, even the most sophisticated counterparties have little more information on a bank’s solvency than the

26. See *supra* note 23 and accompanying text.

27. See, e.g., John Kay, *Unfettered Finance Has Been the Cause of All Our Crises*, FIN. TIMES, Jan. 6, 2010, at 11; John Kay, *Narrow Banking: The Reform of Banking Legislation*, CENTRE FOR THE STUDY OF FIN. INNOVATION, Sept. 2009, at 3–5, available at <http://www.johnkay.com/2009/09/15/narrow-banking>; Wolf, *supra* note 10. But see FIN. SERV. AUTH., THE TURNER REVIEW: A REGULATORY RESPONSE TO THE GLOBAL BANKING CRISIS 94 (Mar. 2009) (advocating curtailment of proprietary trading activities, but not all non-traditional commercial banking intermediation).

28. See SANJAY K. NAWALKHA ET AL., INTEREST RATE RISK MODELING: THE FIXED INCOME VALUATION COURSE 14 (2005); MARTIN WOLF, WHY GLOBALIZATION WORKS 52–53 (2004). Banks are therefore said to “borrow[] short, and lend[] long.” See Franklin R. Edwards & Frederic S. Mishkin, *The Decline of Traditional Banking: Implications for Financial Stability and Regulatory Policy*, 1 FED. RES. BANK OF N.Y. ECON. POL’Y REV. 27, 27 (1995).

bank's retail depositors.²⁹ A run on deposits therefore can quickly transform into, and be stoked by, counterparty redemptions and collateral calls.³⁰ While all financial institutions may pose systemic risks, bank systemic risk is particularly troubling because of the critical functions of banks in the payments system and the transmission of government monetary, credit, and exchange rate policies.³¹

In the case of banks, central banking and deposit insurance are designed to shore up confidence in the system and mitigate its inherent instability by, respectively, providing the option of emergency central bank liquidity (in the United States, via the discount window) to institutions suffering a sudden increase in deposit withdrawals and shifting the ultimate risk for bank failures from depositors to the entire industry (or taxpayers, if industry levies prove insufficient).³² In this context, it is important to recall that, as discussed above in Part I, the introduction of deposit insurance attenuates the force of market discipline by insulating banks from price and quantity reactions by depositors to alterations in a bank's capital levels.³³ Regulatory

29. See TARULLO, *supra* note 14, at 19 (noting that because banks' assets are "notoriously difficult" to evaluate, the "asymmetry of information between corporate insiders and lenders that exists in any situation is compounded in the case of banks").

30. The bank run contagion can also spread among the bank industry itself, as the massive interbank lending market is based largely on confidence and lacks robust documentation and monitoring. See Jack Guttentag & Richard Herring, *Emergency Liquidity Assistance for International Banks*, in THREATS TO INTERNATIONAL FINANCIAL STABILITY 150, 160 (Richard Portes & Alexander K. Swoboda eds., 1987).

31. Joseph J. Norton, *A Perceived Trend in Modern Financial Regulation: Increasing Reliance on a Public-Private Partnership*, 37 INT'L LAW. 43, 47 (2003).

32. Government safety nets include not only deposit insurance and access to central bank liquidity, but also unconditional FedWire payment guarantees, as well as the entire regulatory apparatus that watches over the banking sector. See, e.g., 12 C.F.R. § 210.28(b) (2010) (implying that banks participating in FedWire have access to overdraft facilities at the Federal Reserve Bank where such banks maintains their respective account); Allen N. Berger et al., *The Role of Capital in Financial Institutions*, 19 J. BANKING & FIN. 393, 400 (1995).

33. See, e.g., Donald O. Cook & Lewis J. Spellman, *Repudiation Risk and Restitution Costs: Toward Understanding Premiums on Insured Deposits*, 26 J. MONEY, CREDIT & BANKING 439, 440 (1994) (cautioning that the insulation of banks from market discipline is incomplete to the extent depositors believe that the insurer might be incapable of satisfying claims). The market discipline is transferred to the insuring institutions, which often levy fees (or premiums) for the insurance. It is theoretically possible to mirror the market discipline by accurately pricing the deposit insurance according to the likelihood a bank will require its support. In practice, deposit insurance premiums are largely thought to be dramatically underpriced, likely on account of a race-to-the-bottom approach to avoid handicapping domestic banks vis-à-vis their foreign competitors. See Viral V. Acharya et al., *International Alignment of Financial Sector Regulation*, in RESTORING FINANCIAL STABILITY 365, 366-67 (detailing the problems of arbitrage and the resulting lobbying by financial industries). The Federal Deposit Insurance Corporation Improvement Act, for the first time, pegged deposit insurance premiums to a bank's risk-based capital, but only roughly.

capital requirements therefore aim to approximate the market discipline black hole left by the introduction of moral hazard associated with the government's safety net.³⁴ Recent bailout interventions in favor of stockholders and bondholders by central banks and governments in connection with the subprime credit crisis obviously deepen moral hazard problems.

Over time, and coincident with the increases in the complexity of the banking business³⁵ and a gradual decline in capital ratios,³⁶ bank regulators increasingly have focused on capital (and later, on so-called "risk-based capital") as the primary means of ensuring the soundness of the banking sector.³⁷ Generally speaking, minimum bank capital requirements consist of two quantities and a relation between them: (1) a definition of "capital" that comprises those claims that are first in line to absorb future losses (the numerator);³⁸ (2) a measure of the exposure to risk that capital is intended to cover (the denominator); and (3) a required minimum ratio of capital to that risk exposure.³⁹

34. Former Chairman of the Board of Governors of the Federal Reserve System Alan Greenspan explained the moral hazard problem with U.S. banks' safety net as follows:

The safety net—deposit insurance, as well as the discount window—has so lowered the risks perceived by depositors as to make them relatively indifferent to the soundness of the depository recipients of their funds, except in unusual circumstances. With depositors exercising insufficient discipline through the cost of deposits, the incentive of some banks' owners to control risk-taking has been dulled. Profits associated with risk-taking accrue to owners, while losses in excess of bank capital that would otherwise fall on depositors are absorbed by the FDIC.

Testimony Before S. Comm. On Banking, Hous. & Urban Affairs, 101st Cong. 1–2 (1990) (statement of Alan Greenspan, Chairman, Bd. of Governors of the Fed. Reserve Sys.), available at http://fraser.stlouisfed.org/historicaldocs/782/download/27814/Greenspan_19900712.pdf.

35. See *infra* Part II.B.3.a.

36. See M.K. LEWIS & K.T. DAVIS, *DOMESTIC & INTERNATIONAL BANKING* 149 tbl.5.1 (1987) (noting that the ratio of equity capital to total assets for U.S. banks decreased from 18.3% in 1914 to 6.9% in 1985 and that the same ratio for U.K. banks decreased from 12% in 1900 to 4.6% in 1985).

37. TARULLO, *supra* note 14, at 21. Other commentators view the ascendancy of capital adequacy regulation from a public choice lens. See Thomas Oatley & Robert Nabors, *Redistributive Cooperation: Market Failure, Wealth Transfers, and the Baselle Accord*, 52 INT'L ORG. 35, 41–44 (1998).

38. Ideally, regulatory capital (the numerator of the capital ratio) should consist of financial instruments that conduce to the threefold aim of (1) providing a loss buffer for the governmental providers of the bank safety net, (2) serving as "patient money" that will not be redeemed during a financial crisis, and (3) helping to discipline bank risk-taking behavior. As this Article focuses on the use of internal models in calculating risk-weighted assets (the denominator of the capital ratio), this element of the ratio and the required numerical ratio will not be the subject of further discussion.

39. Arturo Estrella, *A Prolegomenon to Future Capital Requirements*, 1 FED. RES. BANK OF

Prior to the agreement on the Basel Accord in 1988 (the initial Basel Accord), bank regulators measured the exposure to risk as a bank's total assets, much in the same manner we calculate the still-required U.S. leverage ratio today. Since the initial Basel Accord mandated risk-sensitivity in calculating exposure to risk, the denominator of the capital ratio has measured the banks' risk exposure by reference to the Basel Accord's regulatory risk weighting system. Thus, instead of measuring regulatory capital against total assets in a risk-agnostic way, it is measured against assets to which risk weights have been applied to reflect assets' perceived riskiness in a risk-sensitive way. As described in further detail below, for the first time Basel II now permits regulated banks to set the risk exposure component of their regulatory capital ratios by reference to their own internally-generated risk models.

A. Regulating Bank Capital Adequacy in the United States: A Brief Pre-Baselite History

The United States was the first jurisdiction to impose generally applicable minimum capital requirements on its banks. From the enactment of the National Banking Act of 1864 until the Great Depression-era legislation, U.S. regulators evaluated capital formally only when a national bank applied for a charter.⁴⁰ Following the Great Depression, bank authorities turned more attention to capital and solvency of banks during examinations, but still lacked enforcement tools and, more critically, express statutory authority to mandate minimum capital levels.⁴¹ Capital regulation underwent significant formalization in the early 1980s, as bank regulators instituted systematized capital levels, in large part due to unprecedented exposures to riskier sovereign debt.⁴² In 1983, Congress

N.Y. ECON. POL'Y REV. 1, 2 (1995).

40. See Robert F. Weber, *A Brief Pre-Baselite History of Capital Adequacy Regulation in the United States* (Feb. 2010) (unpublished manuscript, on file with author).

41. The U.S. bank regulators developed nascent risk-sensitive leverage ratios as early as the 1950s. Joseph Jude Norton, *Capital Adequacy Standards: A Legitimate Regulatory Concern for Prudential Supervision of Banking Activities?*, 49 OHIO ST. L.J. 1299, 1317 (1989) (finding that in the 1950s the Federal Reserve Board began to use a "simplistic" capital-to-adjusted-risk analysis for internal purposes); see also EUGENE N. WHITE, *COMPTROLLER OF THE CURRENCY, THE COMPTROLLER AND THE TRANSFORMATION OF AMERICAN BANKING: 1960-1990* 30, 30 n. 40 (1992) (describing the Office of the Comptroller of the Currency's (OCC's) 1974 "Victor program," which compared "classified loans," defined as "100 percent of substandard loans, 50 percent of loans especially mentioned [and] 50 percent [of] doubtful loans," to total adjusted capital in order to individuate troubled national banks; those banks with a ratio in excess of 65% would automatically receive special attention).

42. The reasons leading up to this exposure are manifold and outside the scope of this Article. For the moment, it is sufficient to note that the burgeoning Eurodollar markets

granted regulators express statutory authority to regulate capital on an ongoing basis. Moreover, in January 1986, U.S. banking regulators announced a plan to unilaterally implement a risk-based capital adequacy regime that took into account the various risks to which banks' capital bases were subject. By the mid-1980s, Congress had transformed the regulation of capital from a matter of ad hoc enforcement actions to "an ongoing feature of basic bank supervisory policy."⁴³ By moving first, Congress saddled U.S. banks with a competitive disadvantage vis-à-vis their European and Japanese competitors. U.S. banking regulators had in effect imposed a risk tax on U.S.-based banks—which now had to withhold capital as a reserve for each new extension of a loan—without any restrictions keeping capital from migrating offshore. To address each of these problems, the U.S. banking policy establishment pushed international policy coordination under the auspices of the Bank of International Settlements (BIS), eventually resulting in the initial Basel Accord.

B. The Basel Committee and Capital Adequacy: From Basic Risk Sensitivity to an Internal Models Approach

1. Birth of an International Policy Coordinator

In December 1974, with world financial markets reeling following the collapse of two major international banks,⁴⁴ the central bank governors of the G10 agreed to establish the Basel Committee, consisting of central bankers and bank supervisors under the auspices of the BIS, to address the immediate problems arising in connection with the 1974 international financial crisis. In the longer term, there was an understanding that the Basel Committee would work to promote some modicum of convergence of

(funded by U.S. balance of payments deficits) and the increasing internationalization and complexity of financial markets in the 1960s and 1970s, particularly subsequent to the collapse of the Bretton Woods system of managed exchange rates in 1971 and 1973, resulted in banks holding unprecedented levels of currency and interest risks. Banks not only were exposed to new types of international risks, but the amounts subject to these globalized risks increased as well. During the same period, large international banks made significant investments into Eurodollar markets and U.S. banks expanded into foreign markets via Edge Act and Agreement corporations, as well as joint ventures and foreign direct investments. Among U.S. banks, foreign-based assets increased from 3% in 1960 to 19% in 1975.

43. Michael P. Malloy, *Capital Adequacy and Regulatory Objectives*, 25 SUFFOLK TRANSNAT'L L. REV. 299, 301–02 (2002).

44. See RICHARD DALE, *THE REGULATION OF INTERNATIONAL BANKING* 156–67 (1984) (describing the failure of Bankhaus Herstatt); GEORGE ALEXANDER WALKER, *INTERNATIONAL BANKING REGULATION LAW, POLICY AND PRACTICE* 26–39 (2001) (describing the failure of Franklin National).

banking supervisory practices.⁴⁵ The Basel Committee's initial focus on formalizing a coordination framework pursuant to which insolvent institutions could be wound down gave way to increasing attention to the prudential concern of protecting the solvency of internationally active banks and the stability of the international financial system (i.e., the *prevention*, rather than the *resolution*, of insolvencies).

In a 1981 report, the Basel Committee indicated its concern with the erosion of bank capital ratios and advocated a greater approximation in the levels of capital employed by large banks. The decade of the 1970s witnessed a reduction of capital-to-total-assets ratios of all major industrialized nations except for Switzerland and Italy.⁴⁶ While acknowledging that any formal attempt at harmonization of the widely disparate systems of bank capital regulation was impractical, the Basel Committee nevertheless envisaged a role for itself in achieving "greater convergence among its members with regard to national definitions of bank capital for supervisory purposes."⁴⁷ Against this background, a second goal of the convergence effort became central: if policy coordination was to be achieved, how could the Basel Committee do so on a competition-neutral basis?⁴⁸ As the United States had been ratcheting up and formally "legalizing" its minimum bank capital levels in the early 1980s, bank capital ratios in other G10 countries, most notably Japan, continued to plummet. From 1980 to 1985, U.S. banks saw their share of the international banking business plunge from 30% to 23%, while Japan saw a corresponding increase for its banks from 20% to 26%. This trend continued throughout the 1980s and was coincident with Japanese banks operating with much lower capital ratios than U.S. banks.⁴⁹

These trenchant conflicts threatened to derail progress on the Basel Committee's second goal of leveling the competitive playing field, until U.S.

45. See WALKER, *supra* note 44, at 51 n.150.

46. See BRYCE QUILLIN, INTERNATIONAL FINANCIAL CO-OPERATION: POLITICAL ECONOMIES OF COMPLIANCE WITH THE 1988 BASEL ACCORD 14 (2008). The decline in the 1970s was a micro-event in a larger trend of declining capital ratios at U.S. banks from as high as 40% in the 1850s to 6–8% from the 1940s to the present. See Berger et al., *supra* note 32, at 402 fig.1, 403. The marked decline in the 1940s is attributed in large part to the establishment of deposit insurance at the FDIC and the related risk-taking incentives created thereby. See André Lucas, *Evaluating the Basle Guidelines for Backtesting Banks' Internal Risk Management Models*, 33 J. MONEY, CREDIT & BANKING 826, 827 (2001) ("[T]he creation of the [FDIC] in 1933 resulted in a decrease in capital ratios of about 50 percent over a ten-year period.").

47. See QUILLIN, *supra* note 46, at 15.

48. See MICHAEL P. MALLOY, INTERNATIONAL BANKING: CASES, MATERIALS & PROBLEMS 75 (1998).

49. See QUILLIN, *supra* note 46, at 14 fig.2.1.

and U.K. banking authorities reached an agreement in principle in 1987 on capital adequacy convergence that incorporated risk sensitivity for the first time. Importantly, the United States and United Kingdom announced their intention to apply these standards to foreign banks already present or wishing to enter their markets.⁵⁰ Recalcitrant Committee members, including Japan, agreed to move forward on the Basel project.⁵¹

2. *The Initial Basel Accord and the Introduction of Risk Sensitivity*

In July 1988, the Basel Committee published the initial Basel Accord, which set a minimum capital-to-risk-weighted assets ratio of 8%. Like the 1987 U.S.–U.K. accord, the initial Basel Accord determined which risk-weighting methodologies to apply to bank assets. Under the Accord, assets are categorized into five risk-weighted buckets according to their perceived credit risk. The initial Basel Accord's focus on credit risk reflected the then-current perception that credit risk posed the greatest risk to bank solvency.⁵² Each risk category carries a specified risk weighting factor (0%, 10%, 20%, 50%, or 100%).⁵³ Low risk assets such as U.S. Treasury securities receive a 0% risk weighting (that is, they are not added into the denominator of the capital-to-assets ratio), and other assets representing incrementally higher credit risk receive higher risk weights. For example, claims against U.S. banks and securities issued by U.S. state and local governments receive a 20% risk weight; revenue bonds issued by U.S. state and local governments and first mortgage loans on one-to-four family residences receive a 50% risk weight; and (1) property, plant, and equipment, and (2) loans to households and commercial borrowers receive a 100% risk weight. Amounts at risk pursuant to off-balance sheet items such as contingent liabilities and derivative instruments⁵⁴ are then

50. Oatley & Nabors, *supra* note 37, at 49.

51. See Stavros Gadinis, *The Politics of Competition in International Financial Regulation*, 49 HARV. INT'L L.J. 447, 502 (2008) ("Large international banks could not afford to be absent from these markets, and direct negotiations between the United States and Japan began immediately after the announcement of the U.S.–U.K. agreement."); Oatley & Nabors, *supra* note 37, at 51–52 (describing how the "primary targets," Japanese banks, responded to the U.S.–U.K. threats).

52. Recent events might have called this assumption into question, as the post-Gramm Leach–Bliley expansion of universal banking and the associated trading and derivatives activities built up significant market risks. As is discussed *infra*, by the mid-1990s the Basel Committee had incorporated market risks into the Basel Accord.

53. See CARNELL ET AL., *supra* note 13, at 259–60 (describing the four risk weight factor percentages that U.S. federal bank regulators adopted in their implementation of the initial Basel Accord); HAL S. SCOTT, INTERNATIONAL FINANCE: TRANSACTIONS, POLICY AND REGULATION 332 (14th ed., 2007).

54. The initial Basel Accord recognized that the total exposure of a bank with respect

multiplied by a “credit conversion factor” that reflects the Basel Committee’s judgment of the likelihood that the off-balance sheet item will give rise to a balance sheet liability.⁵⁵ The normal risk weights then apply to the resulting “credit equivalent amounts” to yield the required capital to be held against the off-balance sheet item. However, a 50% reduction applies to derivative instruments.⁵⁶

For all its achievements in policy convergence, the initial Basel Accord only took into account one component of credit risk—counterparty default risk—and left other significant risks such as interest rate risk, foreign exchange risk, operational risk, legal risk, and market risk, as well as nondefault-related credit risks such as downgrade or migration risk, spread risk, settlement risk, and credit concentration risk outside of its risk-based framework.⁵⁷ Conversely, banks received no credit from sound risk mitigation techniques such as requiring collateralization or guarantees of loans or hedging exposures.⁵⁸ The risk-weighting categories (or “crude risk buckets”⁵⁹) also were necessarily overbroad and failed to account for the

to certain derivative instruments (e.g., forwards, swaps, options) is limited to the cost of replacing the cash flow in the event of a counterparty default. *See* BASEL COMM. ON BANKING SUPERVISION, INTERNATIONAL CONVERGENCE OF CAPITAL MEASUREMENT AND CAPITAL STANDARDS 20 (1988) (updated to April 1998) (hereinafter BASEL ACCORD). As such, “credit conversion factors” are applied to the replacement cost rather than the nominal amounts of such instruments.

55. *Id.* at 12–13, 19–25.

56. *Id.* at 25 (asserting that the reduction in capital required to be held against such derivatives is in recognition that “most counterparties in these markets, particularly for long-term contracts, tend to be first-class names”). This provision of the accord shows the degree to which the Basel Committee, even before the internal models approach of Basel II, was operating under the assumption that banks themselves (especially those “first class names”) could ensure stability; however, recent experience confirms that first class names often house third-rate operations.

57. For a helpful summary of these sub-components of credit risk, see ARNE SANDSTRÖM, SOLVENCY: MODELS, ASSESSMENT & REGULATION 82–3 (2006). Technically, the initial Basel Accord permitted supervisors to develop capital adequacy requirements that accounted for other types of risk, or to supplement the risk-weighting methodology with “other methods of capital measurement” (e.g., the FDIC’s prompt corrective action regime and minimum leverage ratio requirements).

58. *See* CARNELL ET AL., *supra* note 13, at 272; U.S. GOV’T ACCOUNTABILITY OFFICE, RISK-BASED CAPITAL: BANK REGULATORS NEED TO IMPROVE TRANSPARENCY AND OVERCOME IMPEDIMENTS TO FINALIZING THE PROPOSED BASEL II FRAMEWORK 3–4 (2007) (“Basel I’s simple risk weighting approach does not adequately differentiate between assets that have different risk levels, offers only a limited recognition of credit risk mitigation techniques, and does not explicitly address all risks faced by banking organizations.”).

59. Richard J. Herring, *The Known, the Unknown, and the Unknowable in Financial Policy: An Application to the Subprime Crisis*, 26 YALE J. ON REG. 391, 397 (2009).

different risk profiles of assets within the same category.⁶⁰ Furthermore, the credit conversion factors often operated in a manner that obscured the true economic risks of bank positions.⁶¹ Banks exploited the resulting opportunities for arbitrage. These lacunae were all the more glaring in that it was foreign exchange risk and interest rate risk, and not credit risk, that most directly led to the 1974 bank failures leading to the formation of the Basel Committee and the subsequent sovereign debt crisis of the mid-1980s.

In 1991, Congress enacted the Federal Deposit Insurance Corporation Improvement Act (FDICIA), which implemented the initial Basel Accord but also required U.S. federal banking agencies to revise their risk-based capital standards for insured depository institutions to ensure that these standards take account of interest rate risk, concentration of credit risk, and the risks of “nontraditional activities.”⁶² National treatment of these other risks in non-U.S. jurisdictions was either nonexistent or significantly more complicated than credit risk. Banks were therefore able to engage in regulatory capital arbitrage across asset classes and jurisdictions.⁶³ Nevertheless, and despite its manifold and evident unresolved problems, the initial Basel Accord represented a significant achievement in the realm of financial policy coordination and has been adopted by countries outside the Basel Committee and become an almost global standard.⁶⁴

60. As an example, debt securities issued by the Organisation for Economic Co-operation and Development (OECD) members, Mexico (which joined in 1994 and devalued its currency later that year in the face of a debt crisis) and the Republic of Korea (which joined in 1996 and experienced a massive currency depreciation in 1997 before receiving a \$58 billion loan from the IMF), carried a 20% risk weight prior to their respective crises—reflecting an embedded assumption that sovereign credits from these countries were five times safer than a loan to IBM, which as a corporate exposure carried a 100% risk weight.

61. See Robert C. Merton, *Financial Innovation and the Management and Regulation of Financial Institutions*, 19 J. BANKING & FIN. 461, 468–69 (1995) for an illustration about how structuring a portfolio yielding the return on a group of mortgages through a swap (rather than holding the underlying mortgages themselves) resulted in an eightfold decrease in the bank's capital charge.

62. See Federal Deposit Insurance Corporation Improvement Act of 1991, Pub. L. No. 102-242, § 305(b), 105 Stat. 2236 (1991). FDICIA also required Federal bank regulators to impose a leverage test, and instituted a regime of prompt corrective action designed to counteract the regulatory practice of forbearance by requiring regulators to intervene earlier on during a period of declining capital or leverage ratios. See George G. Kaufman & George J. Benston, *The Intellectual History of the Federal Deposit Insurance Corporation Improvement Act of 1991*, in ASSESSING BANK REFORM: FDICIA ONE YEAR LATER 19 (George G. Kaufman & Robert E. Litan eds., 1993).

63. See, e.g., Norton, *supra* note 31, at 51–52; Francesco Cannata & Mario Quagliariello, *The Role of Basel II in the Subprime Financial Crisis: Guilty or Not Guilty?* 4 (Ctr. for Applied Research in Fin., Working Paper No. 3/09, 2009), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1330417.

64. See WALKER, *supra* note 44, at 569.

3. *The Internal Models Approach: Delegating Assessments of Market Risks and Credit Risks to Regulated Banks*

In the 1990s, financial regulators faced an unprecedented array of emergent risks to bank solvency, including most prominently the proliferation of derivatives and the expansion of banks' trading, capital markets, and off-balance sheet activities. The U.S. bank regulatory regime which, as noted in Part II.A, was the first to impose capital adequacy requirements on its banks, was under significant competitive pressures from other jurisdictions with less onerous regulatory strictures. It is important to note in this context that during the half century following World War II, the United States and Japan were the only jurisdictions that mandated "narrow banking," which prevented banks affiliating with insurance companies, securities firms, and hedge funds.⁶⁵ Because the initial Basel Accord burdened banks from non-U.S. jurisdictions with a competitive disadvantage vis-à-vis their domestic nonbank competitors, those banks expanded their activities to search for returns not subject to regulatory capital taxes. In the United States, the Glass-Steagall Act's (GSA) walling-off of the banking business from nonbanking activities constituted a serious competitive impediment for U.S. banks in a globalized financial market. In 1991, the Treasury Department unsuccessfully sought the repeal of GSA.⁶⁶ Notwithstanding this initial congressional rebuff, the U.S. bank regulatory authorities had attenuated much of GSA's effects and embraced the bank-as-financial-bazaar model by the time Congress abrogated GSA in 1999 with the Gramm-Leach-Bliley Act.

a. *Banking in the 1990s: Competition, Globalization, Technology, Complexity, and Code*

The late 1980s and early 1990s witnessed an accelerated shift of large, internationally active banks away from their traditional business of direct financial intermediation—that is, providing deposit-based financing to borrowers in exchange for loans to be held on the banks' balance sheets—to (1) assuming a more indirect role of earning fee-based income as an underwriter-facilitator in capital markets activities; (2) acting as a dealer of, and deploying their own capital in, off-balance-sheet derivatives transactions; and (3) expanding their trading activities and their risk

65. See Ernest T. Patrikis, *Japan's Big Bang Financial Reforms*, 24 *BROOK. J. INT'L L.* 577, 580–85 (1998); TRIPARTITE GROUP OF BANK, SEC. AND INS. REGULATORS, *THE SUPERVISION OF FINANCIAL CONGLOMERATES* 70–71 (1995), <http://www.bis.org/publ/bcbs20.pdf>.

66. See generally U.S. TREAS. DEP'T, *MODERNIZING THE FINANCIAL SYSTEM: RECOMMENDATIONS FOR SAFER, MORE COMPETITIVE BANKS* (1991).

tolerance for even traditional lending activities.⁶⁷ Bankers and regulators referred to this sectoral dynamic as a shift to “noninterest” income to distinguish it from the traditional interest income earned on loans.⁶⁸ These trends resulted from declining profitability of the traditional banking business due primarily to competitive and regulatory developments that undercut banks’ traditional advantages in their returns on assets (asset side of balance sheet) and their cost of capital (liabilities side of balance sheet).⁶⁹ These funding pressures, deregulatory initiatives, globalization forces, and nonbank financial product innovations squeezed the competitive position of banks severely. Bank regulators permitted the expansion of banks into these new activities because, in the opinion of most bank regulators, “permitting wider activities is *necessary* to ensure that such organizations can remain competitive.”⁷⁰ It was better to double down on risk than risk obsolescence. In the process, banking operations assumed increasing complexity that resulted in earnings and capital volatility, which in turn rendered the Basel Accord’s formulaic approach to credit risk an awkward fit for banks’ dynamic risk profiles.

67. See GOODHART ET AL., *supra* note 15, at 38–40.

68. See, e.g., *Testimony Before the S. Comm. on Banking, Hous. & Urban Affairs*, 103d Cong. 8–9 (1994) (statement of Alan Greenspan, Chairman, Board of Governors of the Federal Reserve System), available at http://fraser.stlouisfed.org/historicaldocs/ag94/download/27989/Greenspan_19940922.pdf [hereinafter Greenspan, *September 1994 Senate Testimony*]; FED. DEP. INS. CORP., *BANKING RISK IN THE NEW ECONOMY* 11 (2000).

69. While competitive pressures constituted, in my view, the proximate cause of the transformation of banking groups throughout the decade, other factors contributed to the scale and speed of the changes. For instance, as discussed below, technology fueled financial innovation. More indirectly, the ascendancy of finance theory in the late twentieth century (e.g., option pricing models, portfolio theory) focused on the varieties of finance as functions, with little regard for the institutions performing the functions. Accordingly, as finance theory was increasingly applied to practice, the traditional institutional demarcations between, on the one hand, banks and, on the other, insurance companies and securities firms, appeared (at least from a theoretical perspective) as anachronisms. Cf. Robert C. Merton, *Future Possibilities in Finance Theory and Finance Practice* 5–6, (Harv. Bus. Sch., Working Paper No. 01-030, 2000), available at <http://www.signallake.com/innovation/FuturePossibilities.01.030.pdf> (explaining how a functional perspective on financial innovation is preferable to an institutional perspective because institutions often use finance theory to change their traditional product mix to better accommodate the functional demands of users of financial services).

70. *Testimony Before the S. Comm. on Banking, Hous. & Urban Affairs*, 101st Cong. 18 (1990) (statement of Alan Greenspan, Chairman, Board of Governors of the Federal Reserve System), available at http://fraser.stlouisfed.org/historicaldocs/ag90/download/27814/Greenspan_19900712.pdf (emphasis added).

i. The New Financial Code

During the 1990s and into the 2000s, new risk management technologies enhanced dramatically the perceived ability of large financial institutions to identify and quantify risks, leading to increased confidence in investment and hedging strategies that utilized data from those technologies. A new risk management industry hailed its ability to imbue advances in theoretical finance with mathematical precision through the use of new computer systems and software technologies that collect, organize, and analyze data in a systematized manner.⁷¹ A new cadre of risk management professionals emerged to administer these technologies, most of whom had scientific or mathematical training to complement their finance backgrounds. Risk managers aimed to measure, with technical precision, the “value at risk” (VaR) associated with certain products and events. Banks and securities firms generated proprietary intellectual property or purchased software or consultant services from third-party vendors to manage risk and promote new product offerings. This new financial code underlying the new banking business model developed outside the view of bank regulators, and formed part of a broader trend where information technology and information processing become an increasingly important source of competitive advantage and, ultimately, wealth.⁷²

These new technologies facilitated three critical developments in late twentieth century finance: (1) VaR methodologies expanded from their initial role of gauging correlation of debt and equity market risks to measuring the impact of credit risks associated with longer-maturity assets such as loans; (2) credit assessment technologies were a contributing cause of banks’ loss of their traditional advantage in processing credit information, but banks were able to channel technologies to their advantage in developing new products that banks were well positioned to develop with their traditional clients, such as over-the-counter (OTC) derivatives; and (3) large banks employed computer technologies to develop sophisticated economic capital (as distinguished from purely regulatory capital) models that sought to ensure that firms had sufficient capital to meet the expectations of the capital market, and subjected these models to “stress testing” and “scenario analysis” to evaluate how a firm would be

71. For a brief discussion of the “systemic coding” of digital information by businesses, see Kenneth A. Bamberger, *supra* note 4, at 682–83.

72. Cf. Jack M. Balkin, *Digital Speech and Democratic Culture: A Theory of Freedom of Expression for the Information Society*, 79 N.Y.U. L. REV. 1, 3, 13–14 (2004) (discussing conflict between democratization of digital content and the “increasing importance of digital content as a source of wealth and economic power”).

affected by hypothetical sets of seriously adverse events.⁷³

First, the development of VaR models purported to enable banks to form a more complete understanding of potential loss associated with any given position. VaR attempts to measure the maximum possible loss of a portfolio over a given time horizon at a specified confidence level.⁷⁴ In other words, VaR models yield a numerical assessment of the maximum loss a position might incur over a specified time period (the time horizon) and with a specified probability tolerance (the confidence interval). Because VaR is an expression of probability and maximum loss, it does not purport to assess literally the exposure at risk associated with a position, which in most circumstances would be 100% of the asset's value. Moreover, the assumed distributions of VaR techniques are where the techniques become the most useful. Since there is no a priori reason for assuming a normal distribution in the context of financial outcomes, pioneers of the VaR techniques employed powerful new computer software to derive statistical model distributions based on which future returns could be predicted (within a given confidence interval).⁷⁵ J.P. Morgan was largely responsible for the development of VaR technologies in 1994 and began to sell software including its proprietary VaR methods in 1996. The first wave of VaR techniques only quantified VaR due to market risks. It took little time, however, before risk managers appreciated the broader applicability of the putative ability of VaR techniques to quantify "maximum" possible loss amounts associated with particular risks, some of them non-market-related.⁷⁶ By the late 1990s the most sophisticated banks had begun to use VaR to classify loan assets into credit risk classes and to use those classifications in allocating capital.⁷⁷

73. See James A. Fanto, *Anticipating the Unthinkable: The Adequacy of Risk Management in Finance and Environmental Studies*, 44 WAKE FOREST L. REV. 731, 737-38 (2009).

74. See Philippe Jorion, *Risk²: Measuring the Risk in Value at Risk*, 52 FIN. ANALYSTS J. 47, 47 (1996); Lucas, *supra* note 46, at 829.

75. Typical modeling techniques include pure historical data approaches, which use historical data alone to determine loss distribution, and so-called "Monte Carlo" simulations, which use historical data to estimate loss but add the use of random sampling driven by advanced computing power.

76. As will be discussed in greater detail in Part V.C.2, some commentators view the VaR construct to be inherently suspect. See, e.g., Nassim Taleb, *Against Value at Risk: Nassim Taleb Replies to Philippe Jorion*, FOOLED BY RANDOMNESS.COM (1997) (expressing skepticism in "[t]he act of reducing risk to one simple quantitative measure on grounds that 'everyone can understand' it").

77. Laurence H. Meyer, Governor, Fed. Reserve, Remarks at the Federal Financial Institutions Examination Council, International Banking Conference: The Challenges of Global Financial Institution Supervision (May 31, 2000), available at <http://www.federalreserve.gov/boarddocs/speeches/2000/20000531.htm> [hereinafter Meyer, FFIEC Remarks].

Second, the emergence of risk management and credit assessment computer and software technologies permitted nonbank lenders to intermediate in loan markets with increasing frequency. Those technologies also enabled banks to transition into new, often riskier, financial products that they began to offer more frequently in the 1990s. New code interacts dynamically with riskier business models; the former gives rise to the latter, which in turn encourages the assumption of additional risks on the grounds that those new risks are limited by the same risk management technologies. Furthermore, as risk management technology advances, it reduces costs for future innovations, propelling the innovation process.⁷⁸

Banks also harnessed this new code to turbo-charge the fee-based securitization and derivatives business and migrate away from traditional forms of bank intermediation. Using new computer models to model cash flows, credit risk, and quality of credit support, originators could now transfer a pool of credit assets—such as credit card receivables, mortgages, and leases—without regard for the credit risk posed by any individual debtor. These new technologies transformed fundamentally the relationship between debtors and creditors by giving rating agencies, issuers, underwriters, and purchasers access to aggregated data predicting the likelihood of default on obligations constituting the securitized pool of assets. Rating agencies developed their own technologies to assess the credit quality of a securitized pool before stamping their credit rating imprimatur on the various tranches of a securitization transaction.⁷⁹ Because a priori models predicted the performance of the pool itself, it became less important for securitization professionals, including bankers, to employ a banker's traditional skill of assessing whether a specific debtor would be able to repay a loan. A debtor default would register only as a loss to the lowest tranche of securitized debt. The importance of computer technologies was not limited to VaR modeling techniques; originators also utilized marketing software, data mining programs, and advanced credit reporting to select creditworthy borrowers and set appropriate interest rates.⁸⁰ For example, a credit card executive boasted that since the mid-1990s the sector

has turned the analysis of consumers into a science rivaling the studies of DNA or the launching of the Discovery spaceship into orbit. The

78. See Merton, *supra* note 61, at 463 (“The total reduction in costs has the effect of reducing the threshold of benefit needed to cover the cost of a new innovation.”).

79. See Richard E. Mendales, *Collateralized Explosive Devices: Why Securities Regulation Failed to Prevent the CDO Meltdown, and How to Fix It*, 2009 U. ILL. L. REV. 1359, 1377 (2009).

80. See Gerding, *supra* note 6, at 144.

mathematics of virtually everything consumers do is stored, updated, categorized, churned, scored, tested, valued, and compared from every possible angle in hundreds of the most powerful computers and by among the most creative minds anywhere.⁸¹

In addition to growth in credit card and mortgage lending (and related securitizations), modeling advances contributed in large part to the burgeoning derivatives market throughout the decade.⁸² As a result of the reliance on computer modeling and aggregated data, an emergent preference for quantitative, standardized information over qualitative information—a “mathematicization” of finance—took hold among financial institutions.⁸³ A central premise of this Article is that this process of mathematization is better thought of as a concomitant to the complexity that took hold in banking business models during this period, rather than as an absolute enhancement in the accuracy of evaluating risk.

Third, large internationally active banks developed their own “economic capital models,” entirely separate from the regulatory capital framework, that computed the amount of capital needed to protect the bank from unexpected future losses within a given confidence level. Most typically, economic capital models are set up to ensure the firm will remain a going concern able to attract counterparties⁸⁴ with a very high degree of probability. Economic capital modeling utilizes advanced market and credit VaR methodologies with long time horizons to assess how much capital a firm is putting at risk given its current portfolio and future business plans. Because the economic capital modeling techniques look forward to evaluate the probability of losses, risk managers submit the models to stress testing and scenario analysis that test how a bank would respond to future extreme adverse events, or sometimes a series of adverse events in so-called “stochastic” tests. These models allow bank management to identify

81. Duncan A. MacDonald, *Card Industry Questions Congress Needs to Ask*, AM. BANKER, Mar. 23, 2007, at 10.

82. See Merton, *supra* note 61, at 463 (writing in 1995 that “[t]he rapid five-year growth in [OTC] derivatives (which are transacted away from a central market putting greater pressure on the underlying institution’s capability to price those derivatives and manage their risk) reflects a growing confidence in the issuing institutions’ modeling and evaluation skills”); cf. 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, 1011 (2009) (highlighting internet-enabled mass marketing, computerized credit scoring programs, and automated loan processing as contributing to massive expansion in lending during 1990s).

83. See Cannata & Quagliariello, *supra* note 63, at 12.

84. While minimum capital requirements are predominantly designed to limit the risk of a catastrophic insolvency resulting in public losses, they are agnostic as to a firm’s going concern value, which often depends on a firm maintaining capital ratios well in excess of minimum levels.

concentrations of risk and opportunities for diversification within a systematized framework, and therefore represent a “more sophisticated, less arbitrary alternative to traditional lending limit controls” that banks otherwise use to limit risk.⁸⁵ Economic capital could also focus on matters of shareholder concern—such as market capitalization at risk and going concern value—rather than simply focusing on book value as regulatory capital requirements do.⁸⁶ Moreover, banks use the economic capital construct to ensure they maintain capital sufficient to maintain their debt ratings as well as allocate capital across a company group.⁸⁷

ii. *Regulatory and Policymaker Reactions to Financial Complexity: In Their Own Words*

The complexity paradigm and the ascendancy of the new financial code did not occur outside the supervision of bank regulators in the United States and abroad who enabled and encouraged the sectoral shift into new lines of business with higher risks and returns. Bank regulators authorized the new business model for two related reasons. First, they believed that a globalized market for capital and financial services made the traditional banking model of holding long-term loan assets and short-term low-yielding deposits untenable. In the process, external regulation by means of “lay[ing] down, *ex cathedra*, common rules and ratios that all banks should follow . . . [was] becoming both less effective and less feasible.”⁸⁸ Regulators perceived that the innovation of the 1990s was different in scale, if not scope, than preceding bursts of financial innovation, but feared that further regulation to curb risk would temper financial innovation and slow economic growth.⁸⁹ This concern was misplaced from the outset, but it is

85. See Michael B. Gordy, *A Risk-Factor Model Foundation for Ratings-Based Bank Capital Rules*, 12 J. FIN. INTERMEDIATION 199, 199 (2003).

86. Bank managers are responsible to a class of constituencies that overlaps, but is not coincident, with the class of constituencies that bank regulators protect. Therefore, the notion of VaR raises the question: *whose value is at risk?* For instance, the market value of a banking group’s equity is expected to be much higher on the priority of a bank manager than a bank regulator, who will be more concerned with the balance sheet liquidation value that ensures safety and soundness of the banking system and the protection of a particular class of creditors (that is, depositors). See FRANCESCO SAITA, *VALUE AT RISK AND BANK CAPITAL MANAGEMENT* 19–20 (2007).

87. See *id.* at 20; Gordy, *supra* note 85, at 200. Decisions regarding distributions and dividends are particularly sensitive in the context of operating subsidiaries with minority shareholders.

88. GOODHART ET AL., *supra* note 15, at 39.

89. In the words of former Federal Reserve Governor Laurence H. Meyer, “[t]he growing scale and complexity of our largest banking organizations . . . raises as never before the potential for systemic risk from a significant disruption in, let alone failure of, one of

evident in the remarks of bank regulators throughout the 1990s; it also evinces the extent to which the economy had come to depend on financial sector profitability.⁹⁰

Second, they possessed a cautious, but untested, confidence in the predictive capability of banks' proprietary risk management functions and internal risk and capital models, and the theoretical finance underlying those models. Faced with a banking sector in secular decline, they authorized banks to enter new markets and product lines with little regard for their effects on safety and soundness, and began to look to the risk management and modeling techniques that enabled much of the new banking industry to perform the task that regulators themselves had by the mid-1990s become incapable of performing: monitoring and understanding the safety and soundness of bank activities. In the capital adequacy context, regulators quickly perceived the poor fit between the initial Basel Accord's formulaic "risk buckets" approach to measuring credit risk and the more dynamic risk profiles of actual banks in the 1990s. The regulators, overwhelmed by the complexity of a globalized, deregulated bank industry subjected to cross-sectoral competition and rapid technological developments, eventually decided to link regulatory capital to firms' internal capital models.

(a) First Bank Regulatory Premise: Complexity Adds Risk, but Is Needed to Compete Effectively

Bank regulators recognized the risks inherent in new business models, but opted to step aside rather than risk "inefficient" regulation that could put banks at a competitive disadvantage. E. Gerald Corrigan, then the Chairman of the Basel Committee and President of the Federal Reserve Bank of New York, warned in 1992 that "[t]he speed, volume, value, and complexity of international banking transactions have introduced new linkages and interdependencies between markets and institutions that have the potential to transmit problems and disruptions from place to place and

these institutions." Laurence H. Meyer, Governor, Fed. Reserve, Remarks Before the National Bureau of Economic Research Conference, Prudential Supervision: What Works and What Doesn't: Supervising LCBOs: Adapting to Change (Jan. 14, 2000), available at <http://www.federalreserve.gov/BoardDocs/Speeches/2000/20000114.htm>. To Meyer, remarkably, regulators faced "the unattractive options of exposing our economies to additional risk in order to obtain financial efficiencies and market choices or of imposing more regulation with both its attendant moral hazard and inefficiencies." *Id.* The lesson learned painfully in 2007 was the folly of assuming a substantial overlap between "financial efficiencies" and "market choices." *Id.*

90. For a discussion on the predominance of financial sector growth and profitability in developed economies, see *supra* note 10 and accompanying text.

institution to institution at almost breakneck speed.”⁹¹ In addition, Corrigan registered the Basel Committee’s concern that “banking groups by themselves, but especially in combination with insurance and securities firms, are becoming very complex organizations” and that “the world of banking and finance has become very complex and perhaps more risky as technology, competition, and deregulation irreversibly alter the framework within which financial institutions and their supervisors must function.”⁹² The remarks also evince regulators’ growing fascination (which would become increasingly important throughout the decade) with the “management information systems that will provide the top management of financial institutions with the tools and the information to ensure that applied technology is being used in a safe, sound, and prudent manner.”⁹³ Governor Laurence H. Meyer stated in 2000 that “[f]or the past decade or so supervisors have recognized that snapshots of the balance sheets of complex banking organizations are not very helpful for supervisory evaluations. Positions just change too rapidly.”⁹⁴

U.S. lawmakers attempted several times to legislate fulsome derivatives regulation in the early 1990s.⁹⁵ In 1994 and 1995, members of the U.S.

91. E. Gerald Corrigan, Chairman, Basel Comm., Remarks Before the Seventh International Conference of Banking Supervisors in Cannes, France: Challenges Facing the International Community of Bank Supervisors (Oct. 8, 1992), in *FED. RES. Q. REV.*, Autumn 1992, at 6. In his initial remarks, Chairman Corrigan characterized the challenges of bank regulators in 1992 as “the most demanding and vexing in the post-World War II period.” *Id.* at 1. Within five years, the industry would be embroiled in the Mexican “peso crisis,” the Asian currency crises, and near collapses of institutions due to failure to monitor derivatives transactions (as with Barings Bank). Corrigan, then, was stating things too equivocally: in fact, the structural dilemma of post-Bretton Woods bank supervision seems to be that at any given point bank supervisors can state unequivocally that the current state of the banking industry is the most “demanding and vexing” from a systemic risk standpoint since World War II. For example, consider the remarks of then Secretary of the Treasury Lloyd Bentsen in testimony before the Senate Committee on Banking, Housing and Urban Affairs in 1994 following the collapse of the thrift industry: “Our country has just emerged from its worst financial crisis since The Great Depression. One of the lessons of that crisis is that our bank regulatory system is cumbersome and antiquated.” *Banking Industry Regulatory Consolidation: Hearing Before the S. Comm. on Banking, Hous., & Urban Affairs*, 103d Cong. 48 (1994) (statement of Lloyd Bentsen, Sec’y, Department of Treasury).

92. See Corrigan, *supra* note 91, at 4. Corrigan undid his qualification that the banking industry is “perhaps” more risky later in his remarks: “[W]hile we and others can engage in a lively debate about whether international banking in the nineties is likely to be more or less risky than it was in the past, I believe we would all be well served to operate on the *assumption* that systemic risk may be greater as we look ahead.” *Id.* at 6.

93. *Id.* at 9.

94. Meyer, FFIEC Remarks, *supra* note 77, at 1.

95. The FDIC Improvement Act of 1991 included provisions to improve the enforceability of netting contracts, which reduce the legal risks stemming from the failure of

Congress proposed several bills to introduce sweeping regulatory reform in the area of derivatives. These bills called for varying degrees of regulatory oversight of the derivatives activities of banks, ranging from disclosure requirements to full-blown capital requirements and an outright ban on derivatives transactions for FDIC-insured depository institutions.⁹⁶ Representative Henry Gonzalez of Texas, a co-sponsor of the bill that received the most attention—the Derivatives Safety and Soundness Supervision Act of 1994—warned that “growing bank involvement in derivative products is . . . like a tinderbox waiting to explode. In the case of many market innovations, regulation lags behind until the crisis comes, as it has happened in our case with [savings and loans] and banks.”⁹⁷ By the time that bill was re-introduced, Representative Gonzalez lamented the “bank regulatory agencies[?] claims that legislation was not necessary.”⁹⁸ Senator Byron Dorgan introduced a radical bill that aimed to achieve a simple result: prohibiting FDIC-insured banks from engaging in derivatives activities. Senator Dorgan’s remarks when introducing the bill indicate his preference for a narrow banking industry:

What investors do with their own money is their own business. But what they do with money insured by the American taxpayers, is the business of Congress. The purpose of deposit insurance is to encourage saving. It is to promote a pool of capital that is available to build homes and businesses and jobs. Deposit insurance is not supposed to underwrite rampant speculation on Wall Street, and my bill will help prevent that from happening.⁹⁹

Notably, each of these legislative proposals emphasized to varying degrees the importance of management involvement in and oversight of banks’ derivatives activities. The Derivatives Supervision Act of 1994 went further, seeking to codify mandatory internal controls and procedures for derivatives programs. Congress never enacted any of these bills, in large part due to the Federal Reserve’s steadfast belief that “[w]e must not lose sight of the fact that risks in financial markets are regulated by private

firms active in derivatives. That legislation also required regulators to increase capital standards for institutions with significant interest rate risk associated with derivatives or other instruments, and it required banks to limit their interbank credit exposures from derivatives and other sources.

96. See Risk Management Improvement and Derivatives Oversight Act of 1995, H.R. 20, 104th Cong. (1995); Risk Management Improvement and Derivatives Oversight Act of 1995, H.R. 20, 104th Cong. (1995); Derivatives Dealers Act of 1995, H.R. 1063, 104th Cong. (1995); Derivatives Safety and Soundness Supervision Act of 1994, H.R. 4503, 103d Cong. (1994); Derivatives Limitations Act of 1994, S. 2123, 103d Cong. (1994); Derivatives Supervision Act of 1994, S. 2291, 103d Cong. (1994).

97. 139 CONG. REC. 13,393 (1993).

98. 141 CONG. REC. E35 (daily ed. Jan. 5, 1995) (statement of Rep. Henry Gonzalez).

99. 140 CONG. REC. 10,469 (1994).

parties.”¹⁰⁰

(b) *Second Bank Regulatory Premise: The New Financial Code Provides an Effective Check on Risks to Safety and Soundness from New Bank Activities*

Federal bank regulators sought to harness banks' internal risk models to promote their public regulatory goals of safety and soundness. For instance, 1995 interagency guidelines required banks to establish internal controls and information systems that provide for effective risk management and adequate procedures to safeguard assets.¹⁰¹ Regulators perceived risk management technologies as a tool to minimize the burgeoning special risks posed by derivatives. In 1993 the Office of the Comptroller of Currency (OCC) issued Circular No. 277, titled “Risk Management of Financial Derivatives.”¹⁰² Circular No. 277 set forth extensive risk management guidelines governing derivatives activities conducted by national banks, but limited its new capital adequacy discussion to a general admonition that banks' boards of directors “should ensure that the bank maintains sufficient capital to support the risk exposures” from their banks' derivatives activities.¹⁰³ Similarly, the Federal Reserve issued trading- and derivatives-related risk management guidance in the mid-1990s, but without requiring additional capital or limiting the extent or magnitude of derivatives activities.¹⁰⁴ In 1998 when the Commodity Futures Trading Commission (CFTC) published a request for

100. *Testimony before the Subcomm. on Telecomm. & Fin. of the H. Comm. on Energy & Commerce*, 103d Cong. 26 (1994) (statement of Alan Greenspan, Chairman, Board of Governors of the Federal Reserve System), available at <http://fraser.stlouisfed.org/historicaldocs/805/download/27981/Greenspan-19940525.pdf>. [hereinafter Greenspan, *May 1994 House Testimony*].

101. The agencies promulgated these guidelines pursuant to a congressional mandate in the 1991 FDICIA law. See Standards for Safety and Soundness, 60 Fed. Reg. 35,674, 35,676 (July 10, 1995) (codified at 12 C.F.R. pts. 208 & 263).

102. OFFICE OF THE COMPTROLLER OF THE CURRENCY, BANKING CIRCULAR NO. 277, RISK MANAGEMENT OF FINANCIAL DERIVATIVES (1993), available at 1993 OCC CB LEXIS 101.

103. The remainder of that document's discussion of capital adequacy was limited to a reminder that banks already had existing capital requirements in place arising under the Basel Accord's treatment of off-balance sheet items. See *id.* at 24–25.

104. See MELANIE L. FEIN, SECURITIES ACTIVITIES OF BANKS § 7.07[C] (2004). Similarly, the 1994 Basel Committee Derivatives Guidelines acknowledged that “[o]ne outstanding feature of financial markets is the increasing use of sophisticated models by major institutions as their principal means of measuring and managing risk.” BASLE COMM. ON BANKING REGULATION, RISK MANAGEMENT GUIDELINES FOR DERIVATIVES 2 (1994), <http://www.bis.org/publ/bcbcs211.pdf?noframes=1> (hereinafter RISK MANAGEMENT GUIDELINES).

comments on the possible regulation of OTC derivatives by the CFTC—including supplementary capital requirements on OTC derivatives dealers¹⁰⁵ the reaction from the legislative and executive branches was swift. The Federal Reserve, the SEC, and the Clinton Treasury Department—which housed the OCC and the OTS—resisted, and Congress passed the Commodity Futures Modernization Act of 2000,¹⁰⁶ which exempted nearly all OTC derivatives from CFTC and SEC oversight.¹⁰⁷

The regulatory focus on internal risk management techniques was hardly a U.S.-specific concern. From 1987 to 1992, bank regulators in the United Kingdom, France, Germany, Singapore, and Switzerland issued rules or guidance concerning risk management and internal control functions as a means of curbing derivatives risk at banks.¹⁰⁸ The Basel Committee published a document titled “Risk Management Guidelines for Derivatives” in July 1994.¹⁰⁹ These guidelines followed a 1993 Group of Thirty study¹¹⁰ addressing emergent risks attending mounting notional values of derivatives outstanding. The Basel Committee noted the increasing prominence derivatives had assumed to the overall risk profile and profitability of banks,¹¹¹ and observed that the “growing complexity, diversity and volume of derivatives products, facilitated by rapid advances in technology and communications, pose increasing challenges to managing [credit, market, liquidity, operational and legal] risks.”¹¹² The Basel Committee also welcomed the “increasing use of sophisticated models by major institutions as their principal means of measuring and managing risk.”¹¹³ The report anticipated the likelihood that the internal models would ultimately provide the most granular information concerning the risk

105. See *Over-the-Counter Derivatives*, 63 Fed. Reg. 26,114, 26,114–27 (May 12, 1998).

106. Commodity Futures Modernization Act of 2000, Pub. L. No. 106-554, 114 Stat. 2763A-366 (2000).

107. See 144 CONG. REC. E1505 (daily ed. July 31, 1998) (statement of Rep. James Leach) (stating, regarding the 1998 CFTC proposal, “three of the four government agencies which have responsibility for overseeing the derivatives market place—the Federal Reserve Board, the Treasury Department, the [SEC]—have come to the conclusion that the other principal regulator, the [CFTC], has embarked on a regulatory path at odds with the U.S. national interest”); David Barboza & Jeff Gerth, *Who’s in Charge? Agency Infighting and Regulatory Uncertainty*, N.Y. TIMES, Dec. 15, 1998, at C14.

108. U.S. GOV’T ACCOUNTABILITY OFFICE, FINANCIAL DERIVATIVES: ACTIONS NEEDED TO PROTECT THE FINANCIAL SYSTEM 114 (1994).

109. See BANK FOR INT’L SETTLEMENTS, *supra* note 104, at 1.

110. GROUP OF THIRTY, DERIVATIVES: PRACTICES AND PRINCIPLES (1993).

111. *Id.* at 2.

112. BANK FOR INT’L SETTLEMENTS, *supra* note 104, at 1.

113. *Id.* at 2.

of derivative products, and that it would therefore be important for supervisors “to assure that they (and external auditors) have staff with sufficient mathematical knowledge to understand the issues” associated with these models.¹¹⁴

The European Community’s 1993 Capital Adequacy Directive mandated that banks maintain capital to cover unexpected losses due to interest rate risks.¹¹⁵ In its recitals, the directive registered the importance of “the existence, in all institutions, of internal systems for monitoring and controlling interest-rate risks on all of their business” and noted that “such systems must be subject to overview by the competent authorities.”¹¹⁶ The directive also for the first time set minimum capital requirements in respect of market risk exposures relating to derivatives contracts.

Chairman Alan Greenspan’s 1994 testimony before the House of Representatives Subcommittee on Telecommunications and Finance concerning the 1994 GAO report on derivatives, and in particular its recommendations for increased regulation of banks’ derivatives and proprietary trading activities, provides a lens into the Federal Reserve’s intellectual framework during the 1990s and its concern over the inability of extant capital adequacy regulation to accommodate an increasingly complex and dynamic banking industry. Throughout his testimony, Greenspan remarked on the increasing complexity of financial markets and evidenced a profound confidence that enhanced risk management techniques and models developed by banks operated as effective checks on excessive risk-taking. His comments on market risk capital requirement proposals illustrated the connection between growing complexity and the intellectual reliance on internal capital models:

Although the market risks of many banking instruments, including many derivative contracts, can be accurately assessed using . . . simple models [such as the initial Basel Accord formulae to calculate credit risk capital requirements], a considerably more sophisticated approach is necessary to assess more complex instruments, especially those with options characteristics, and to aggregate different categories of market risk. The recognition of the need for a more sophisticated approach has led banking regulators in the United States and abroad to explore carefully the potential for allowing banks to use their own internal models to assess the need for capital to cover market risk.¹¹⁷

To summarize, complexity begets a need for a “more sophisticated

114. *Id.*

115. Council Directive 93/6, 1993 O.J. (L 141) 1, 7 (EC).

116. *Id.* at 2.

117. Greenspan, *May 1994 House Testimony*, *supra* note 100, at 11.

approach,” which “has led banking regulators” to explore the adoption of internal models.¹¹⁸ The expansion of derivatives markets was attributable to advances in risk management technology itself.¹¹⁹ Greenspan stated further that he expected that banks would achieve still further progress in risk management of derivatives activities and that regulators would need to incorporate consideration of those internally-generated, firm specific techniques and models into the supervisory process.¹²⁰

In other 1994 comments, Greenspan echoed his sentiments expressed throughout the early 1990s. He noted that the “evolving financial firm” was

becoming so complex that it not only challenges our ability to write laws and regulations, but—more important—is leading to overly complex rules and regulations that challenge the ability of managers to manage. At least part of the solution to the increasing complexity in bank risk positions may be to rely less on the writing of complicated and highly specific rules that apply to all banks, and to concentrate more on the development of common conceptual frameworks and flexible supervisory procedures that can accurately distinguish risks on a bank-by-bank basis.¹²¹

While “traditional” capital adequacy rules have “served us well over the decades . . . as the complexity, if not the dimensions, of bank risk-taking has increased, the regulatory capital standards also have evolved and become more complex.”¹²² To continue ratcheting up the complexity of capital

118. *Id.*

119. *See id.* at 7 (“It is important to recognize that significant advances in the management of market and credit risks, including improvements both in financial methodology and in the design of management information systems, lie behind the recent surge in derivatives activity. These advances have made independent, highly skilled risk management staffs and rigorous measurement and analysis of market and credit risks key elements of a sound risk management approach for trading activities, and more generally, for banking activities.”).

120. *See id.* at 7–8, 23; Alan Greenspan, Chairman, Bd. of Governors of the Fed. Reserve Sys., Remarks Before the 30th Annual Conference on Bank Structure and Competition, Chicago 11–12 (May 12, 1994), available at http://fraser.stlouisfed.org/historicaldocs/ag94/download/27980/Greenspan_19940512.pdf (“No matter how good we become at bank supervision, however, we should always keep in mind that the first line of supervisory defense must be the quality of the risk management systems used by banks themselves [W]e have recognized for some time that capital rules are often less meaningful than the sophisticated internal models used by some banks to test the sensitivity of their net worth to possible future changes in asset prices.”) [hereinafter Greenspan, Chicago Remarks].

121. Alan Greenspan, Chairman, Bd. of Governors of the Fed. Reserve Sys., Remarks Before the Boston College Conference on Financial Markets and the Economy 9 (Sept. 19, 1994), available at http://fraser.stlouisfed.org/historicaldocs/ag94/download/27990/Greenspan_19941008.pdf [hereinafter Greenspan, Boston College Remarks].

122. Alan Greenspan, Chairman, Bd. of Governors of the Fed. Reserve Sys., Remarks

adequacy regulation in lockstep with bank risk-taking would “create[] more problems than [it would] solve.”¹²³ In fact, Greenspan continued, “[i]ntricate capital rules run the very real risk of causing inefficiencies resulting from complex bank strategies to avoid binding capital constraints and, at worst, may lead to less measurable and possibly greater bank exposure to losses beyond capital.”¹²⁴ Instead, “[a]t least part of the solution to *the problem of complexity in risk behavior* is to rely less on the writing of rules, such as capital regulations, that apply uniformly to *all banks . . .*”¹²⁵ While this position stopped short of expressly calling for calibrating regulatory capital to internal models, the upshot was clear: in light of the epistemic gap between what regulators could know and what they aimed to know, regulators needed to focus on institution-specific risk characteristics. In this context, Greenspan’s encouragement of the development of banks’ internal credit rating technologies and the rapid growth and use of the new financial code in broadening the scope of financial services is instructive.¹²⁶ In short, “[t]hat is why the supervisory effort is increasingly focusing on the evaluation of risk management systems.”¹²⁷

At the 1995 G7 summit in Halifax, the G7 issued a communiqué highlighting the importance of policy coordination in addressing challenges

Before the Garn Institute of Finance, University of Utah 8 (Nov. 30, 1994), available at http://fraser.stlouisfed.org/historicaldocs/ag94/download/27991/Greenspan_19941130.pdf [hereinafter Greenspan, University of Utah Remarks].

123. *Id.* at 9.

124. *Id.*; see also Greenspan, Chicago Remarks, *supra* note 120, at 9 (“Greatly increasing the complexity of capital regulations can only lead to inefficiency as I see it.”).

125. Greenspan, University of Utah Remarks, *supra* note 122, at 9 (emphasis added); Greenspan, *September 1994 Senate Testimony*, *supra* note 68, at 16 (“As we proceed through the 1990s, we should focus on enhancing supervisory practices, rather than on developing new laws and regulations.”).

126. See Greenspan, Boston College Remarks, *supra* note 121, at 1; Greenspan, University of Utah Remarks, *supra* note 122, at 3–6; Alan Greenspan, Chairman, Bd. of Governors of the Fed. Reserve Sys., Remarks Before the American Bankers Association 2–9 (Oct. 8, 1994), available at http://fraser.stlouisfed.org/historicaldocs/ag94/download/27990/Greenspan_19941008.pdf [hereinafter Greenspan, ABA Remarks]; Greenspan, Chicago Remarks, *supra* note 120, at 4 (“A crucial difference between the banks of today and those of our traditions . . . is that risk information processing now lies more visibly closer to the core of banking business because of the blossoming of new financial products and services that rely so critically on fast and high quality risk information and risk analysis.”). Greenspan also cautioned that, in his opinion, regulators and Congress should not impede “technological change . . . [b]ecause it seems so clear that bankers face significant ‘new horizons’ in the lending process, regulatory agencies must be especially careful not to place obstacles in the path of beneficial technological change.” Greenspan, ABA Remarks, *supra*, at 9.

127. Greenspan, *September 1994 Senate Testimony*, *supra* note 68, at 11.

relating to trade imbalances and currency and financial market instability. The Halifax communiqué is probably most noteworthy for its proposal to create an “Emergency Financing Mechanism” to serve as an enhanced in extremis financing facility under the auspices of the International Monetary Fund (IMF).¹²⁸ However, the document also touched on the “growth and integration of global capital markets,” which had “created both enormous opportunities and new risks.”¹²⁹ The group emphasized that the “accelerating pace of financial innovation,” combined with “the risks inherent in the growth of private capital flows [and] the increased integration of domestic capital markets,” posed significant systemic risks.¹³⁰ To that end, the G7 envisaged a role for private industry participants to bridge the information gap between financial actors and their regulators: “We urge . . . strengthened policy advice from international financial institutions on the appropriate supervisory structures.”¹³¹

In response to the G7’s 1995 Halifax Summit report, the Basel Committee and the International Organization of Securities Commissioners (IOSCO) issued a joint statement in 1996 noting that a tension existed in the “exponential rate of technological and financial innovation, including notably the increased use of derivative products.”¹³² On the one hand, innovation can increase systemic risk to the extent it is not captured in the *ex ante* regulatory-governance architecture; on the other hand, complexity often opens up possibilities for “significant enhancements to risk management procedures.”¹³³ A year later at the G7 summit in Lyon, the G7 finance ministers emphasized the importance of “market-reinforced prudential supervision” and applauded the Basel Committee’s initiative to address market risk in the capital adequacy framework by reference to internal VaR models.¹³⁴ In light of the increasing complexity of their business models, “primary responsibility for risk management rests

128. Group of Seven, *Halifax Summit Communiqué*, ¶ 17 (June 16, 1995), <http://www.g8.utoronto.ca/summit/1995halifax/communique/index.html>.

129. *Id.* at ¶ 14.

130. *Id.*

131. *Id.* at ¶ 22.

132. BASLE COMM. ON BANKING SUPERVISION & INT’L ORG. OF SEC. COMM’NS, BASLE/IOSCO JOINT STATEMENT FOR THE LYON SUMMIT 1 (1996), <http://www.bis.org/publ/bcbs26.pdf?noframes=1>.

133. *Id.* Regarding this latter element, because derivatives facilitate the specific identification and management of risks, they offer the theoretical possibility of encouraging the safety and soundness of financial institutions, as well as the efficient allocation of risks. See RISK MANAGEMENT GUIDELINES, *supra* note 104, at 3.

134. Group of Seven, *Finance Ministers Report to the Heads of State and Government on International Monetary Stability*, (June 28, 1996), available at <http://www.g7.utoronto.ca/summit/1996lyon/finance.html>; see also *infra* Part II.B.3.b.

with market participants.”¹³⁵

In 1996 the Group of Thirty¹³⁶ levied a much bleaker assessment of the status of mid-1990s financial regulation, noting that “the global operations of major financial institutions and markets have outgrown the national accounting, legal and supervisory systems on which the safety and soundness of individual institutions and the financial system rely.”¹³⁷ Prior to issuing its report, the Group of Thirty surveyed sixty-six large complex financial institutions, many of which expressed concerns about the quality of risk management knowledge systems.¹³⁸ The Group of Thirty focused on the build-up of systemic risk that the Basel Committee and IOSCO addressed in their roughly contemporaneous joint report: “the increasing size, velocity, and complexity of international transactions, and the increasing concentration of trading activity in a relatively small number of institutions that play a leading role in multiple markets, suggest an increased potential for shocks as well as increasing difficulty in improvising effective crisis-management in the event of a shock.”¹³⁹ The report warned that while a complete breakdown of the world financial system had never occurred, by the mid-1990s such a scenario was possible due to “the emergence of large integrated financial firms with corporate structures and finances of extreme complexity and global scope.”¹⁴⁰ The former paradigm of capital adequacy regulation missed the mark:

[D]irect and indirect risk exposures within [such a] group are so complicated and opaque and change so rapidly that it is virtually impossible to monitor them in anything like real time. Accounting and disclosure practices have not begun to keep pace. Risk exposures can build up undetected by existing monitoring systems. In a crisis, both peer institutions and regulators may feel they have too little information about the condition of a faltering institution and insufficient time to assess this complex information to warrant taking action.¹⁴¹

To remedy in part the ratcheting up of systemic risk, the Group of Thirty proposed “enhanced responsibility [for] financial institutions” in financial regulation, which “implies that supervisors will be readier [sic] to rely on the institutions that they supervise, and that the institutions

135. See Group of Seven, *supra* note 134, at C134a.

136. The Group of Thirty, or G30, is a group consisting of academics, former supervisors and regulators, and representatives of the financial industry.

137. GROUP OF THIRTY, GLOBAL INSTITUTIONS, NATIONAL SUPERVISION AND SYSTEMIC RISK v (1997).

138. See *id.* at ii.

139. *Id.* at 5–6.

140. *Id.* at 11.

141. *Id.* at 8.

themselves will accept the responsibility to improve the structure of, and discipline imposed by, their internal control functions.”¹⁴² Such a redesigned governance edifice would recognize that since the underlying causes of excess risk-taking are firm-specific, the top-down mode of governance will likely prove inadequate since regulators could not be expected “to evaluate the quality of traders or the current daily [VaR] in trading exotic derivative instruments.”¹⁴³ Regulators would perennially be “behind the curve” and also unable to attract the talent required to monitor such complex systems with adequately high pay.

b. The 1996 Market Risk Amendments to the Basel Accord: Internally Modeling Market Risk

To address the burgeoning trading book and derivatives activities of internationally active banks, the Basel Committee initiated a process in 1992 to establish rules that would require banks to set aside capital to protect against market risks.¹⁴⁴ The Basel Committee circulated a paper outlining a framework for measuring market risk and offering banks a menu of standardized computational methodologies. Banks reacted negatively to the proposals, on the grounds that their internally generated VaR models more accurately captured market risk.¹⁴⁵ The Basel Committee agreed with the banks, and in 1996 it amended the Basel Accord to include a capital requirement to cover market risks for assets held in the trading book, expressly permitting the use of internal VaR models in setting the capital requirement.¹⁴⁶

142. *Id.* at 12.

143. JOHN HEIMANN & LORD ALEXANDER OF WEEDON, GLOBAL INSTITUTIONS, NATIONAL SUPERVISION AND SYSTEMIC RISK 87 (1997).

144. See Nancy White Huckins & Anoop Rai, *Market Risks for Foreign Currency Options: Basle's Simplified Model*, 28 FIN. MGMT 99, 99 (1999).

145. *Id.*

146. See BASLE COMM. ON BANKING SUPERVISION, AMENDMENT TO THE CAPITAL ACCORD TO INCORPORATE MARKET RISKS 1 (1996), <http://www.bis.org/publ/bcbs24.pdf?noframes=1> [hereinafter 1996 MARKET RISK AMENDMENTS]. The Basel Committee was not alone in viewing VaR as a credible tool to estimate market risk. In 1997, the SEC promulgated Item 305(a) of Regulation S-K, which mandated that issuers filing documents under the Securities Act of 1933 or the Securities Exchange Act of 1934 disclose certain information about market risks from derivatives and other investment activities. See *Disclosure of Accounting Policies for Derivative Financial Instruments and Derivative Commodity Instruments and Disclosure of Quantitative and Qualitative Information About Market Risk Inherent in Derivative Financial Instruments, Other Financial Instruments, and Derivative Commodity Instruments*, 62 Fed. Reg. 6044, 6064 (Feb. 10, 1997) (codified at 17 C.F.R. pt. 210). Issuers were given the option of using VaR as a disclosure method. See *id.* at 6064–65. Earlier, FAS 119 encouraged, but did not

The Amendment to the Capital Accord to Incorporate Market Risks (MRA) defined market risk to include interest rate risk and equity risk associated with a bank's trading book (including positions in derivatives and off-balance sheet instruments) and commodities risk and foreign exchange risk throughout a bank's asset portfolio.¹⁴⁷ Importantly, and in distinction to the U.S. FDICIA initiative,¹⁴⁸ the MRA did not require that banks submit to a single formula for computing market risk capital charges. Instead, regulated banks could choose one of two methodologies of computing the newly applicable capital charges: a "standardized" approach or a method "allow[ing] banks to use risk measures derived from their own internal risk management models."¹⁴⁹ For those banks adopting the internal models approach, the MRA required them to determine their VaR over a one-day time horizon (that is, the maximum loss a bank would incur in a one-day period) at a 99% confidence interval. The VaR estimate would then be multiplied by a "safety factor" multiplier of three to set the regulatory capital requirement.¹⁵⁰ This multiplier could be ramped up to four based on unfavorable model backtesting results showing the lack of reliability of an internal model.

As a condition precedent to the use of internal models for purposes of market risk capital, the MRA required the bank regulator to determine that the bank meets certain general prerequisites to ensure the conceptual

require, companies to report market risk via footnotes by one of five methods, including VaR. See CODIFICATION OF ACCOUNTING STANDARDS AND PROCEDURES, Statement of Fin. Accounting Standards No. 119, ¶¶ 12–13 (Fin. Accounting Standards Bd. 1994).

147. See 1996 MARKET RISK AMENDMENTS, *supra* note 146, at 1. The U.S. banking regulators implemented the MRA effective January 1, 1997. See Risk-Based Capital Standards: Market Risk, 61 Fed. Reg. 47,358 (Sept. 6, 1996) (codified at 12 C.F.R. pts. 208 & 225).

148. See *supra* note 62 and accompanying text.

149. 1996 MARKET RISK AMENDMENTS, *supra* note 146, at 3. The 1996 market risk capital charge exempts certain categories of covered assets (i.e., debt and equity securities in the trading book, all positions in commodities) from the operation of the base Basel Accord credit risk charge. Then, the market risk capital charge, whether calculated pursuant to the "standardized" method or a proprietary internal model, is added to the Basel Accord credit risk charge to yield a total capital requirement. See THOMAS S.Y. HO & SANG BIN LEE, THE OXFORD GUIDE TO FINANCIAL MODELING: APPLICATIONS FOR CAPITAL MARKETS, CORPORATE FINANCE, RISK MANAGEMENT, AND FINANCIAL INSTITUTIONS 602 (2004).

150. By requiring the application of the safety factor multiplier, the Basel Committee impliedly acknowledged the uncertainty of the VaR estimates. The selection of the multiplier was largely a political compromise, and lacked any putative scientific justification at the time of its selection. In 1997, Gerhard Stahl published a paper purporting to show that a multiplier of three was reasonable to incorporate consideration of model uncertainty with respect to a model's distribution of risk factors. See Gerhard Stahl, *Three Cheers*, 10 RISK 67, 67–69 (1997).

soundness of the models and the adequacy as well as day-to-day usage and integration of the risk management function.¹⁵¹

In recognition of the potential conflicts of interest inhering in an internal models approach, the MRA required that internal models be subject to backtesting and that unfavorable test results would result in a higher safety factor multiplier (the base multiplier was, as noted above, three).¹⁵² If the results of the backtesting indicate that the internal model's measurement of VaR did not correspond with actual daily profit and loss data (or "trading outcomes," as the MRA puts it), a penalty multiplier would apply to the VaR depending on the extent of the disjoint between VaR and actual loss. The MRA provides that the aim of the backtesting regime is to "incorporate suitable incentives" into the internal models approach, but the nature of the backtesting exercise is that it is retrospective and not anticipatory. The Basel Committee notably did not require that a model ensure capital adequacy in light of hypothetical future adverse scenarios or stress tests.

In 2005, the Basel Committee issued joint guidance with IOSCO to revise the MRA to address the burgeoning credit risk that was building up in banks' trading books through an explosion in the trading of collateralized debt obligations (CDOs), credit default swaps (CDSs) and other structured and illiquid products.¹⁵³ These amendments also aimed to reduce capital arbitrage opportunities. As bank trading books burgeoned and average

151. 1996 MARKET RISK AMENDMENTS, *supra* note 146, at 39–41.

152. See BASEL COMM. ON BANKING SUPERVISION, AMENDMENT TO THE CAPITAL ACCORD TO INCORPORATE MARKET RISKS 41 (2005), <http://www.bis.org/publ/bcbs119.pdf?noframes=1> [hereinafter 2005 MRA AMENDMENTS]; BASEL COMM. ON BANKING SUPERVISION, SUPERVISORY FRAMEWORK FOR THE USE OF "BACKTESTING" IN CONJUNCTION WITH THE INTERNAL MODELS APPROACH TO MARKET RISK CAPITAL REQUIREMENTS 1–2, 11–12 (1996) [hereinafter BACKTESTING FRAMEWORK], <http://www.bis.org/publ/bcbs22.pdf?noframes=1>. Notably absent from the Basel Committee reports, however, is a direct mention of conflicts of interest. Instead, the Basel Committee focused on "incorporating suitable incentives into the internal models approach[.]" though it appears from context that the Basel Committee was referring to "continual improvement" of the models rather than the obvious moral hazard involved from the delegation of responsibility. BACKTESTING FRAMEWORK, *supra*, at 1. U.S. banking regulators adopted the backtesting methodology in nearly identical form to the Basel Committee paper.

153. See Susan Schmidt Bies, Governor, Bd. of Governors of the Fed. Res. Sys., Address at the Global Association of Risk Professionals Basel II Summit (Feb. 26, 2007), *available at* <http://www.federalreserve.gov/newsevents/speech/Bies20070226a.htm>; see also Risk-Based Capital Standards: Market Risk, 71 Fed. Reg. 55,958, 55,962 (Sept. 25, 2006) (codified at 12 C.F.R. pt. 325) ("The objective of enhancing the risk sensitivity of the rule reflects the growth in traded credit products, such as credit default swaps and tranches of collateralized debt obligations, other structured products, and less liquid products.").

asset holding periods shortened, opportunities for arbitrage abounded, chiefly by way of banks classifying as trading positions certain assets that properly belonged in the loan book (and accordingly carry a generally higher capital charge). Under the 2005 amendments to the MRA, most large banks¹⁵⁴ would be required to measure and hold capital against the incremental default risk not captured in the bank's VaR models.¹⁵⁵ In particular, bank regulators considered the MRA's specification of a ten-day trading holding period for a 99% confidence interval to be an unrealistic assumption for VaR in connection with illiquid credit default swaps.¹⁵⁶ As was evident from the sudden collapse of AIG's CDS business in 2008, a collapse in confidence with respect to an important CDS counterparty can lead to a rapid evaporation of liquidity.¹⁵⁷ Although the Basel Committee insisted on an additional capital charge and ramped up the statistical "confidence" of the measurement, the banks were again instructed to utilize internal models to measure the relevant risks.¹⁵⁸ Once again, we see in the 2005 amendments (1) a perception of a mismatch between extant capital

154. The Basel Accord only applies to "internationally active banks." See BASEL COMM. ON BANKING SUPERVISION, AMENDMENT TO THE CAPITAL ACCORD TO INCORPORATE MARKET RISKS 1 (2005), <http://www.bis.org/publ/bcbs119.pdf?noframes=1>. In the United States, the proposed rules will apply to all banks with worldwide consolidated trading revenue equal to either (1) 10% of total assets or (2) \$1 billion. See Risk-Based Capital Standards: Market Risk, 71 Fed. Reg. at 55,960.

155. See BASEL COMM. ON BANKING SUPERVISION, PROPOSED REVISIONS TO THE BASEL II MARKET RISK FRAMEWORK 1 (2008), <http://www.bis.org/publ/bcbs140.pdf?noframes=1>.

156. See Risk-Based Capital Standards: Market Risk, 71 Fed. Reg. at 55,968. In December 2007, the U.S. banking regulators had received comments on the market risk amendments NPR and indicated a final rule would be promulgated in the near future. See Risk-Based Capital Standards: Advanced Capital Adequacy Framework—Basel II, 72 Fed. Reg. 69,288, 69,289 n.2 (Dec. 7, 2007) (codified at 12 C.F.R. pt. 325). Nevertheless, to date they have yet to adopt the 2005 amendments.

157. Robert O'Harrow Jr. & Brady Dennis, *Downgrades and Downfall*, WASH. POST, Dec. 31, 2008, at A1. The incremental VaR would be measured with a one-year horizon and a 99.9% confidence interval (instead of the ten-day horizon and 99% confidence interval applicable under the 1996 MRA).

158. See Risk-Based Capital Standards: Market Risk, 71 Fed. Reg. at 55,965 ("As under the current market risk capital rule, a bank would be required to use one or more internal models to calculate a daily VaR-based measure that reflects general market risk for all covered positions."); BASEL COMM. ON BANKING SUPERVISION, THE APPLICATION OF BASEL II TO TRADING ACTIVITIES AND THE TREATMENT OF DOUBLE DEFAULT EFFECTS 67 (2005), <http://www.bis.org/publ/bcbs116.pdf?noframes=1>. Banks are also free to calculate their incremental credit risk capital charge by reference to a surcharge through an approach consistent with its approach for calculating credit risk in its Basel II risk-based capital internal model. If such a "surcharge" is applied, the bank can insulate itself from the backtesting requirement altogether. See 2005 MRA AMENDMENTS, *supra* note 152, at 47.

regulation and the risks to which banks were actually subjecting their asset portfolios and (2) a resolution to delegate the measurement of that risk to the regulated banks.

c. Basel II Pillars 1 and 3: Internally Modeling Credit and Operational Risks and Public Disclosure

Shortly after the Basel Committee had finalized the market risk-focused 1996 MRA, it commenced a reevaluation of the Basel Accord's treatment of credit risk. Aside from a few amendments to tidy up unresolved issues in the Basel Accord, the credit risk regime had remained largely static throughout the 1990s.¹⁵⁹ Bank supervisors were faced with an increasingly dynamic risk profile of banks and the need to anticipate new sources of vulnerability and uncertainty (of both the known and unknown variety), which "require[d] trying to understand how changing institutions, products, markets, and trading strategies create vulnerabilities to new kinds of shocks and new channels of contagion."¹⁶⁰ Among the measures that intrigued the Basel Committee was the incorporation of internal credit risk models, which had advanced considerably in the 1990s, into the capital adequacy regulatory context. The Basel Committee circulated a draft proposal to members and regulated banks in June 1999, and presented an agreed text five years later in June 2004 (Basel II).¹⁶¹ The Basel II reforms significantly retool bank capital adequacy regulation. Basel II comprises three "pillars": Pillar 1 specifies the minimum capital requirements for credit risk and operational risk; Pillar 2 concerns the supervisory review process; and Pillar 3 sets forth new market disclosure requirements intended to enhance market discipline alongside regulation and supervision.

159. Amendments included (i) a 1991 amendment resolving a lacuna in the Basel Accord by setting of a 1.25% ceiling (or 2% in exceptional circumstances) for the extent to which banks could count general provisions or general loan loss reserves as Tier 2 capital; (ii) 1994 amendments facilitating the netting of obligations from a single counterparty; and (iii) 1994 amendments to address perceived risks with preferential risk weighting of OECD government-issued debt subsequent to the entry of Mexico, South Korea, and Turkey in the OECD. *See* DUNCAN WOOD, GOVERNING GLOBAL BANKING 124–25 (2005).

160. Herring, *supra* note 59, at 396.

161. While increasing the risk sensitivity of the initial Basel Accord was the impetus behind the Basel II reform, I do not mean to give the impression that the members of the Basel Committee were pursuing this goal as enlightened philosopher kings. The agenda of the multi-year reform effort was driven in part by massive lobbying expenditures of large internationally active banks, which stood to gain from the internal models approach competitive advantages vis-à-vis their regional competitors. This story, while important for context, is outside the scope of this Article, which examines the internal models approach as it is in order to gauge its merits and demerits as a new governance technology.

i. Pillar 1: Capital Requirements and Internal Models

Pillar 1 allows banks to compute their regulatory capital requirements against credit risk in two ways: (1) a revised standardized approach based on the initial Basel Accord, or (2) one of two versions of an “internal ratings based” (IRB) approach whereby banks are permitted to develop and use their own internal risk ratings.¹⁶² The IRB approaches permit banks meeting certain qualitative and quantitative criteria¹⁶³ to set their capital requirements by reference to inputs from their own internal VaR models rather than the Basel Accord’s multipliers. In the United States, bank regulators have mandated the use of the IRB for banks with either consolidated total assets of at least \$250 billion or consolidated on-balance sheet exposure of at least \$10 billion.¹⁶⁴

Specifically, there are two IRB approaches: the foundation approach (FA) and the advanced approach (AA). Both approaches require banks to categorize their assets according to five categories (sovereign, bank, corporate, retail, and equity).¹⁶⁵ The IRB approaches are based on four key input parameters: (1) the probability of default (PD); (2) the loss given default (LGD); (3) the exposure at default (EAD); and (4) effective maturity (M). PD represents the “long-run average of one-year default rate” for a given borrower.¹⁶⁶ LGD measures the anticipated loss, expressed as a percentage, of a total exposure upon the occurrence of a default.¹⁶⁷ EAD measures the total exposure if a default occurred, expressed as an amount. Basel II sets forth elaborate asset class-specific computational formulae to be used in calculating the capital requirements based on whether a group is

162. The revised standardized approach further disaggregates the five risk-weighting categories of the Basel Accord, thereby heightening the risk sensitivity of the standardized capital adequacy requirements. BASEL COMM. ON BANKING SUPERVISION, INTERNATIONAL CONVERGENCE OF CAPITAL MEASUREMENT AND CAPITAL STANDARDS—A REVISED FRAMEWORK (COMPREHENSIVE VERSION) 19–51 (2006), <http://www.bis.org/publ/bcbs128.pdf?noframes=1> [hereinafter BASEL II DOCUMENT] (expanding risk weight categories to include, among others, a 35% risk weights for claims secured by residential real estate and 150% risk weights for claims on corporate rated below BB- by Standard & Poors). Basel II also includes provisions to take account of credit risk mitigation in the form of credit default swaps, financial guarantees and collateralization of claims. *See id.* at 31–51.

163. *See id.* at 88–120.

164. *See Risk-Based Capital Standards: Advanced Capital Adequacy Framework—Basel II*, 72 Fed. Reg. 69,288, 69,298 (Dec. 7, 2007) (codified at 12 C.F.R. pt. 325). Banks qualifying for IRB are also required to adopt the AMA for operational risk purposes. *See infra* note 174 and accompanying text.

165. BASEL II DOCUMENT, *supra* note 162, at 52.

166. *Id.* at 99.

167. A standardized definition of default is provided in paragraph 452. *Id.* at 100.

using AA or FA. Thus, the applicable formula differs between, e.g., an FA bank's sovereign exposures and an AA bank's sovereign exposures, or between an FA bank's equity exposures and the same FA bank's corporate exposures.¹⁶⁸

The formulae include some combination of the input parameters. Generally, the FA formulae utilize internal models for PD estimates but not for LGD, EAD, and M estimates.¹⁶⁹ The AA formulae utilize all internally modeled estimates.¹⁷⁰ As a result, the derivation of the capital requirement for a given class of assets is dependant on internally generated estimates of the input parameters. These input parameters are the same as, or are very similar to, the inputs used in the VaR economic capital models that large groups have been using since the 1990s.¹⁷¹ It is important to point out that, unlike the capital models used in the MRA, banks' internal credit risk economic models are not actually used in setting the regulatory capital level, though they share common inputs. Instead, the common inputs are inserted into the formulae set out in the Basel II documents. So the Basel Committee trusts banks about credit, but not as much as they trust banks about trading markets; embedded in the Basel formulae are particular assumptions about the underlying drivers of portfolio credit risk, including loss correlations.¹⁷²

Basel II also includes for the first time a mandatory charge against "operational risk," which was defined as the "risk of loss resulting from inadequate or failed internal processes, people and systems or from external events."¹⁷³ Under the advanced measurement approach (AMA), groups may "use their own risk metrics for calculating the operational risk capital requirement, including loss data, scenario analysis, and risk mitigation

168. There is an inertial aspect to the implementation of IRB to asset classes: any group using IRB for one or more asset classes (e.g., sovereign, bank) is required eventually to extend IRB treatment to all asset classes, and a group may not return to the standardized approach once initiating IRB. *Id.* at 61–62. Moreover, the enhanced flexibility to measure LGD and EAD provides a significant incentive for groups to migrate from FA to AA. See Til Schuermann, *What Do We Know About Loss Given Default?* 3 (Wharton Fin. Inst. Center, Working Paper Series No. 04-01, 2004), available at <http://fic.wharton.upenn.edu/fic/papers/04/0401.pdf>.

169. Technically, M is "calculated" internally rather than estimated. BASEL II DOCUMENT, *supra* note 152, at 60.

170. *Id.* at 59.

171. See, e.g., Risk-Based Capital Standards: Advanced Capital Adequacy Framework—Basel II, 72 Fed. Reg. 69,288, 69,291 (Dec. 7, 2007) (codified at 12 C.F.R. pt. 325) ("The [IRB] framework is based on 'value-at-risk'(VaR) modeling techniques that measure credit risk and operational risk.").

172. *Id.* at 69,292; TARULLO, *supra* note 14, at 155–59.

173. BASEL II DOCUMENT, *supra* note 152, at 144.

measures.”¹⁷⁴ Like the IRB approaches to credit risks and the MRA for market risks, AMA eligibility is conditioned on meeting certain criteria.¹⁷⁵

ii. *Pillar 3: “Market Discipline” Through (Some) Disclosure of Proprietary Information*

With Pillar 3, the Basel Committee seeks to foster “market discipline” by requiring banks to make public, unaudited disclosures of certain qualitative and quantitative information about their regulatory capital positions, risk management infrastructure, and risk positions.¹⁷⁶ In keeping with the Basel II theme, the disclosures are designed to “be consistent with how senior management and the board of directors assess and manage the risks of the bank.”¹⁷⁷ Pursuant to Pillar 3, the top consolidated entity within a banking group must disclose information relating to its capital structure, regulatory capital requirements, risk exposures and risk management processes with respect to credit, market, interest, operational, and equity risks.¹⁷⁸ All disclosures under Pillar 3 are subject to a materiality qualification.¹⁷⁹

Groups using the IRB approach for credit risk must disclose quantitative details regarding the inputs used in the models (i.e., PD, LGD, EAD, M) and the backtested performance of the models. The time horizon for the required backtesting is unspecified, though the Basel Committee “expect[s] that banks would provide these disclosures for as long [a] run of data as possible.”¹⁸⁰ The general characteristics of the internal models used by banks calculating the market risk AMA capital charge must similarly be described, and disclosures are to be made regarding the stress testing and backtesting that, as discussed above, must be applied to the portfolio.¹⁸¹ Groups using the AMA to set operational risk capital charges must provide a description of the AMA, including a “discussion of relevant internal and external factors considered in the bank’s measurement approach.”¹⁸²

Additionally, qualitative disclosure regarding certain assumptions of the IRB credit risk internal models is required.¹⁸³ With respect to these models, disclosure must be made of “[t]he definitions, methods and data for estimation and validation of PD, and . . . LGD and/or EAD, including

174. See Kimberly D. Krawiec, *The Return of the Rogue*, 51 ARIZ. L. REV. 127, 138 (2009).

175. See BASEL II DOCUMENT, *supra* note 152, at 149–52.

176. See *id.* at 226.

177. *Id.*

178. *Id.* at 231–42.

179. *Id.* at 227.

180. *Id.* at 236 n.214.

181. *Id.* at 241.

182. *Id.*

183. *Id.* at 235.

assumptions employed in these variables.”¹⁸⁴ However, the disclosure “does not require a detailed description of the model in full—it should provide the reader with a broad overview of the model approach, describing definitions of the variables, and methods for estimating and validating” the model inputs.¹⁸⁵

III. BROKER-DEALERS AND THE CSE PROGRAM

In 2004, the SEC invited the largest U.S. broker-dealers to adopt an internal models approach to capital adequacy regulation in the style of Basel II under its Consolidated Supervised Entity (CSE) Program. From 1975 until 2004, all U.S. broker-dealers were subject to the so-called “uniform net capital rule” as Rule 15c3-1, which operated as a check on the proprietary trading activities of registered broker-dealers.¹⁸⁶ The net capital rule gauges the adequacy of a broker-dealer’s capitalization by reference to availability of liquid assets to satisfy the obligations of its customers. Specifically, firms must elect either to “(a) maintain aggregate indebtedness at a level” not in excess of “fifteen times net capital” (the “basic test”) or “(b) maintain minimum net capital equal to not less than two percent of ‘aggregate debit items’”¹⁸⁷ (the “alternative test”).¹⁸⁸ When considering the regulatory purpose behind the net capital rule, most commentators have focused on the protection of customers and creditors from losses and delays that might arise when a broker-dealer fails, and the related protection of the SIPC insurance of customer accounts,¹⁸⁹ though there is, as with banks, a systemic risk minimization rationale as well.

Both the basic and the alternative net capital ratio tests first require a calculation of net capital, which is really a regulatory assessment of the liquid capital available for prompt distribution in the event of liquidation.

184. *Id.*

185. *Id.* at n.207.

186. *See generally* THOMAS LEE HAZEN & DAVID L. RATNER, *BROKER DEALER REGULATION: CASES AND MATERIALS* 521–33 (2003). Industry firms were subject to some form of capital regulation since enactment of the Securities Exchange Act of 1934. In 1942, the SEC promulgated the precursor to Rule 15c3-1, but exempted from its purview firms that were members of stock exchanges with similar capital adequacy regulation, such as the NYSE’s Rule 325. In response to the industry’s “paperwork crisis” in the late 1960s and a rash of insolvencies of U.S. broker-dealers, Congress and the SEC parried proposals and guidance for capital regulation that eventually resulted in Rule 15c3-1 in 1975.

187. John C. Coffee, Jr. & Hilary A. Sale, *Redesigning the SEC: Does the Treasury Have a Better Idea?*, 95 VA. L. REV. 707, 739 (2009). “Aggregate debit items” is a measure of assets that takes into account the “haircuts” discussed below to reflect illiquidity. *See id.* n.86.

188. *Id.* n.86.

189. *See, e.g.*, Norman S. Poser, *Why the SEC Failed: Regulators against Regulation*, 3 BROOK. J. CORP. FIN. & COMM. L. 289, 297 (2009).

To compute net capital, the broker–dealer starts with its GAAP assets and subtracts its GAAP liabilities to yield a net-worth-based capital number. Subordinated liabilities meeting certain criteria and deferred tax liabilities are added back into capital and illiquid assets (such as fixed property and exchange membership rights), intangible assets (such as goodwill), prepaid assets (such as insurance premiums and rent) and unsecured receivables are backed out to produce a “tentative net capital” number. Finally, a prescribed percentage of the market value of each broker–dealer proprietary position is subtracted from tentative net capital, based on the perceived market and asset liquidity risks associated with that particular position. These “haircuts” are essentially reserves that reflect the expectation that in a liquidation scenario, the proceeds to be obtained from liquidating securities are subject to adverse price movements. Proprietary assets that are less liquid or more volatile carry higher haircut percentages, which reduces the capital number more than, for example, Treasury bills (which carry a 0% haircut). These haircuts are aggregated and subtracted from the capital number to yield a final “net capital” amount that is compared to aggregate indebtedness (under the basic test) or aggregate debit items (under the alternative test). A firm with inadequate net capital may not open its doors for business until it corrects the capital shortfall. The haircut feature of the net capital rule is analogous to the initial Basel Accord’s risk-weighting regime.

It should be pointed out that both the basic and alternative variants of the net capital rule, like the IBA, incorporated only the most rudimentary risk sensitivities. In 1997 and 2002, the SEC and the CFTC, respectively, approved the use of private third-party statistical option-pricing models to set capital charges for certain options and futures contracts. In doing so, the SEC emphasized that statistical modeling techniques were capable of assessing risks and evaluating correlation of asset prices with greater detail and sensitivity than the rigid haircut regime that had formerly been in place. Under this new system, third-party vendors would be approved by the applicable self-regulatory organizations (e.g., NYSE or NASD) and would provide to the broker–dealers, for a fee, results of option pricing models that aimed to estimate potential loss on options. The highest amount of loss at any particular valuation point would be the charge to net capital.¹⁹⁰ The SEC therefore sought to leverage the expertise of industry to better synchronize risk and capital, much in the same way the SEC had pegged capital charge haircuts for nonconvertible debt securities to

190. U.S. GOV’T ACCOUNTABILITY OFFICE, *RISK-BASED CAPITAL: REGULATORY AND INDUSTRY APPROACHES TO CAPITAL & RISK* 144 (1998), available at <http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=gao&docid=f:gg98153.pdf>.

“nationally recognized statistical rating organizations” in 1975.¹⁹¹ Other than the option pricing models, the net capital rule went largely undisturbed from 1982 until 2004.¹⁹²

By October 2008, each the five major independent broker–dealer institutions—Bear Stearns, Goldman Sachs, Lehman Brothers, Merrill Lynch, and Morgan Stanley—had undergone a massive and rapidly cascading liquidity crisis and been liquidated or, at the behest of the Federal Reserve, either converted to a financial holding company or been acquired in a shotgun wedding-style transaction. How had the liquidity-minded net capital rule failed to preserve the ability of these institutions to meet their obligations in due course? The answer is simple: since 2004, none of these institutions had been bound by the net capital rule and were instead subject to the CSE Program internal models regime that set no ceiling on leverage. In fact, all five institutions were operating by February 2008 with gross leverage ratios of approximately thirty times net capital.¹⁹³

Professors John Coffee and Hillary Sale have documented the connection between the E.U. Financial Conglomerates Directive (FCD)¹⁹⁴ and the CSE Program.¹⁹⁵ U.S. investment banks, desirous to avoid submitting to consolidated regulation in the E.U. (including requirements regarding internal controls, capital adequacy, intragroup transactions, and risk concentration) in addition to U.S. regulation, brought pressure on the SEC to regulate the broker–dealers in a substantially equivalent manner, so

191. See Erik R. Sirri, Div. Dir. of Trading & Mkts., Sec. Exch. Comm’n, Speech by SEC Staff: Proposed Amendments Relating to References to Ratings of Nationally Recognized Statistical Rating Organizations (June 25, 2008), available at <http://www.sec.gov/news/speech/2008/spch062508ers-2.htm>.

192. See Lee A. Pickard, *SEC’s Old Capital Approach Was Tried—and True*, AM. BANKER, Aug. 8, 2008, at 10, available at http://www.americanbanker.com/issues/173_156/-359703-1.html; see also Net Capital Requirements for Brokers and Dealers, 47 Fed. Reg. 3517 (Jan. 25, 1992) (codified at 17 C.F.R. pt. 240).

193. See *Mewling and Puking*, ECONOMIST, Oct. 25, 2008, at 89–90; OFFICE OF INSPECTOR GEN., SEC, REPORT NO. 446-A, SEC’S OVERSIGHT OF BEAR STEARNS AND RELATED ENTITIES: THE CONSOLIDATED SUPERVISED ENTITY PROGRAM (2008) [hereinafter CSE–BEAR STEARNS REPORT]. Taking into account off-balance sheet exposures, the leverage ratios were considerably higher. See *Testimony Before the Financial Crisis Inquiry Commission Hearing on the Financial Crisis*, app. A, (2010) (statement of J. Kyle Bass, Managing Partner, Hayman Advisors, L.P.), available at <http://www.fcic.gov/hearings/pdfs/2010-0113-Bass.pdf> (as of year-end FY 2007, reporting the following leverage ratios: Morgan Stanley 44.3, Lehman 52.3, Bear Stearns 38.1, Goldman 36.8).

194. Council Directive 2002/87, 2003 O.J. (L 35) 1 (EC). Major U.S. commercial banks were exempted from the operation of the FCD because they were subject to “equivalent” supervision in the United States in the form of group-level supervision by the Federal Reserve. See Coffee & Sale, *supra* note 187, at 738.

195. See Coffee & Sale, *supra* note 187, at 737–38.

as to fall within the FCD exemption for financial groups operating under equivalent supervisory standards. In 2004, the SEC offered to these broker-dealers the option of opting out of the net capital rule system and entering the new CSE regulatory regime of consolidated groups.¹⁹⁶ Under the CSE Program, broker-dealers with at least \$5 billion of capital would be permitted to avoid the net capital rule entirely, and instead subject themselves to an alternative net capital program resembling Basel II.¹⁹⁷ A qualifying broker-dealer could become a CSE by applying for an exemption from the SEC standard net capital rule.¹⁹⁸ CSE groups would have to “[c]alculate a group-wide capital adequacy measure consistent with the international standards adopted by the Basel Committee” and “maintain an overall . . . capital ratio of not less than the Federal Reserve’s 10 percent ‘well-capitalized’ standard for bank holding companies.”¹⁹⁹ Firms were to maintain tentative net capital at a level above \$1 billion and net capital above \$500 million at all times.²⁰⁰

As discussed in detail in Part II.B.3.c, the Basel II framework relies on the regulated firm to determine its own required capital levels based on inputs derived from internal models. Intriguingly, federal bank regulators proceeded very cautiously with the implementation of Basel II guidelines in the United States. The same banking regulators that participated in the creation of the guidelines were careful to ensure they were not applied too hastily domestically. The SEC, by contrast, pushed through the CSE Program in a matter of months.²⁰¹ These risk models purported to gauge the market risks that by September 2008 had materialized and evaporated

196. See *Alternative Net Capital Requirements for Broker-Dealers That Are Part of Consolidated Supervised Entities; Supervised Investment Bank Holding Companies*, 69 Fed. Reg. 34,428 (June 21, 2004) (codified at 17 C.F.R. pt. 240). Technically, Citigroup and JPMorgan Chase were CSEs under the CSE Program, but the SEC did not exercise direct oversight over these institutions, which were separately overseen by the Board of Governors of the Federal Reserve. See *CSE-BEAR STEARNS REPORT*, *supra* note 193, at v.

197. See Pickard, *supra* note 192, at 10 (lauding the track record of the net capital rule and lamenting the transition to the CSE Program regime).

198. See *Commodity and Security Exchanges*, 17 C.F.R. § 240.15c3-1 (2005).

199. *Examining the Regulation and Supervision of Industrial Loan Companies: Hearing Before the S. Comm. on Banking, Hous. & Urban Affairs*, 110th Cong. 8 app. A (2007) (statement of Marc E. Lackritz, President and CEO, Sec. Indus. & Fin. Markets Ass’n); *CSE-BEAR STEARNS REPORT*, *supra* note 193, at 10–11.

200. See *CSE-BEAR STEARNS REPORT*, *supra* note 193, at 11.

201. The SEC proposed the revisions to Rule 15c3-1 in November of 2003. See *Alternative Net Capital Requirements for Broker-Dealers That Are Part of Consolidated Supervised Entities*, 68 Fed. Reg. 62,872 (Nov. 6, 2003). By June 2004, the SEC had adopted the revisions as final rules. See *Alternative Net Capital Requirements for Broker-Dealers that are Part of Consolidated Supervised Entities: Supervised Investment Bank Holding Companies*, 69 Fed. Reg. at 34,428.

any *real* capital cushion, requiring the provision of over \$12 trillion in support in the form of financial guarantees, capital injections, asset purchases, and emergency liquidity assistance by the U.S. government and the Federal Reserve.²⁰² And yet at the time of the Bear Stearns implosion, each of the major U.S. investment banks was sufficiently capitalized under the CSE Basel II program,²⁰³ according to its own VaR assessments.²⁰⁴ The capital market, however, was telling a different story; Bear Stearns lacked access even to secured funding.²⁰⁵

The deregulatory effects of the CSE Program naturally raise the question of capture: was the SEC captured by the powerful investment banks that saw capital requirements as antiquated relics of a financial era before financial innovation had minimized costs of financial distress normally associated with leverage? It should go without saying that the investment banking industry and their well-placed alumni lobbied aggressively for abrogation of the net capital rule.²⁰⁶ The tight-knit and centralized group of the five largest investment banks might be expected to overcome the free-riding problem normally incident to legislative or regulatory change.²⁰⁷ The decentralized and dispersed groups of smaller broker-dealers (who would encounter a higher cost of capital vis-à-vis the largest investment

202. *Adding Up the Government's Total Bailout Tab*, N.Y.TIMES.COM, Feb. 4, 2009, available at <http://www.nytimes.com/interactive/2009/02/04/business/20090205-bailout-totals-graphic.html>.

203. See *Testimony Concerning Recent Events in Credit Markets: Before the S. Comm. on Banking, Hous., and Urban Affairs*, (2008) (statement of Christopher Cox, Chairman, Securities and Exchange Commission), available at <http://www.sec.gov/news/testimony/2008/ts040308cc.htm> (testifying on behalf of the SEC regarding the March 2008 Bear Stearns collapse).

204. Cf. Fanto, *supra* note 73, at 742 (“[I]f financial institutions underestimate loss probability, they will not have adequate capital in extreme circumstances.”).

205. *Id.*

206. See Timothy A. Canova, *Financial Market Failure as a Crisis in the Rule of Law: From Market Fundamentalism to a New Keynesian Regulatory Model*, 3 HARV. L. & POL’Y REV. 369, 384 (2009) (“[I]n 2003 and 2004, the biggest Wall Street investment banks, led by Henry Paulson, then the head of Goldman Sachs, lobbied the [SEC] and the Financial Accounting Standards Board for a number of key regulatory changes. The SEC commissioners unanimously granted the banks an exemption from the net capital rule . . .”); Stephen Labaton, *Agency's '04 Rule Let Banks Pile up New Debt*, N.Y. TIMES, Oct. 3, 2008, at A1; Kevin Drawbaugh, *U.S. SEC Clears New Net-Capital Rules for Brokerages*, REUTERS NEWS, April 28, 2004, available at http://securities.stanford.edu/news-archive/2004/20040428_Headline08_Drawbaugh.htm (“Goldman Sachs, Morgan Stanley, Merrill Lynch, Lehman Brothers and Bear Stearns have expressed keen interest in CSE status . . .”).

207. Cf. MANCUR OLSON, JR., *THE LOGIC OF COLLECTIVE ACTION: PUBLIC GOODS AND THE THEORY OF GROUPS* 1–3 (1965) (theorizing that small and concentrated interest groups may overcome free-riding problems that normally frustrate interest groups’ efforts to procure favorable legislation and regulatory policy).

banks) and the brokerage customers (who would lose the benefits of the inherent conservatism of higher capital charges applicable to their custodians) would arguably navigate the free-rider problem with greater difficulty. The five major investment banks constituted a group small enough that dropping out would be difficult, and the costs of abrogating the net capital rule could be spread among smaller competitors and industry customers.

While this basic Olsonian account is in some respects accurate, it is not a complete account of the CSE Program. Two other interrelated factors, familiar to the discussion above regarding Basel II, must be taken into account. Firstly, regulators perceived—not without good reason—that the increasing complexity of the investment banking and broker–dealer business rendered the formulaic approach of the net capital rule inadequately responsive to the risks underlying and affecting these regulated businesses. With each round of financial innovation, the correlation between the haircut formulae and the real risks underlying financial assets became increasingly arbitrary. Moreover, as risk disintermediation increases, the risk correlation among a firm’s positions is rendered more opaque. Secondly, the acculturation of financial regulators relying on leveraging private sector expertise in capital regulation—what Professor Geoffrey Miller has aptly termed, in a slightly different context, the “Basel Brand”²⁰⁸—played a significant role in the SEC’s CSE initiative. The SEC borrowed the Federal Reserve’s Basel II method of calculating capital requirements for bank holding companies and applied them to the new consolidated supervised entities.²⁰⁹ In a sense, convergence of capital regulation among investment banking and commercial banking groups made eminently good sense; after all, in the years following passage of the Gramm–Leach–Bliley Act in 1999, global financial conglomerates came to dominate global lending and investment banking activities.²¹⁰ If the two categories were collapsing into one, it made little sense to regulators to regulate them according to disparate logics.

IV. INSURANCE COMPANIES & SOLVENCY II

Insurance companies, like banks, must deal with an inherent asset–liability mismatch. In the case of insurance companies, though, the problem is the mirror image of the banking mismatch: an insurance

208. John D. Morley & Roberta Romano, *The Future of Financial Regulation* 101 (John M. Olin Ctr. for Studies in Law, Econ., and Pub. Pol’y, Research Paper No. 386, 2009).

209. See CSE–BEAR STEARNS REPORT, *supra* note 193, at 10–11.

210. See Wilmarth, *supra* note 82, at 972–74 (discussing the Gramm–Leach–Bliley Act’s effect on the U.S. financial services industry both domestically and abroad).

company funds long-term future liabilities (i.e., policy claims) with a regular stream of premium income (i.e., short-term assets). Government-administered insurance guarantee funds support policyholders in the event a firm is insolvent. Insurance regulators therefore tightly regulate capital adequacy; it is, along with consumer protection, their chief regulatory objective. The European Union is poised to reform its insurance industry capital adequacy framework by instituting the so-called Solvency II framework. As proposed, Solvency II will allow firms to use internal market and credit risk models as the basis on which regulatory capital levels are established.

V. INTERNAL CAPITAL MODELS APPROACH AS NEW GOVERNANCE

For the most part, financial regulatory scholarship has not yet appreciated the important insights of new governance theory and its applicability to dynamic, complex financial markets implicating a wide range of public policy interests. Part V will (1) summarize new governance theory, providing illustrative examples where it is put to practical use and discussing its connections to and disjunctions from the familiar rules-principles debate; (2) describe how the internal models approach to capital regulation can be considered, in certain respects, a new governance regulatory technique; and (3) characterize the shortcomings of the internal models approach as falling within familiar traps that affect new governance reforms, and conclude that Pillar 3's disclosure regime fails to redress these traps adequately.

A. *What Is New Governance?*

New governance refers to a wide range of administrative governance techniques and tools that differ in important ways from traditional top-down, command-and-control regulation. In particular, new governance scholarship highlights the increasing involvement of nonstate actors in the governance tools that shape and constitute public policy and regulation. The description of new governance techniques as tools is not accidental; their relation to policy objectives is instrumental rather than rival.²¹¹ New

211. See LESTER M. SALAMON, *THE TOOLS OF GOVERNMENT: A GUIDE TO THE NEW GOVERNANCE* 1, 8–9 (Lester M. Salamon ed., 2002) (advocating a shift in the “unit of analysis” of public administrative study from public agencies to the tools and instruments of public administration); see also On Amir & Orly Lobel, *Stumble, Predict, Nudge: How Behavioral Economics Informs Law and Policy*, 108 COLUM. L. REV. 2098, 2131–32 (2009) (arguing that the ends and means of public policy are “inevitably intertwined,” and that new governance “unabashedly recognizes” that the choice of tools in public policymaking is therefore inherently normative); Orly Lobel, *Setting the Agenda for New Governance Research*, 89 MINN. L.

governance scholarship is ambitious in its scope, and it touches on a wide spectrum of the realms of public administration, from nursing home care, Medicare and Medicaid service delivery, workplace safety, and employment to crop insurance and endangered species conservation. Despite the ambition of new governance, comparatively little has been written to situate financial regulation reforms in the new governance context.

The units of inquiry according to the traditional conception of regulation are hierarchically-ordered administrative agencies, in possession of unique expertise, to which the legislature has granted discretion to pursue statutorily defined regulatory objectives.²¹² To the extent private involvement is contemplated, it is usually framed as a threat to proper administrative process. Public choice theorists have called into question administrative discretion itself, emphasizing the pervasiveness of strategic manipulation in public administration, and describing policy choices as a product of pressure on the part of discrete, well-organized private actors.²¹³

REV. 498, 502 (2004) (“In their willingness to synthesize an emerging social vision, progressive reformers can move beyond entrenched and failed government structures while resisting flat attacks on the affirmative state.”); Symposium, *The Changing Shape of Government*, 28 FORDHAM URB. L.J. 1319, 1334 (2001) (remarks by Lester M. Salamon). By conflating the means and ends of public regulation, Lobel recalls the expressly pragmatic “experimentalist” strain of new governance scholarship. See, e.g., Michael C. Dorf & Charles F. Sabel, *A Constitution of Democratic Experimentalism*, 98 COLUM. L. REV. 267, 284–86 (1998) (citing Pierce, Dewey, and Mead and invoking the “reciprocal determination of means and ends” as a guiding principle behind their project of “organizing decentralized, collaborative design and development under conditions of volatility and diversity”); see also *id.* at 302 (“Think of the new institutions as pragmatist in that they systematically provoke doubt, in the pragmatist sense of an urgent suspicion that habitual beliefs are poor guides to current problems.”).

212. See JAMES O. FREEDMAN, *CRISIS AND LEGITIMACY: THE ADMINISTRATIVE PROCESS AND AMERICAN GOVERNMENT* 44 (1978) (“The New Deal believed in experts. Those who rationalized its regulatory initiatives regarded expertise and specialization as the particular strengths of the administrative process.”); Laurens Walker, *The End of the New Deal and the Federal Rules of Civil Procedure*, 82 IOWA L. REV. 1269, 1272 (1997) (discussing the strengths of the administrative process, particularly expertise and specialization).

213. See Susan Rose-Ackerman, *Progressive Law and Economics—And the New Administrative Law*, 98 YALE L.J. 341, 344–47 (1988); see also Frank H. Easterbrook, *The Supreme Court, 1983 Term—Foreword: The Court and the Economic System*, 98 HARV. L. REV. 4, 14–17 (1984) (advocating that judges adopt an approach to statutory interpretation that seeks to enforce the intent of bargains among private actors embodied in legislation); cf. William N. Eskridge, *Implications of Public Choice Theory for Statutory Interpretation*, 74 VA. L. REV. 285 (1988) (“Public choice theorists typically treat legislation as an economic transaction in which interest groups form the demand side, and legislators form the supply side.”). See generally Gary S. Becker, *A Theory of Competition Among Pressure Groups for Political Influence*, 98 Q.J. ECON. 371 (1983) (presenting a theory of private competition for political influence).

Still others focus on accountability: how to protect the integrity and expertise of the public administrative apparatus from narrowly self-interested, private-interested parties.²¹⁴

Each of these accounts relies on a conceptual division between public policymakers and private nonstate actors. As Professor Jody Freeman has put it, they rely on “the illusion of a public realm”—that is, that there exists a purely public sphere of activity.²¹⁵ Even public choice theory buys into this illusion, to the extent it advocates a normative deregulatory position; there is a cross-pollination of private and public realms, but only because the former is seeking to capture the latter. New governance theory posits that this traditional conception is outdated as a descriptive matter, and that, as a normative matter, in many contexts it is unlikely to conduce to favorable regulatory outcomes. Instead, it is better to evaluate the effectiveness of governance by reference to the tools through which governance is effectuated, rather than by reference to the *dramatis personae* of the regulator–regulatee game. As such, new governance scholars tend to focus their analysis on the new modes of interaction between state and nonstate actors. New governance, as a dynamic toolset rather than an *ex ante* ideal distribution of administrative power, is therefore analytically different than traditional accounts of administrative law discussed above. It can coexist with traditional administrative activity, either as a rival or a complement, and it can, though it need not, lead to wholesale transformation of old governance into new governance.²¹⁶ New governance tools aim to respond to the continual changes of regulated society and knowledge itself, so “all solutions [to problems] should be regarded as provisional.”²¹⁷

New governance programs and tools assume different forms, and often include clusters of the following characteristics: increased participation of and power sharing with nonstate actors; public adoption of rules negotiated by nonstate stakeholders; encouragement of experimentation; promotion of competition and diversity as a structural element of regulation; dynamic, flexible, and dialogic lawmaking process as a response to dynamism of regulated markets; multilevel functional integration and network-seeking among branches, departments, agencies of government, and among state

214. See Jody Freeman, *Collaborative Governance in the Administrative State*, 45 UCLA L. REV. 1, 13 (1997) (describing this position as a “conceptual limitation” that inhibits more effective governance reform proposals).

215. Jody Freeman, *The Private Role in Public Governance*, 75 N.Y.U. L. REV. 543, 564 (2000).

216. See David M. Trubek & Louise G. Trubek, *New Governance and Legal Regulation: Complementarity, Rivalry and Transformation*, 13 COLUM. J. EUR. L. 539, 542 (2007).

217. *Id.*

and nonstate actors, and within regulatee firms; active pursuit of nonstate actor knowledge to supplement—and sometimes replace—public administrative expertise; promotion of subsidiarity; use of flexible, revisable rules and standards; use of broad framework agreements; use of benchmarks, indicators, and peer review to ensure accountability; and fostering of deliberation among stakeholders over the nature of problems and methods by which to solve them.

Of course, no new governance tool draws on all of these attributes. New governance measures are at times highly formalized, and at other times informal and consultative, consistent with “soft law” pronouncements.²¹⁸ The common thread running throughout new governance scholarship is the deployment of novel techniques and tools in governance, usually involving increased nonstate involvement, to overcome emergent or intractable recurrent problems inhibiting the traditional command-and-control regulatory model from achieving its regulatory objectives. This Part discusses three of these characteristics in greater detail, since they are most relevant to regulatory reform in dynamic and complex financial markets, including Basel II’s internal models approach: (1) retention of a public role in lawmaking and enforcement; (2) active pursuit of nonstate actor knowledge to supplement, and sometimes replace, public administrative expertise; and (3) a dynamic, flexible, and dialogic lawmaking process.

1. The Benign Big Gun: Retaining a Public Administrative Presence

The dominant account of new governance contemplates retention of some formal public authority, even if it operates in the background. While broader definitions of “governance” include a wider range of measures impacting social and economic systems,²¹⁹ for purposes of this discussion new governance must involve some element of public administrative ordering. This precondition can be thought of as a jurisdictional requirement; in other words, there is no ambiguity that the new governance regulatory event is within the purview of at least one, and perhaps multiple,

218. Not all new governance initiatives are characterized by “softness,” though softness is often an indicium of new governance. At times, however, new governance measures are characterized by a high degree of “hardness,” especially the procedural orderings designed to facilitate consensus-forming and power-sharing in the drafting of legislation and regulation. See Bradley C. Karkkainen, *Reply: “New Governance” in Legal Thought and in the World: Some Splitting as Antidote to Overzealous Lumping*, 89 MINN. L. REV. 471, 485–87 (2004).

219. See Scott Burris et al., *Changes in Governance: A Cross-Disciplinary Review of Current Scholarship*, 41 AKRON L. REV. 1, 7–9 (2008) (highlighting the risk that governance risks “becoming a point of false rhetorical convergence” and adopting an abstract definition of “governance” as “the management of the course of events in the social system”).

public administrative agencies.²²⁰ By locating the regulatory event within an administrative agency's jurisdiction, the new governance measure enhances accountability and perhaps legitimacy as well.²²¹ The central accountability challenge associated with new governance—namely, that such measures vest substantial policy discretion in nonstate actors that are not responsible for the results—is thus mitigated. In other words, the state is not dead; it remains a critical juncture of new governance networks, just not as an authoritative, directing regulator in a command-and-control system.²²² By retaining a public element, new governance is also distinguished from deregulation. The deregulatory political mood of the 1970s and 1980s resulted in significant deregulation of the trucking and railroad industries, financial institutions, oil and gas prices, occupational safety, and environmental protection.²²³ Consider, for instance, the Garn–St. Germain Depository Institutions Act of 1982, which among other things removed restrictions on thrift banks that had previously prevented them from taking demand deposits and making commercial loans, lifted other restrictions applicable to all depository institutions, and scheduled the formal phase-out of all interest rate restrictions on demand deposits.²²⁴ With respect to each of these elements of the Act, the state dropped out of the picture, except for its general supervisory competence to ensure the “safety and soundness” of regulated banks and thrifts. The state decided

220. Cf. David A. Dana, *The New “Contractarian” Paradigm in Environmental Regulation*, 2000 U. ILL. L. REV. 35, 47 (2000) (“Thus, although it is true that contractarian regulation is a reform alternative to command-and-control regulation, it is also true that command-and-control regulation is a precondition for contractarian regulation.”).

221. Orly Lobel, *The Renew Deal: The Fall of Regulation and the Rise of Governance in Contemporary Legal Thought*, 89 MINN. L. REV. 342, 452–53 (2004) (“The retention of supervisory authority and the background threat of direct regulation and enforcement strengthen accountability in the shift to [the new] governance.”).

222. See Adam Crawford, *Networked Governance and the Post-Regulatory State? Steering, Rowing and Anchoring the Provision of Policing and Security*, 10 THEORETICAL CRIMINOLOGY 449, 459 (2006) (discussing the continued importance of the state even to radical governance reforms, seeing its importance “in its symbolic power and cultural authority; in its legitimacy claims and public perceptions of its legitimacy; as a distinctive (tactical) resource and source of information through which interests are pursued; [and] in its residual position as a back-up of last resort with regard to other forms of control”); Louise G. Trubek, *New Governance and Soft Law in Health Care Reform*, 3 IND. HEALTH L. REV. 137, 159–60 (2006) (describing the state's role in new governance initiatives as “disaggregated” but “necessary”).

223. The advances of public choice theory provided intellectual succor for the deregulatory politics of the Carter–Reagan–George H.W. Bush presidencies. For some public choice theorists, favorable regulatory outcomes were not achievable in the context of public politics, so the state's proper role was a stage exit.

224. Garn–St. Germain Depository Institutions Act of 1982, Pub. L. No. 97-320, 96 Stat. 1496 (codified as amended in scattered sections of 12 U.S.C. & 20 U.S.C. (2006)).

that achievement of the regulatory objective was no longer worth pursuing, and a private-market ordering of the thrift demand deposit markets materialized quickly. Again, for purposes of this Article, and most new governance scholarship, a purely private ordering will not be properly categorized as a new governance tool.

By retaining residual command-and-control powers, regulators wield what Ian Ayres and John Braithwaite have referred to as a benign big gun.²²⁵ The background threat of the benign big gun, in the form of rarely deployed but available severe sanctions, serves to incentivize regulated market actors to avoid defecting from the regulatory objective. In this respect, new governance excludes pure deregulatory initiatives and assumes that some payoff, whether through the avoidance of stringent regulation or a positive incentive to cooperate, exists for the regulated private-sector actors in exchange for their participation in the governance initiative. The new governance world, though, need not exclude self-regulatory regimes such as the Financial Industry Regulatory Authority (FINRA), provided that there remains public supervision of the self-regulatory organization (SRO).²²⁶ When the regulatory objective is best achieved through a collaborative relation between public regulator and private regulatee rather than a draconian set of sanctions accompanied by intrusive supervision, the background threat of a benign big gun will be preferable.²²⁷ Importantly, one need not adopt a rational actor model of behavior to accept the theoretical superiority of a benign big gun model; the presence of the public authority in the background can motivate socially responsible deliberation in the foreground, in effect leveraging off of regulatees' pre-existing commitments to, e.g., professional integrity or law-abidingness.²²⁸

225. See generally IAN AYRES & JOHN BRAITHWAITE, *RESPONSIVE REGULATION: TRANSCENDING THE DEREGULATION DEBATE* 19–53 (1992) (describing a benign big gun approach to regulation that aims to appeal to the social responsibility of actors to obtain voluntary compliance, but also stands ready to deploy deterrent threat sanctions of increasing severity to motivate purely economically motivated “rational actors” and incapacitate chronic law violators).

226. In the case of FINRA, the SEC must approve any issuance of, or modification to, an SRO rule. See 15 U.S.C. § 78s(b)(1) & (2) (2006).

227. The concept of “penalty defaults” is analogous here. Contract law provides for penalty defaults, in the form of background sanctions that no party is likely to prefer, to induce contracting parties to engage in efficient contracting. See Ian Ayres & Robert Gertner, *Filling Gaps in Incomplete Contracts: An Economic Theory of Default Rules*, 99 *YALE L.J.* 87, 97–98 (1989) (characterizing the common law rule that courts will enforce only contracts with certain and definite terms as an incentive for contracting parties to make their expectations express in the contract). The penalty default thus encourages responsible *ex ante* contracting and deliberation rather than *ex post* litigation. See *id.*

228. AYRES & BRAITHWAITE, *supra* note 225, at 47.

2. *Decentering Governance: Increased Power-Sharing and Stakeholder Participation*

New governance measures often provide for actual power-sharing and increased participation of nonstate actors in multiple stages of the lawmaking process (legislation, rulemaking, implementation, enforcement). By including more stakeholders in the process, policymaking is decentralized and conceived “not as [a top-down ordering process] to be done by autonomous regulators but rather as a process of mutual problem-solving among stakeholders from government and the private sector.”²²⁹ The expertise and knowledge of private actors can be “harness[ed] . . . to serve public goals,”²³⁰ and public lawmaking is oriented toward a collaborative, consensus-seeking form of governance.²³¹ The actors might remain the same, but the modes of interaction are no longer tethered to the traditional administrative law paradigm. In this respect, new governance differs from pluralistic accounts of governance that acknowledge an important role for nonstate actor involvement, but never call into question the exclusively public dimension of policymaking power and authority.²³² In new governance, there are multiple public and private legal entities, but there is one *public process*.²³³

Increased participation and power-sharing allow for structuring collaborative solutions to complex problems.²³⁴ Advantages to this

229. Joanne Scott & David M. Trubek, *Mind the Gap: Law and New Approaches to Governance in the European Union*, 8 EUR. L.J. 1, 5 (2002).

230. Freeman, *supra* note 215, at 549.

231. See Karkkainen, *supra* note 218, at 474 (referring to new governance as “consensus-oriented”).

232. See Freeman, *supra* note 215, at 559–60 (describing the pluralist “interest representation” model of administrative law in which interest groups strive to advance their perspectives in regulation and capture is checked by “democratizing” the regulatory process to include numerous groups). A prominent example of pluralist participation is the right of interested parties to provide comments to proposed rules under the APA. See 5 U.S.C. § 553(c) (2006).

233. See Lobel, *supra* note 221, at 375 (“[T]he governance model offers a framework that enables us to view the different sectors—state, market, and civil society—as part of one comprehensive, interlocking system. The focus is on government interactions with private actors in public action.”).

234. See, e.g., Dorf & Sabel, *supra* note 211, at 315–23 (theorizing an experimentalist governance regime of “directly deliberative polyarchy” in which “governance councils” collaborate with local citizens and “pool their experience to inform their separate decisions” to achieve “good government under conditions of volatility and diversity”); Michael A. Rebell & Robert L. Hughes, *Schools, Communities, and the Courts: A Dialogic Approach to Education Reform*, 14 YALE L. & POL’Y REV. 99, 114–36 (1996) (elaborating a “community engagement dialogic model” of school reform that seeks to build community consensus among teachers, administrators, parents, and students in order to achieve better outcomes); Charles F. Sabel & William H. Simon, *Destabilization Rights: How Public Law Litigation Succeeds*, 117 HARV. L.

approach include reduced likelihood that regulatees will defect from a mutually agreed upon policy solution because of its perceived legitimacy; after all, they helped write it, and they agreed to it.²³⁵ Therefore, provided appropriate stakeholders contribute to the process, enhanced participation and power-sharing bolster legitimacy. Of perhaps even greater importance, though, is the potential of negotiated regulatory deals to bridge knowledge gaps between regulators and regulatees in exceedingly complex regulated industries. As noted above in Part II.B.3.a.ii with respect to banks, complexity can overwhelm administrative agencies, and often regulatees are in possession of critical data and information. Since new governance posits a collaborative, nonadversarial relationship between regulator and regulatee, the latter will presumably be more inclined to disclosure and forthrightness than to preservation of its interests at all costs against public interference. A similar point may be made with respect to third-party public interest groups, whose inclusion in a tripartite lawmaking process will bring still further perspectives to the fore.²³⁶

For example, the European Union's Maastricht Treaty vests employers and labor representatives with co-lawmaking powers pursuant to the "social dialogue" lawmaking process. While traditional lawmaking in the European Union proceeds exclusively from public authority, under the "social dialogue," employers and pre-certified labor representatives can negotiate generally applicable policy agreements governing labor relations, workplace safety, vocational training, and other areas of E.U. "social policy" that, upon Council approval, have binding force as directives under

REV. 1015, 1019–21, 1067–69, 1077–80 (2004) (advocating for the "destabilization" of chronically underperforming public institutions to, among other things, induce participation of wider array of stakeholders in decisionmaking processes).

235. According to socio-legal research, absent unusually high recourse to detection and prosecution command-and-control techniques, regulatees are more likely to comply with regulations that are perceived as legitimate. See AYRES & BRAITHWAITE, *supra* note 225, at 113 ("[C]onsiderable evidence indicates that participation in a decision-making process increases the acceptance and improves the execution of the decisions reached."); Donald C. Langevoort, *The Social Construction of Sarbanes-Oxley*, 105 MICH. L. REV. 1817, 1818 (2007) ("[C]ompliance decisions are based at least as much on the perceived legitimacy of the law and prevailing norms in local context as any deliberate risk calculation."); Orly Lobel, *Interlocking Regulatory and Industrial Relations: The Governance of Workplace Safety*, 57 ADMIN. L. REV. 1071, 1089–91 (2005) (describing limited success of top-down, command-and-control OSHA regulation in inducing compliance from firms); Scott & Trubek, *supra* note 229, at 8 (discussing the efforts of new governance to secure legitimacy and the effects legitimacy concerns have on new governance design). See generally TOM R. TYLER, WHY PEOPLE OBEY THE LAW 3–7, 170–78 (1990) (analyzing the link between legitimacy and the perception of governmental authority).

236. See *infra* Part V.B.

E.U. law.²³⁷ Thus, nonstate stakeholders wield substantial power over the direction of the lawmaking process, though public actors remain in the process (the Commission initiates the discussion, and the Council ratifies the negotiated agreement between the social partners). In the United States, regulatory negotiation (or “reg-neg”) has emerged as an alternative to traditional Administrative Procedure Act (APA) administrative rulemaking.²³⁸ In a reg-neg, either industry representatives or the agency proposes formation of a committee pursuant to the Federal Advisory Committee Act. If the agency agrees to constitute a committee for a reg-neg, stakeholders—including, unlike the E.U.’s social dialogue model, any additional interested nonstate third parties—may petition the agency for inclusion in the negotiations. The agency has discretion over which interested parties are included in the process. At the conclusion of the negotiation, if a consensus rule is achieved it is then channeled through the normal notice and comment rulemaking process under the APA. In the cases of reg-neg and E.U. social dialogue lawmaking, the public involvement remains substantial, but nonstate actors contribute as collaborative co-policymakers in reaching a negotiated governance solution.²³⁹

Another example of a new governance tool involving increased participation of nonstate actors is the use of Habitat Conservation Plans (HCP) to permit “incidental takings” of wildlife. Pursuant to a 1982 amendment to the Endangered Species Act (ESA), Congress permitted

237. Treaty on European Union arts. 1–4, Feb. 7, 1992, 1992 O.J. (C 191) 1, 91–2 (EC) (requiring E.U. Commission to consult with, and providing the right to assume lawmaking initiative via contractual negotiations to, “management and labour”); *Communication Concerning the Application of the Agreement on Social Policy Presented by the Commission to the Council and to the European Parliament*, at 4–5, 30 COM (1993) 600 final, Dec. 14, 1993 (certifying the representative status of certain unions and employer associations and establishing criteria for organizations to be consulted); see also Council Directive 1999/70, 1999 O.J. (L 175) 43 (EC) (framework agreement on fixed term work); Council Directive 97/81, 1998 O.J. (L 14) 9 (EC) (framework agreement on part-time work). For more information on the E.U.’s social dialogue lawmaking, see Jelle Visser, *More Holes in the Bucket: Twenty Years of European Integration and Organized Labor*, 26 COMP. LAB. L. & POL’Y J. 477, 495–99 (2005).

238. For a summary of the reg-neg process, see Richard B. Stewart, *A New Generation of Environmental Regulation?*, 29 CAP. U. L. REV. 21, 87–94 (2001).

239. Professor Kimberly Krawiec’s discussion of “negotiated governance” is illustrative of this collaborative, contract-based conception of new governance. See Kimberly D. Krawiec, *Cosmetic Compliance and the Failure of Negotiated Governance*, 81 WASH. U. L.Q. 487, 516–22 (2003). Krawiec is skeptical of negotiated governance initiatives inasmuch as they, like all agreements, leave certain terms undefined. These negotiated agreements are “incomplete contracts” that invite opportunistic behavior among parties—particularly lawyers and compliance professionals—during renegotiation, which, in the regulatory context, occurs during the implementation and enforcement stages. See *id.* at 521.

businesses that would otherwise run afoul of the strict prohibition of “takings” of any animal designated by U.S. regulators as an endangered species to engage in “incidental takings” of endangered species if they submitted a satisfactory HCP.²⁴⁰ An HCP must include commitments from the applicant to mitigate damage and not appreciably reduce the likelihood of survival and recovery of the species in the wild, but the plan design is still largely left to the discretion of the applicant. After an HCP enters into force, the supervision of the permit holder’s compliance with the HCP may, but need not necessarily, be delegated to a third-party intermediary with an interest in policing compliance, such as a nonprofit conservationist group.²⁴¹ In place of the strict prohibition—which sets up a winner-take-all political conflict between pro-growth and pro-conservationist camps—the HCP alternative opens up the possibility that pro-growth and pro-conservationist groups can participate in a collaborative process.

3. *Flexible and Dynamic Law: Overcoming Rule–Principle Polarity*

The end governance output of each negotiated regulatory deal is generally an *ex ante* rule or principle. Moreover, these *ex ante* laws are often generally applicable to all market participants without regard to the specific circumstances of regulated firms. When regulating dynamic and complex market behaviors, such *ex ante* laws will be either over- or under-inclusive, and will often fail to achieve their objectives. Worse still, they might unnecessarily exacerbate market complexity by motivating a regulatory arbitrage game in which regulatees develop technologies to avoid the effects of the *ex ante* law. Unless enforced simplicity is the favored solution,²⁴² the challenge for lawmakers is to construct a regulatory system that is flexible enough to keep up with the dynamism of these regulated activities.

Much of the scholarship and popular discourse concerning the need for flexibility and dynamism in financial regulatory reform has occurred in the context of the rules–principles debate. While the rules–principles divide has already proven its substantial marketing value in jurisdictional

240. The amendments to the ESA permit takings that are “incidental to, and not the purpose of, the carrying out of an otherwise lawful activity.” 16 U.S.C. § 1539(a)(1)(B) (2006). For a helpful background discussion of the genesis and mechanics of HCPs, see Albert C. Lin, *Participants’ Experiences with Habitat Conservation Plans and Suggestions for Streamlining the Process*, 23 *ECOLOGY L.Q.* 369, 371–81 (1996).

241. See Lee P. Breckenridge, *Nonprofit Environmental Organizations and the Restructuring of Institutions for Ecosystem Management*, 25 *ECOLOGY L.Q.* 692, 697 (1999) (noting a trend that nonprofit organizations, such as the Nature Conservancy, are taking an increasingly active role in monitoring HCPs).

242. This qualification is not trivial in the case of financial regulation. See *supra* notes 25–27 and accompanying text.

competition,²⁴³ its meaning is notoriously inexact and it is never an accurate description of an entire system.²⁴⁴ In most cases, it is more sensible to analyze regulatory reforms in dynamic financial markets according to a new governance framework and ask if lawmaking technologies, whether “based” in principles or rules, are being deployed effectively and in a flexible manner.

Professor Larry Cunningham has described three ways in which the rules–principles distinction is commonly understood. First, the analytical distinction refers to a temporal division between rules, the content of which is set out *ex ante*, and principles, the content of which is filled in *ex post*. Second, the conceptual distinction refers to a distinction between particularized, concrete rules and general, abstract principles. Third, the functional distinction refers to principles, which repose discretion in designated actors, and rules, which do not. All three ways of understanding the divide resonate with new governance scholarship. In particular, the analytical and conceptual rubrics shed light on the new governance attribute of flexible and dynamic lawmaking.²⁴⁵

Professor Louis Kaplow has touched on the analytical and conceptual rubrics, theorizing that precise rules are costly *ex ante*, as their content is the result of an extensive deliberative or negotiated process.²⁴⁶ Applying that precept to the reg–neg and E.U. social dialogue processes discussed above in Part V.A.2, it is unobjectionable.²⁴⁷ On the other hand, general, abstract principles are costly *ex post*, when the content of the law must be implemented by regulators, interpreted by practitioners, and enforced by adjudicatory authorities. According to Kaplow’s formulation, it then

243. Lawrence A. Cunningham, *A Prescription to Retire the Rhetoric of “Principles-Based Systems” in Corporate Law, Securities Regulation, and Accounting*, 60 VAND. L. REV. 1411, 1416, 1481–91 (2007).

244. See Cristie L. Ford, *Principles-Based Securities Regulation in the Wake of the Global Financial Crisis*, 55 MCGILL L.J. (forthcoming 2010) (manuscript at 9) (available at Social Science Research Network) (“Rules and principles are also best understood as points on a continuum rather than discrete concepts, and there is a good deal of overlap and convergence among them.”).

245. See Cunningham, *supra* note 243, at 1417, 1420. Cunningham ultimately eschews the rules–principles distinction due to its unavoidable imprecision, and recommends that legal scholars and policymakers “retire” its usage.

246. See Louis Kaplow, *Rules Versus Standards: An Economic Analysis*, 42 DUKE L.J. 557, 559–60 (1992).

247. There is some evidence that less time is required to fully deliberate on, and negotiate, rules under the reg–neg process than traditional APA rulemaking. See Cornelius M. Kerwin & Scott R. Furlong, *Time and Rulemaking: An Empirical Test of Theory*, 2 J. PUB. ADMIN. RES. & THEORY 113, 124, 134 (1992). That said, it is certainly true that the time and expense of producing an agreed-upon rule pursuant to reg–neg or a similar negotiated lawmaking process exceeds the amounts expended to draft an open-ended principle.

follows that, given economies of scale, “the greater the frequency with which a legal command will apply, the more desirable rules tend to be relative to standards.”²⁴⁸ In other words, when a regulatory scenario is likely to be frequently occurring (as with the “repeat player” regulator–regulatee encounters in the financial industry), it is preferable to invest in precise rulemaking upfront, rather than incur expenditures in frequent and shifting reinterpretations of principles, the content of which is filled in *ex post*.

Professor Cristie Ford elaborates on Kaplow, noting that the law drafter might lack adequate information to draft *ex ante* rules governing frequently applicable occurring transactions or events.²⁴⁹ Under such circumstances, it is therefore preferable that the content of laws—or, more broadly, the means and tools by which regulatory objectives are to be achieved—be flexible and dynamic.²⁵⁰ Therefore, synthesizing Kaplow and Ford, a highly complex and high-frequency regulatory scenario characterized by regulator–regulatee information gaps is susceptible to neither rules (because of information asymmetries) nor principles (because of the frequently recurring nature of the regulatory encounter), but more likely some mixture of the two. From a new governance perspective, though, this theoretic dilemma is easily remedied by focusing on the ways in which new tools, whether they consist of rules or principles, will achieve regulatory objectives in a flexible and dynamic market.

From a new governance perspective, it is more sensible to refer to many so-called “principles-based” regulatory systems as flexible systems that are open to diverse forms of articulation.²⁵¹ One way to retool governance in these markets is to equip public administrative processes with structural mechanisms to engage in continuous learning and revision, monitoring and error detection, benchmarking, and peer review. An “experimentalist” strain of new governance theorists has emphasized that solutions in new governance regimes are provisional and should remain subject to constant

248. Kaplow, *supra* note 246, at 577.

249. Ford, *supra* note 4, at 36–37.

250. See Ford, *supra* note 244, at 9.

251. See Lobel, *supra* note 221, at 391. Julia Black proposes a “conversational model of regulation” to remedy the inherent uncertainty, indeterminacy, and over- or under-inclusiveness of regulatory rules and principles. See BLACK, *supra* note 23, at 37–44. Professor Black notes that “[i]n conversation, the problems of generalizations and to an extent of open texture can be, and are, resolved by explanation and latitude in interpretation and understanding on the part of those participating.” *Id.* at 38. A conversational model of regulation raises accountability concerns that could be addressed by widening the conversational constituency to include other affected parties. See *id.* at 42–43; cf. Part V.B. The participants in the conversation will then constitute the “interpretive community” that collectively develop the content of regulation. See Black, *supra* note 23, at 37.

revision in light of observed experience. The experimentalist scholars apply insights from management theory and practice to public governance dilemmas.²⁵² For example, the Lamfalussy rulemaking process governing E.U. financial regulation rulemaking provides for mandatory four-year sunset reviews of framework laws, which guarantees that the E.U.'s lawmaking bodies revisit the assumptions of earlier laws.²⁵³ Moreover, the Lamfalussy process requires the E.U. lawmaking authorities to consult repeatedly with so-called Level 3 committees²⁵⁴ comprising financial regulators from the member states.²⁵⁵ The Level 3 committees ensure consistent implementation, supervision, and enforcement of the E.U.-level rules by the member state regulators. One important new governance aspect of the Level 3 committee role is a mandatory peer review of member states' implementation efforts, which forces the committees to evaluate implementation, share information, and even create ad hoc groups to address specific shortcomings.²⁵⁶ In their composite, these peer review interactions permit the identification, on a rolling basis, of best practices and create a forum to exert moral suasion on underperforming member states.²⁵⁷

252. See Dorf & Sabel, *supra* note 211, at 286 (“The immediate instigation of our design for democracy is a series of innovations by private firms that suggest institutional devices for applying the basic principles of pragmatism to the master problem of organizing decentralized, collaborative design and development under conditions of volatility and diversity. The innovations, inspired by organizational breakthroughs in Japan, but no longer limited to Japanese firms or those in close association with them, are a response to markets that have become so differentiated and fast changing that prices can serve as only a general framework and limit on decisionmaking.”); Simon, *supra* note 4, at 6–11 (contrasting the “static optimization” managerial perspective with a “reliability” perspective of managers operating in dynamic industries that is more responsive to uncertainty and, therefore, a better model for financial regulation).

253. See Elliot Posner, *The Lamfalussy Process, Polyarchic Origins of Networked Financial Rule-Making in the EU*, in EXPERIMENTALIST GOVERNANCE IN THE EUROPEAN UNION 43, 47–48 (Charles F. Sabel & Jonathan Zeitlin eds., 2010) (referring to the sunset clauses as “formal recursive mechanism”).

254. The three Level 3 committees are the Committee of European Banking Supervisors (CEBS), the Committee of European Insurance and Occupational Pensions Supervisors (CEIOPS), and the Committee of European Securities Regulators (CESR). See Commission Decision 2009/77, art. 1, 2009 O.J. (L 25) 18, 20 (EC), available at http://www.cesr.eu.org/index.php?page=document_details&from_title=Documents&id=5548; Commission Decision 2009/78, art. 1, 2009 O.J. (L 25) 23, 25 (EC), available at <http://www.c-eb.org/Aboutus.aspx>; Commission Decision 2009/79, art. 1, 2009 O.J. (L 25) 28, 30 (EC), available at <http://www.ceiops.eu/media/files/aboutceiops/EC-Decision-2009-79-EC-establishing-CEIOPS.pdf>.

255. See Posner, *supra* note 253, at 47.

256. See *id.* at 55.

257. Cf. Dorf & Sabel, *supra* note 211, at 350–53 (theorizing a rolling best practice

While Europe has been more creative in making use of experimentalist best practice and continuous learning regimes in the financial regulatory arena, U.S. regulators have recently demonstrated a greater openness to these alternatives. For example, in October 2009 the Federal Reserve announced a proposed supervisory initiative to conduct a horizontal review of compensation practices of twenty-eight “large, complex banking organizations” (LCBOs).²⁵⁸ The announcement listed several principles that the Federal Reserve expects will guide LCBO compensation practices.²⁵⁹ The policies implemented by LCBOs in response to the listed guiding principles will become subject to the ongoing safety and soundness review by Federal Reserve personnel.²⁶⁰ The Federal Reserve set forth a broad set of principles and left the articulation of the specific policies to the discretion of the LCBOs. As LCBO compensation practice evolves, the Federal Reserve will be able to identify best practices and establish them as benchmarks, and then press the lagging LCBOs during supervisor reviews to update compensation in light of their more innovative competitors.²⁶¹ Here we see an oft-overlooked attribute of transparency: not only does it enhance democratic legitimacy, it is also a learning device.²⁶² As firms and regulators learn more on a rolling basis, the regulatory landscape can and should adjust.

Another recent example of open articulation of law in the financial arena is the U.S. insurance regulators’ move to a “principles-based reserving” regime according to which life insurers will be able to estimate their liabilities with respect to policy and annuity reserves based in part on company specific experience and the results of internal stochastic models.²⁶³

environmental regime that would require firms to ramp up environmental standards to meet the industry best practices, and explaining how such a regime would result in significant innovation as market participants would aim to out-innovate competitors, which would be saddled with additional expenses to ensure compliance with constantly evolving best practice standards); *id.* at 345 (“The chief purposes of administrative agencies in democratic experimentalism are . . . to set—again by a variation of benchmarking—regulatory standards for market actors; and to undertake such changes in their own activities and organization as cumulative self-scrutiny indicates will further these purposes.”).

258. Proposed Guidance on Sound Incentive Compensation Policies, 74 Fed. Reg. 55,227, 55,229 (Oct. 27, 2009).

259. *Id.* at 55,232–38.

260. *Id.* at 55,238.

261. *See id.* (“The review is designed to . . . [among other things, i]dentify emerging best practices through comparison of practices across organizations and business lines.”). Additionally, the guidance itself is open-ended: the Federal Reserve commits to “update this guidance as appropriate to incorporate best practices as they develop over time.” *Id.*

262. *See* Sabel & Simon, *supra* note 234, at 1072 (“Transparency is both an accountability norm and a learning device.”).

263. *See* Elizabeth K. Brill et al., *Modernization of U.S. Insurance Regulation: Principles-Based*

The Model Standard Valuation Law, some form of which is in effect in nearly all U.S. states, is based on a legislative model that has not changed for over 150 years. The “principles-based reserving” reform will allow the valuation of liabilities to evolve with advances in mortality risk modeling technology and in consideration of a firm’s experience when reserving for its own products.

B. Normative New Governance: Pro-Regulation, but Beware of Legitimacy Challenges

There is a normative pro-regulatory implication of new governance, and its techniques are instrumental tools to be deployed to achieve legitimate policy objectives. However, the tools of new governance pose significant normative challenges for governance stakeholders. Lester Salamon has referred to the “legitimacy challenge”²⁶⁴ posed by new governance. According to the traditional conception of regulation, there is a trade-off between flexibility and legitimacy.²⁶⁵ Increased private involvement in governance risks blocking the channels through which democratic legitimacy flows. Professor Orly Lobel describes the legitimacy challenge as follows: “A . . . challenge posed by the shift to a [new] governance model is striking a balance between the value of direct participation and the need for a high-quality representative democracy.”²⁶⁶ We have seen above in Part V.A.1 how retention of a benign big gun presence reinforces legitimacy, but what bulwarks protect the state from excessive influence by nonstate actors? It is here in the discussion of legitimacy that the danger of capture arises: if

Reserving for Life Insurers, 3 DEBEVOISE & PLIMPTON FIN. INST. REP. 1, 3–5 (2009).

264. See Salamon, *supra* note 211, at 38. Salamon also describes the “accountability challenge” and the “management challenge.” I read Salamon’s legitimacy challenge as, at bottom, a more radical version of the accountability challenge, as it goes to the compatibility of the new governance regime with our current system of government. Cf. Edward Rubin, *The Myth of Accountability and the Anti-Administrative Impulse*, 103 MICH. L. REV. 2073, 2073, 2121 n.138 (2005) (distinguishing between accountability—“the ability of one actor to demand an explanation or justification of another actor for its actions and to reward or punish that second actor on the basis of its performance or its explanation”—and legitimacy, which “refers to the acceptability of a political regime in its entirety”); Jerry L. Mashaw, *Accountability and Institutional Design: Some Thoughts on the Grammar of Governance*, in PUBLIC ACCOUNTABILITY: DESIGNS, DILEMMAS AND EXPERIENCES 115, 120–22 (Michael W. Dowdle ed., 2006) (referring to legitimacy concerns, under Rubin’s definition, as questions of “legal accountability”).

265. Michael C. Dorf & Charles F. Sabel, *Drug Treatment Courts and Emergent Experimentalist Government*, 53 VAND. L. REV. 831, 837 (2000) (“[E]mergent experimentalist bodies . . . point the way beyond a parallel dilemma that has long been taken to be a defining feature and limit of bureaucratic administration, the conflict between accountability and the flexibility required for effectiveness.”).

266. Lobel, *supra* note 221, at 453.

the administrative state can be captured under the traditional regulatory model, should we be all the more cautious that regulatees will use new governance as a Trojan Horse through which to achieve further agency capture?

Regulators need to be concerned not only with direct capture, but also with subtler, but related, threats to legitimacy. Professor Lobel describes one such danger as the risk that a new governance measure, because of its emphasis on ground-level information gathering from a larger array of stakeholders, will internalize the “illusion of information and transparency—that the information age, through its own mechanisms, can solve all problems.”²⁶⁷ Lobel warns in particular against the dominion of economic expertise, which, due in part to its putative quantifiability and quasi-scientific qualities, might come to dominate a new governance lawmaking process. The nonstate actors with the best access to, and the greatest ability to process and present, information might be expected to exert disproportionate influence over the information-based policymaking process.²⁶⁸ In reality, power, in both direct and hegemonic manifestations, is inevitably enmeshed in decisions about which information to credit, and how to organize information. The challenge, then, is to ensure that substantive policy deliberation still occurs (thus ensuring a proper democratic exercise of public power), and that the regulatory exercise is not reduced to the stamping of a state imprimatur on policy prescriptions based solely on data presented by particular interest groups. A related danger arises when a financial market adopts an idea, method or innovation purporting to streamline a process, or improve a matter of regulatory concern, that becomes “branded” such that its recurrent use is considered by stakeholders to be an authentic improvement. In financial market regulation, this “branding” phenomenon is likely to be most parlous during periods of rising asset prices and corporate profitability, when, to borrow Robert Shiller’s phrase, “social contagion” attenuates counterparty market discipline²⁶⁹ and regulators are eager to avoid conflict. There may even be

267. *Id.* at 455. Professor Lobel describes the “illusion of information and transparency” as possessing two components: “[f]irst, it elides the tension between the desire of a society to radically disperse decisionmaking” and the existence of qualified experts capable of making meaningful decisions; and second, it adopts the misguided notion that the more information that is disclosed and circulated, the higher the likelihood that stakeholders will converge on a single position.

268. Similarly, Professors Dorf and Sabel warn against the danger that underperforming entities might propose performance measures that “conceal more than they reveal,” in order to obstruct the proper functioning of an experimentalist benchmarking system. *See* Dorf & Sabel, *supra* note 211, at 348.

269. *See* ROBERT J. SHILLER, *THE SUBPRIME SOLUTION: HOW TODAY’S GLOBAL FINANCIAL CRISIS HAPPENED, AND WHAT TO DO ABOUT IT* 51–55 (2008) (discussing social

psychological tendencies to develop unconscious biases that privilege knowledge systems—such as those embedded in the new financial code—that purport to normalize and assimilate events and data that are in fact unexpected and unpredictable.²⁷⁰ If the human mind abhors an authentic encounter with uncertainty, we should be skeptical of crediting knowledge systems that tend to minimize uncertainty. The legitimacy challenge deepens further as financial regulators, believing markets to be self-correcting or relying on limited information, allow product innovation to proceed until a problem, along with the institutions involved in its production, becomes “too big to fail.”²⁷¹ While not forms of capture in a strict sense, these risks can be thought of as a sort of soft, hegemonic capture whereby agencies behave as if captured without any direct expenditures by regulatees.

Nevertheless, as noted above, the New Deal-era formula of prescriptive rules drafted *ex ante* and issued *ex cathedra* will likely be ineffective to achieve stated regulatory objectives in a dynamic and complex market environment. This is certainly true with respect to the complexity paradigm of contemporary financial markets. We have seen above in Part II.B how complex financial innovation resulting from technology, globalization, and increased competition rendered the crude risk buckets of the initial Basel Accord arbitrary nearly from the outset. Certain activities have become too complex to be regulated or supervised by goal-pursuing regulators, no matter how expert; they will almost always be behind the curve.²⁷² Moreover, even if regulations could be drafted with requisite precision, bureaucratic slippage in an environment with little margin for error (because in complex systems, small differences often make worlds of difference) would frustrate regulatory objectives.²⁷³ As a result, it is to some degree inevitable that those regulators charged with supervision of complex

contagion phenomenon in financial markets).

270. Simon, *supra* note 4, at 4–5.

271. See Kenneth C. Kettering, *Securitization and Its Discontents: The Dynamics of Financial Product Development*, 29 CARDOZO L. REV. 1553, 1670 (2008) (“[A] financial regulator dealing with a product ‘too big to fail’ will tend to behave in much the same way as it would if it had been captured by the firms invested in the product . . .”).

272. See Trubek & Trubek, *supra* note 216, at 542 (“[A]s society becomes more complex and problems harder to solve, there is a need for more experimentation. Because stakeholders often have the requisite knowledge [to solve problems], increased participation becomes not only desirable, but also necessary.”).

273. See, e.g., William R. Freudenburg & Robert Gramling, *Bureaucratic Slippage and Failures of Agency Vigilance: The Case of the Environmental Studies Program*, 41 SOC. PROB. 214, 214 (1994) (defining “bureaucratic slippage” as “the tendency for broad policies to be altered through successive reinterpretation, such that the ultimate implementation may bear little resemblance to legislated or other broad statements of policy intent.”).

regulatees operating in complex markets will turn to nonstate actors who are actually “on the ground” to supplement their understanding of the regulated market.²⁷⁴

The tripartite model of new governance can erect structural bulwarks against the risk that a regulator is captured by a regulatee that has been invited into a new governance process. The “social dialogue,” HCP, and reg–neg examples discussed above contemplate a tripartite model involving some participation from third-party interest group organizations in addition to regulators and regulatees.

Wisconsin’s Green Tier environmental program provides another example of a tripartite new governance structure. The Green Tier allows qualifying firms to “opt out” of much of the command-and-control framework, including the permitting process.²⁷⁵ A firm is eligible if it (1) constructs and commits to an “environmental management system” (EMS) self-regulatory regime that, in the estimation of state clean air and water regulators, is functionally equivalent to an ISO-certified system²⁷⁶ and (2) presents a plan that will ensure “superior environmental performance.”²⁷⁷ Green Tier firms are permitted to tailor their own solutions, embodied in the EMS, to regulatory objectives, and enter into a “participation contract” with the state environmental regulator that may specify certain derogations, on a case-by-case basis, from the command-and-control regulatory regime.²⁷⁸ The Green Tier program contemplates including third-party interest group organizations directly in the regulatory contract negotiation process (with appropriate rights of action against the regulatee)²⁷⁹ and the formation of the Green Tier advisory committee comprised of academics, municipal government officials, and representatives from industry and environmental groups.²⁸⁰

274. While the focus of this Article is on contemporary financial complexity, complexity is hardly a uniquely financial phenomenon. The factors impacting the complexity of financial markets (e.g., globalization, competition, technology) underlie analogous processes in other industries and cultural contexts.

275. See Trubek & Trubek, *supra* note 216, at 558.

276. See WIS. STAT. § 299.83(1)(dg) (2009).

277. *Id.* § 299.83(5)(d). “Superior environmental performance” is defined as “performance that results in measurable or discernible improvement in the quality of the air, water, land, or natural resources, or in the protection of the environment, beyond that which is achieved under [extant] environmental requirements.” *Id.* § 299.83(1)(g).

278. WIS. STAT. § 299.83(6)(j) (“The department shall ensure that the incentives provided under a participation contract are proportional to the environmental benefits that will be provided by the participant under the participation contract.”).

279. WIS. STAT. § 299.83(1)(e).

280. Wisconsin Department of Natural Resources, Green Tier Advisors, <http://dnr.wi.gov/org/caer/cea/environmental/advisors/index.htm> (last visited July 4,

The involvement of third-party stakeholders such as public interest groups to supervise and contribute to regulatory compliance enhances the legitimacy and effectiveness of a broad participatory regime and minimizes the risks of capture.²⁸¹ Provided they are adequately resourced and deputized, these groups may improve governance in many other respects, including (1) contributing more constitutively in a dialogic governance process, rather than in a confrontational *ex post* litigation capacity;²⁸² (2) increasing the knowledge base on which policy is made by bridging information gaps and providing additional perspectives to be considered; (3) eliminating the risk of soft capture, whereby administrative agencies are captured without any lobbying expenditures on the part of regulatees;²⁸³ and (4) embedding in governance participation a counterweight to well-organized constituencies that more effectively mobilize political support, thereby enhancing policy from a republican standpoint as well. These groups become part of an “interpretive community” that collectively develop the content of regulation.²⁸⁴

Such open participation of, and communication with, third-party interest groups not only polices the regulator–regulatee relationship, it also provides incentives for those groups’ representatives to remain faithful to the stated mission. In a regime characterized by confrontation and litigation, these groups often resort to pursuing symbolic, rather than tangible, rewards, especially when their constituency is diffuse and tangible rewards are only obtained with great difficulty.²⁸⁵ When the stakes and results of the regulatory process are open, it becomes more difficult to justify symbolic victories to represented constituencies. It goes without saying that not every group organized as “Citizens for X” is characterized by unbending fealty to X. It is therefore important that the public agency acts as a gatekeeper, inviting to the governance game only regulatees and

2010).

281. See generally AYRES & BRAITHWAITE, *supra* note 225, at 54–100 (elaborating a theory of tripartite governance involving regulators, regulatees, and third-party public interest groups).

282. See *id.* at 91–92 (“[F]ace-to-face negotiation will often transform confrontational disputes into accommodative encounters where the concerns of the other are internalized.”); cf. Dorf & Sabel, *supra* note 211, at 349 (“[T]here are some first signs that advocacy groups are in fact realizing that they have more to gain by participating in decentralized problem solving than by using strong-arm techniques to set limits on centralized decisions.”).

283. See AYRES & BRAITHWAITE, *supra* note 225, at 79–80, 90.

284. BLACK, *supra* note 23, at 30–37.

285. See MURRAY JACOB EDELMAN, *THE SYMBOLIC USES OF POLITICS* 4, 22–43 (1985) (explaining how unorganized political groups can provide “symbolic reassurance” to their constituencies more reliably than tangible benefits for when aggregate political promises diverge from actual possible allocations).

authentically representative third-party interest group organizations.²⁸⁶

C. Internal Capital Models as Flawed New Governance

By studying the causes of regulatory reforms, we can understand their objectives and assess their effectiveness as regulatory tools. In the case of Basel II and the CSE Program, internal models were included in the capital adequacy framework as a response to growing complexity that amplified the mismatch between asset portfolios and the *ex ante* system of risk weights embodied in the initial Basel Accord. Part II.B.3 described the integration of internal market risk and credit risk models into the Basel II capital adequacy regime as an attempted response to increased complexity in banking institutions. In Part III, the adoption of the CSE Program for large U.S. investment banks was explained in part as a similar response to complexity. The internal models approaches to capital adequacy possess attributes of new governance initiatives, especially power-sharing, enhanced stakeholder participation, and flexible and dynamic lawmaking. They also retain a benign big gun in the form of residual command-and-control authority. However, as currently formulated, the utilization of internal models in capital adequacy regulation fails to address adequately the legitimacy challenges of new governance programs.

1. Enhanced Power-Sharing and Increased Participation, a Benign Big Gun, and Dynamic and Flexible Lawmaking

Each internal models approach involves increased participation of and power-sharing with regulatees. The capital charges for risks incurred are set by reference to criteria generated by the firms themselves. In the case of Basel II, the regulator provides the formula and the regulated banks furnish their own internal estimates of the credit risk inputs, and permits banks to calculate market risk and organizational risk on their own. Similarly, the CSE Program, which measures market risk, permits banks to utilize their own market risk calculations. Both Basel II and the CSE Program share power and enhance governance participation vertically by harnessing the information to which bank groups, but not regulators, have traditionally had access in order to address a complex regulatory objective.²⁸⁷ The

286. This tripartite mode of governance is surely more natural to those familiar with the European socio-legal order, with its rich history of social dialogue among institutions representing wide spectra of workers and employers, which antedates the development of the E.U. social dialogue governance discussed above by several decades.

287. See Cannata & Quagliarello, *supra* note 63, at 11 (“[S]ince the identification of the adequate combination of capital and risk is not an easy task and financial markets and products are increasingly complex, it is reasonable that any assessment starts up with the

“Basel Brand” of regulation is also characterized by an emphasis on the cross-learning that occurs as a result of enhanced regulator understanding of how regulatees actually operate. In this respect, Basel II invites comparison with cross-learning resulting from stock investments from capital-rich developing jurisdictions in sophisticated and complex financial institutions in capital-importing jurisdictions.²⁸⁸

In addition, the internal models approach introduces significant flexibility into the capital adequacy regime by aligning the capital charges in a more risk-sensitive manner with the dynamic asset portfolios of contemporary financial institutions. The models are plastic and may be adjusted to reflect market experience or results of model backtesting. The SEC hailed the CSE Program for its ability to “monitor for *and act quickly in response to* financial or operational weakness in a CSE holding company or its unregulated affiliates that might place regulated entities, including U.S. and foreign registered banks and broker dealers or the broader financial system at risk.”²⁸⁹ For a firm operating under Basel II’s IRB approach, lead risk managers at the firm will be able to adjust the model assumptions directly through channels of corporate authority, rather than wait for a cumbersome notice-and-comment rulemaking or similar proceeding at the administrative level. Under Basel II, regulators are more concerned with process of model updating than the substantive details of any particular model. For instance, banking groups using the IRB approach must ensure that their models’ inputs are used in the business operating units, and that results of backtesting models are incorporated into the models. As a process-oriented reform, the internal models approach recalls Lester Salamon’s observation that new governance initiatives reconceptualize regulators as procedural arrangers seeking to achieve regulatory objectives.

Each reform also adopts, to varying degrees, a benign big gun approach. The Basel Committee only permits firms to utilize internal models to set their capital adequacy requirements if they meet, both initially and on an ongoing basis, certain qualitative and quantitative criteria. Moreover, bank

evaluation made by the intermediaries themselves.”).

288. Cf. Katharina Pistor, *Banking Reform in the Chinese Mirror* 13–14, (Colum. L. & Econ., Working Paper No. 354, 2009), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1446930 (“[B]ehavioral change is more likely to be achieved by engaging individual actors in the process of change rather than confronting them with new policy guidelines enshrined in formal law—in the development of which they did not take part.”).

289. *The Industrial Bank Holding Company Act of 2007: Hearing on H.R. 698 Before the H. Comm. on Financial Services*, 110th Cong. 15 (2007), available at <http://www.sec.gov/news/testimony/2007/ts042507rc.htm> (statement of Robert Colby, Deputy Dir., Market Regulation, SEC) (emphasis added).

regulators provide Basel II's credit risk formulae, which neatly circumscribe the authority of regulatee banks to set their own credit risk capital charges. Required backtesting for market risk VaR models with step-ups in capital charges for underperforming models similarly ensures a continuing regulator presence. In certain respects, the CSE Program, while increasing regulatee participation and power-sharing, also ramped up regulator involvement in U.S. investment banks by, for example, submitting them to consolidated supervision and requiring consent to SEC examination of all affiliates, regular reporting requirements to SEC, and mandatory provision of reports filed by affiliates subject to inspection by other regulators. Overall, though, the SEC's authority and resources to police the new governance aspects of the CSE Program proved disastrously inadequate.²⁹⁰ Due to its abdication of effective enforcement, the CSE Program straddles the line between new governance and deregulation.

In summary, the internal models approach in theory holds potential for finally bridging the information gaps that impede regulatory understanding of firms' risk profiles. It also might foster a more collaborative relation between regulators and regulatee firms, and minimize the tendency for firms to resort to capital arbitrage.²⁹¹

2. *Internal Models and Normative Challenges to Legitimacy*

The limitations of using statistical models from the new financial code as tools to measure risk are manifold and well-documented,²⁹² but their main *inherent* limitation is their inability to locate an *ex ante* data set from which reliable conclusions may be drawn as to the probability and impact of future events, particularly large impact events.²⁹³ In other words, a predictive statistical model is necessarily self-referential, so it is incapable of supporting inferences with respect to future "fat-tail" phenomena, certain

290. See Coffee & Sale, *supra* note 187, at 741–44 (pointing out that the SEC assigned only three staff to each CSE firm and that the SEC technically lacked the basic authority to order a firm to increase its debt-to-equity ratio).

291. See *supra* notes 20 and 23 and accompanying text.

292. Note that VaR-type models pose additional challenges unrelated to their accuracy as risk measurement tools, such as the so-called VaR negative feedback loop, which occurs when declines in an asset's price cause firms utilizing modeling technologies to sell off that asset, exacerbating the downward pressure on the asset price as all firms attempt to sell.

293. See, e.g., Nassim N. Taleb, *Common Errors in Interpreting the Ideas of The Black Swan and Associated Papers*, N.Y.U. POLY INSTITUTE (2009), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1490769 (bemoaning what Taleb calls the "ludic fallacy": namely, that statistical models assume a probability structure similar to closed games with a priori known probability when they often lack sufficient data from which to construct a probability distribution in the first place).

of which may lack any historical precedent data at all.²⁹⁴ The importation of statistical “certainty” into complex phenomenon like contemporary financial markets is especially problematic. Some have suggested that induction, and even cause-and-effect relationships, are unintelligible in certain complex environments characterized by circularity, self-referentiality, and unpredictability.²⁹⁵ Asset and credit markets, in short, are not like coin flips.²⁹⁶

Moreover, all VaR models have mechanical limitations. Consider as an example the MRA internal models approach, which permits banks to use VaR models based on whatever simulations they prefer.²⁹⁷ Banks may choose among so-called historical simulation, Monte Carlo simulation, and variance-covariance techniques to measure VaR.²⁹⁸ A key assumption of the variance-covariance technique is a normal distribution of financial market returns, which is not only empirically false,²⁹⁹ but false with respect to arguably the primary justificatory purpose of the capital charge: namely, to ensure that banks had a capital buffer to withstand low-probability adverse developments (including, most importantly, non-normally distributed fat tail events). Though historical simulations have the advantage of avoiding the assumption of a normal distribution of returns, two significant problems exist with their use: first, accuracy is a function of the sampling period; and second, limiting inputs to historical data necessarily assumes that future extreme return distributions will not exceed

294. Cf. RICCARDO REBONATO, *PLIGHT OF THE FORTUNE TELLERS: WHY WE NEED TO MANAGE FINANCIAL RISK DIFFERENTLY* 252 (2007) (questioning utility of a 99.9 percentile confidence interval for one-year loss because of a lack of sufficient data points for 1000-year events from which patterns might be drawn); Ford, *New Governance in the Teeth of Human Frailty*, *supra* note 4, at 49 (discussing “Knightian uncertainty [as] a breeding ground for pathologies in decision making and human conduct”).

295. Taleb, *supra* note 293, at 5–6. A similar point is made with respect to the impossibility of actuarially pricing risks for purposes of setting risk-based deposit insurance premiums: “The risks of an ‘extreme’ event, in the form of a banking crisis resulting in massive losses to a deposit insurance fund, defy the sort of probabilistic quantification based on experience that insurers conduct to anticipate losses from insured events. In the face of this uncertainty, an insurer cannot calculate the resources it may need and thus cannot price efficiently.” TARULLO, *supra* note 14, at 26.

296. See Emanuel Derman, *Models*, 65 *FIN. ANALYSTS J.* 28, 32 (2009).

297. 1996 MARKET RISK AMENDMENTS, *supra* note 146, at 44.

298. *Id.*

299. See GOODHART ET AL., *supra* note 15, at 80 (“[I]t is now well known that financial market returns are only imperfectly described by the normal distribution. In particular, the empirically observed frequency distributions have fat tails, i.e. large market movements occur more often than predicted by the normal [distribution].”); Shahin Shojai & George Feiger, *Economists’ Hubris—The Case of Risk Management*, 28 *J. FIN. TRANSFORMATION* 27, 32 (2010), available at <http://www.ssm.com/abstract=1550622>.

historical extremes.³⁰⁰

Using internal models for regulatory capital adequacy purposes poses incentive-related problems as well. In the years leading up to the subprime credit crisis, most firms' internal models had not addressed the possibility that house prices might decline.³⁰¹ This methodological error might not be casual; it is precisely the method one might expect a bank, cognizant of the safety net it enjoys, to take.³⁰² The bank's model allows the bank to participate fully in the rising tide of financial profits. This recalls Professor Steven Schwarcz's discussion of systemic risk as a tragedy of the commons problem: because the benefits of exploiting finite capital allocations accrue disproportionately to financiers performing the allocation and the costs fall onto the broader class of users of finance, financiers lack sufficient incentives to internalize the externalities and their misjudgment of risk might cost the real economy in the long run.³⁰³ To adapt the infamous phrase of former Citigroup CEO Chuck Prince, "If the music is still playing, the capital model will be made to dance." Finally, this point on the incentive structure of banks applies on an intra-firm basis as well: profit center units have little interest in accurate risk profiling of activities that are likely to yield greater compensation.³⁰⁴

300. GOODHART ET AL., *supra* note 15, at 82. On the other hand, adopting a longer-term observation period would include more data observation points, but would be unavailable for certain standard risk factors (if the risk factor has developed recently) and increase the likelihood that a return distribution has changed in recent periods, which could lead to biased VaR estimates. *See id.* at 79.

301. *See, e.g., Testimony Before the Financial Crisis Inquiry Commission Hearing on the Financial Crisis* (2010) (statement of J. Kyle Bass, Managing Partner, Hayman Advisors, L.P.), available at <http://www.cspan.org/Watch/Media/2010/01/13/HP/A/28382/Financial+Crisis+Inquiry+Commission++Day+One.aspx>.

302. Note that one need not maintain that banks were engaging consciously in fraudulent, "heads I win, tails you lose" behavior vis-à-vis taxpayers to ascribe to this theory. There may be a psychological bias in favor of unrealistic modeling assumptions. *See supra* note 270 and accompanying text. Credit rating agencies played an important role in the subprime credit crisis by providing a veneer of credibility to the models' predictions. Even the Federal Reserve, as late as 2006, claimed that, notwithstanding historical price trends, the housing bubble was not worrisome because housing prices always tracked income growth (despite the fact that mortgage loan growth, which inevitably flowed through to housing prices, doubled that of GDP growth). *See Testimony Before the Financial Crisis Inquiry Commission Hearing on the Financial Crisis*, slide 3 (2010) (statement of Michael Mayo, Managing Director, Caylor Securities), available at <http://www.cspan.org/Watch/Media/2010/01/13/HP/A/28382/Financial+Crisis+Inquiry+Commission++Day+One.aspx> (documenting 8%–21% loan growth in all real estate sub-sectors and 4.5% GDP growth, in each case during the 2000s).

303. *See* Steven L. Schwarcz, *Systemic Risk*, 97 GEO. L.J. 193, 206 (2008).

304. *Cf.* TARULLO, *supra* note 14, at 101 ("The various bank divisions had little interest in promoting clear and well-developed risk profiles of their activities, since this might mean

For present purposes, it suffices to note that the inherent limitations of modeling technologies are present in all their uses, and the high-impact events against which we should guard most cautiously will almost never be susceptible to financial modeling. It is therefore imperative that any regulatory use of internal models is undertaken with full knowledge of these inherent limitations and a healthy dose of skepticism.

Notwithstanding the positive new governance attributes discussed above in Part V.C.1, the extant regulatory structures within which internal models are put to use present normative challenges typical of new governance reforms that accentuate the models' inherent limitations. The retention of a benign big gun attenuates the immediate danger of outsourcing an important policy objective to largely self-interested regulatees. However, relying on effective supervision of internal models' adequacy opens up possibilities of literal or soft capture, especially with respect to bank regulators (like those in the United States) that are funded by assessments and fees from their regulatees.³⁰⁵ The adoption of a new governance technique in response to financial complexity raises challenges to legitimacy and effectiveness, particularly with the forms of soft capture discussed above in Part V.C. As discussed above in Part II.B.3.i, that very complexity was facilitated by sophisticated technological code that is treated in Basel II and the CSE Program as the solution to the complexity problem.

Regulators resorted to internal models because there was no competing method to bridge the information asymmetry between banks and regulators. Banks tightly guard their proprietary risk models, which constitute a significant store of value for risk-intermediating financial institutions. When a single group of stakeholders offers to bridge a wide information deficit through introduction of a new governance technology relying on proprietary information or methods, the challenge to effective policymaking and democratic legitimacy is acute. Recalling Lobel's warning against the "illusion of information" (i.e., that privileged access to

more constraints on the very activities that—at least in the short term—were most likely to yields the highest profits.”); Steven L. Schwarcz, *Regulating Complexity in Financial Markets*, 87 WASH. U. L. REV. 211, 224–25 (2009) (describing how risk management personnel had incentives to allocate assets to achieve low VaR estimates, notwithstanding the gradual build-up of massive fat tail risk that was not taken into account in the VaR model). In this context, it is also noteworthy that though most large financial groups had risk committees on their boards of directors, outside audits of risk management function (as opposed to the financial statements and internal controls functions) is not required. See Fanto, *supra* note 73, at 744–45.

305. See Arthur E. Wilmarth, Jr., *Cuomo v. Clearing House: The Supreme Court Responds to the Subprime Financial Crisis and Delivers a Major Victory for the Dual Banking System and Consumer Protection*, in *THE PANIC OF 2008: CAUSES, CONSEQUENCES AND IMPLICATIONS FOR REFORM* 20, 23 (Lawrence E. Mitchell & Arthur E. Wilmarth, Jr. eds., forthcoming 2010).

and processing of information, especially economic information, can compromise new governance initiatives), the resort to internal risk models raises this unique danger of regulatee-controlled economic information in the form of the new financial code.³⁰⁶ The danger is that this information will foster an unjustified perception of safety and soundness due to its putative quantifiability. When David Li, a J.P. Morgan researcher, published a paper in 2000 using a statistical technique known as the Gaussian copula model to measure default correlation among corporate bonds underlying a CDO, he dramatically enhanced bankers' confidence in their ability to quantify the risks associated with each CDO tranche.³⁰⁷ As bankers relied more and more on Li's method, they unwittingly created a new systemic correlation risk: if the model contained a faulty assumption, the effects of the error would be amplified considerably because all market participants would suffer losses. Li himself said of his model: "The most dangerous part is when people believe everything coming out of it."³⁰⁸

Moreover, the SEC's uncritical adoption of the Basel Brand in the CSE Program further compromises the legitimacy of resorting to internal models to calculate capital requirements, inasmuch as regulators proved to suffer from the same social contagion as market participants, perhaps stoked by biases that encouraged the use of internal models that purported to minimize uncertainty.³⁰⁹ Even where inherently skeptical regulators attempt further inquiry into a model's assumptions, a desire to avoid conflict will frequently inhibit effective supervision when the political cost of dissenting from the Basel Brand is high, as occurs during periods of rising asset prices, returns, and risks. The discussion in Part II.B.3.i.b regarding regulators' largely uncritical embrace of banks' ability to understand risk exemplifies the social contagion problem.

Finally, as noted above in Part V.C, financial technologies are vulnerable to "too big to fail" dynamics where regulators behave as though they have been captured. First, the rapid proliferation of internal models created a path dependency in that they became too important to bank competitiveness and to look to any other risk gauge could constitute a disruption of bank business that could pose systemic risks. The models themselves had become "too big to fail" and no other method of bridging the information asymmetries was feasible. Second, on an ongoing basis, the procyclicality of using VaR models to compute capital requirements

306. See Lobel, *supra* note 221, at 455.

307. GILLIAN TETT, FOOL'S GOLD: HOW UNRESTRAINED GREED CORRUPTED A DREAM, SHATTERED GLOBAL MARKETS AND UNLEASHED A CATASTROPHE 120-21 (2009).

308. *Id.* at 122.

309. See *supra* note 270 and accompanying text.

heightens the regulatory stakes: if regulators or other stakeholders do not recognize mismatches between modeled risk and actual risk at an early stage, regulators might be tempted to “forbear” prompt corrective action until the next administration so as to forestall a painful contraction of credit (in the process exacerbating its inevitable effects).³¹⁰

While no comprehensive empirical study has been conducted to date, it is safe to say these problems are not merely theoretical. In the years leading up to the recent subprime credit crunch, large international commercial banking groups had, for the most part, not transitioned fully to an internal model approach for capital adequacy purposes, though U.S.-based investment banks were subject to the CSE Program. U.S. commercial bank regulators adopted the IRB approaches in December 2007, but the final rule provided for: (1) a minimum sixty-day period of review of a bank’s implementation plan; (2) a four-quarter “parallel run” period, during which a bank was required to comply with all of the IRB prerequisite criteria; and (3) a minimum of three four-quarter “transitional floor” periods before which a bank could transition to a “stand alone” IRB approach.³¹¹ The earliest a U.S. banking group can fully transition to the IRB, then, is April 2012. U.S. commercial banks—but not investment banks—were, however, operating under 3%–4% leverage ratio constraints under FDICIA. European banks were subject to Basel II effective January 2008, well after the credit crisis was a foregone conclusion. Since Basel II was not in effect in the U.S. commercial banking sector, it can hardly be blamed for the capital collapse during the subprime credit crunch. However, the losses suffered by the industry lay some blame on the modeling technologies on which Basel II is based, inasmuch as they failed to understand the risks involved.³¹²

In 2006, Tim Geithner, then-president of the Federal Reserve Bank of New York, ordered a review of how well large banks measured their ability to withstand a severe market downturn; the results were not encouraging, as firms were failing to account for worst-case scenarios in their models.³¹³

310. Forbearance by regulators during the late 1980s contributed to the thrift debacle of the early 1990s. See William K. Black, *Why Is Geithner Continuing Paulson’s Policy of Violating the Law?*, HUFFINGTON POST, Feb. 23, 2009, http://www.huffingtonpost.com/william-k-black/why-is-geithner-continuin_b_169234.html (“[FDICIA]’s premise was that regulatory discretion led to cover-ups of failed banks and excessive losses to the taxpayers.”).

311. Risk-Based Capital Standards: Advanced Capital Adequacy Framework—Basel II, 72 Fed. Reg. 69,288, 69,300–01 (Dec. 7, 2007) (to be codified at 12 C.F.R. pt. 325).

312. At present, the models are not publicly disclosed, so it is impossible to individuate with precision the models’ effects.

313. Robert O’Harrow, Jr. & Jeff Gerth, *As Crisis Loomed, Geithner Pressed But Fell Short*, WASH. POST, Apr. 3, 2009, at A1.

In 2005, Swiss bank UBS had already transitioned to Basel II when it decided to pursue aggressively the mortgage securitization business.³¹⁴ UBS's risk management department utilized a model that assumed that the so-called "super senior" risk that UBS retained on its balance sheet in securitization transactions could only lose 2% of its value.³¹⁵ Its Basel II capital requirements plunged and UBS piled on its super senior exposure. By 2007, it had \$50 billion in exposure;³¹⁶ not coincidentally, within two years UBS had booked about \$50 billion in asset write downs and was shored up only by a series of private and public capital infusions.³¹⁷ As Rodge Cohen of Sullivan & Cromwell put it, describing his eleventh-hour sessions with the Federal Reserve and bank executives during the week AIG was nationalized and Lehman Brothers filed for Chapter 11 protection: "If there is a single factor which is the principal source of what has happened, it is the absence of knowledge of how much risk is in the system, and where it was. I think those who were optimistic simply did not realize how much risk was there."³¹⁸ This conclusion implicitly supports the prescription that if regulators are to continue to use internal models in capital adequacy regulation, the current regulatory approaches require modification.

3. Pillar 3's Mandatory Disclosure as an Incomplete Tripartite Governance Response to Legitimacy Challenges

Pillar 3 of Basel II attempts to address soft and direct capture concerns by fostering "market discipline" through disclosure requirements.³¹⁹ Public disclosure transmits information concerning capital positions, risk exposures, and internal models to capital markets participants, other counterparties, and rating agencies, and therefore affects the access to and price of debt and equity capital as well as deposits/premiums. If recipients of the information possess the requisite sophistication to process and understand it, the capital markets can impose discipline on disclosing banks by increasing the cost of capital for, or diverting business from, firms that are perceived to be engaging in riskier activities.³²⁰ In this way, market

314. TETT, *supra* note 307, at 161–63.

315. *Id.* at 162.

316. *Id.* at 242.

317. Goran Mijuk, *Prescription for UBS: Hard Work*, WALL ST. J., Sept. 2, 2009, at C2.

318. FT.com, View from the Top, "Interview with Rodgin Cohen," 2:10–2:50, <http://www.ft.com/cms/8a38c684-2a26-11dc-9208-000b5df10621.html> (last viewed Apr. 14, 2010).

319. The CSE Program did not require any public disclosure relating to internal models and therefore did not address the tension at all.

320. *Cf.* BANKING CRISES, *supra* note 13, at 11–13 (explaining how market participants can create market information sources that complement banking supervision by increasing

responses to banks' uses of internal models would contribute to what Robert Shiller has referred to as a "new information infrastructure" aspiring to "alter[] the social contagion and information cascades that underlie the formation of speculative bubbles."³²¹ In particular, mandatory disclosure concerning the assumptions, mechanics, and backtesting results of internal models would subject the models themselves to outside scrutiny.³²² Provided the disclosure is meaningful, third-party organizations representing stakeholder constituencies affected by allocations of risk capital (e.g., depositors, capital markets investors, consumer credit customers, mortgage loan recipients) could subject the internal models to their own scenarios and tests, altering assumptions where necessary, in order to gauge institution-level risks. Moreover, because these interest groups represent wide arrays of actors, they are well positioned to examine the aggregate assumptions of bank industry capital modeling practices to test for correlations that could pose systemic risks. That is, to the extent that banks and regulators as a group are failing to focus on a particular distributive contingency—because, for example, banks enjoy limited liability and regulators have been captured—an unaffiliated interest group particularly affected by the contingency could test and publish a model assuming an adverse course of events. Such an approach should foster both legitimacy and also the quality of the models.³²³ Third-party surveillance of the internal models represents an attractive tripartite governance solution in which regulators, regulatees, and affected third-party stakeholders collaborate.

A tripartite regime based on mandatory disclosure leaves unresolved the problem of what to do with the disclosed information. Interest groups can run and publish their own tests, modifying assumptions and data sets, but unless they have standing to object to the internal models used by banks, such a regime will rely on regulator suasion. If nothing else, a bevy of ever-skeptical third-party interest groups will raise the stake (the "price") of regulatory capture or forbearance: it will be harder to capture or deceive

information flows to regulators as well as the costs of forbearance, and could even serve as triggers for regulatory intervention).

321. SHILLER, *supra* note 269, at 121.

322. A mandatory disclosure regime should also disrupt intra-firm politics by shifting power away from senior executives and towards risk management personnel, the sole firm constituency with the operational expertise to fulfill the firm function now subject to disclosure. *Cf.* Sabel & Simon, *supra* note 234, at 1078–79 (explaining how a liability determination in a case against a public agency, by mandating enhanced transparency, tends to decentralize power within the agency and empower "lower tier workers" who receive "increased discretion to cope with contingencies with which they are most familiar").

323. *See supra* note 262 and accompanying text.

bank regulators that, in possession of alternative scenario tests, are adequately informed and subject to scrutiny. In most cases, though, the represented third-party interest will be widely dispersed, so it is not reasonable to expect that such interest groups will marshal their resources as effectively as regulated financial institutions to engage regulators in a debate about internal models. Interest groups could be formally deputized with some form of administrative standing to challenge a model's assumptions, or institutionally resourced with public financial support. Credit rating agencies, which have extensive modeling experience and have even begun to incorporate consideration of internal capital models into their financial strength ratings, could be enlisted to review capital models.³²⁴ Provided the banking groups themselves are not funding the rating agencies, the familiar rating agency conflicts of interest would not be expected to hamstring such a system. Alternatively, interest group participation could be formalized by a thirty-day comment period during which groups could submit comments or modifications to a bank's internal models.³²⁵ The bank's regulator would then be required to explain publicly why it did or did not adopt the proposed revisions to the bank's regulatory capital requirement. In this way, capital adequacy regulation would borrow tripartite new governance features from, e.g., reg-neg and the Green Tier Program.

Though Pillar 3's emphasis on disclosure of internal models is a welcome addition to the bank regulatory toolkit, its requirements are at present too limited to foster an authentic tripartism that can credibly protect the capital adequacy regime against legitimacy challenges. As mentioned above, under Pillar 3 banks provide general descriptions of the market risk and operational risk models, and more particularized information concerning the "definitions, methods, data, and assumptions" used in the credit risk

324. Large internationally active bank competitors domiciled in foreign jurisdictions (and their regulators), too, would have incentives to monitor the use of internal models to ensure their local industries are not competitively disadvantaged by lax enforcement in other jurisdictions. While monitoring from other jurisdictions might improve the quality of global banking regulation, it would not necessarily conduce to the public objectives of a particular jurisdiction's bank regulatory apparatus, which is concerned with the safety and soundness of the domestic institutions. In recognition of these cross-jurisdictional conflicts of interest, the Basel Committee has established Accord Implementation Group and a Capital Interpretation Group to foster uniformity in the implementation and interpretation of Basel II. Notwithstanding the domestic focus of regulation, foreign banks and regulators would be expected to contribute to the discussion, and raise the international political costs of domestic regulators endorsing flawed models.

325. *Cf.* Dorf & Sabel, *supra* note 211, at 349 (proposing that "authorizing legislation would confer on aggrieved citizen users a statutory right to participat[e]" in administrative processes resulting in benchmarking and standard setting).

models, subject to the qualification that Pillar 3 “does not require a detailed description of the model in full—it should provide the reader with a broad overview of the model approach, describing definitions of the variables, and methods for estimating and validating” the model inputs.³²⁶ This exception threatens to swallow Pillar 3’s general disclosure rules, as it provides banks with a justification to avoid disclosure of sensitive proprietary information. Pillar 3’s fatal flaw as a tripartite new governance tool is its overemphasis on the proprietary aspect of the models and an underemphasis on their informational aspect.

The current disclosure requirements did not come without protestations from banks, which lamented the required disclosure of confidential and proprietary information.³²⁷ The Basel Committee recognized that any disclosure regime must balance the benefits of increased disclosure against the utility created by protecting proprietary information. According to the Committee, this information, if shared with competitors, “would render a bank’s investment in these products/systems less valuable, and hence would undermine its competitive position.”³²⁸ We have seen earlier how banks’ VaR and other modeling technologies did not merely facilitate the business of banking; they had become part and parcel of the business of banking, and comprised a key competitive asset and repository of value for banking groups.³²⁹ The same is true with the internal models used in setting regulatory capital requirements, which borrowed technology directly from firms’ VaR models. In particular, mandatory disclosure of proprietary models estimating credit risks strikes at the basic value proposition of banks: their effective intermediation between savings and investment. The introduction of widespread statistical modeling (and, as a result, securitization) in the banking business has shifted the focus of credit intermediation from qualitative on-the-ground assessment of debtors’ likelihood-of-repayment to behavioral and economic predictions based on

326. BASEL II DOCUMENT, *supra* note 162, at 235 n.207; *cf.* Agency Information Collection Activities; Submission for OMB Review; Joint Comment Request, 73 Fed. Reg. 4222 (Jan. 24, 2008) (stating that “certain *summary information* would be made available to the public for reporting periods after a bank has qualified to use the advanced approaches for regulatory capital to provide a sufficient degree of public disclosure to market participants”) (emphasis added).

327. *See* Risk-Based Capital Standards: Advanced Capital Adequacy Framework—Basel II, 72 Fed. Reg. 69,288, 69,336 (Dec. 7, 2007) (codified at 12 C.F.R. pt. 325) (noting that some commentators objected because the disclosure requirement would place them at a disadvantage against foreign competitors); *cf.* BASEL II DOCUMENT *supra* note 162, at 228 (stating that sharing proprietary information would seriously affect the value of banks’ products/systems).

328. BASEL II DOCUMENT, *supra* note 162, at 228.

329. *See supra* note 72 and accompanying text.

aggregated pools of debtor data. Statistical models are, in short, *what banks do anymore*. It might be possible to accommodate bank concerns about proprietary interests by embedding modeling software into interactive disclosure interfaces, which would permit other parties to adjust assumptions and parameters to determine the outputs a model would yield. Regulators could require the use of eXtensible Business Reporting Language (XBRL) to present interactive data, much like the SEC currently does for some reporting companies, mutual funds, and rating agencies. The challenge would be to design a compromise XBRL-type disclosure system that neither permits third-parties to deduce proprietary models nor lacks information required to assess a model's performance.

It is at least partially true that mandatory disclosure of risk models will erode competitive position of disclosing banks vis-à-vis two sets of competitors. First, while large U.S. banks are required to adopt Basel II's IRB approach, other jurisdictions offer IRB as an option. As such, mandatory internal model disclosure could impose a regulatory tax on U.S.-based banks. Second, the IRB approach is designed, in all jurisdictions, to apply to large internationally active banks. Accordingly, a free-rider problem might arise as smaller banks adopt modeling technologies developed by larger competitors subject to IRB. A different but related danger arises if large internationally active banks from non-U.S. jurisdictions eschew a disclosure-enhanced Basel II altogether, resulting in social loss through frustration of IRB's new governance attributes.

Notwithstanding these potential costs of enhanced disclosure, the legitimacy challenge, discussed above, poses its own substantial economic costs and democratic deficits. I propose a new emphasis on tripartism through fuller disclosure, on the grounds that third-party interest groups representing other constituencies will (1) discipline banks by subjecting their internal models to enhanced scrutiny, thereby attenuating risks of literal and soft capture, and (2) experiment with new modeling assumptions, techniques, data sources and scenarios to improve the accuracy of the models.

CONCLUSION

New governance theory provides an analytical framework to assess financial regulatory reform initiatives designed to regulate and manage the complex and dynamic networks of risks in which financial institutions put our surplus capital to work. New governance is always oriented around the problem of complexity; it sees in it a source of opportunity, but also danger. It shines light on normative challenges to the legitimacy of efforts to involve regulatees and third-parties more directly in public regulation of complexity, such as heightened risks of literal and soft capture. This Article

poses as a complexity problem the structural dilemma of capital adequacy regulation resulting from the disjoint between its traditional prescriptive risk-weighting approach and the actual risks financial institutions face. Capital adequacy is not unique in this respect; the complexity paradigm of contemporary finance is characterized by widening information asymmetries between regulators and regulatees generally. In the face of dizzying complexity, the tools and methodologies of traditional regulation begin to appear arbitrary. I argue that a new governance perspective addresses this structural dilemma of financial regulation as a problem of regulatory technology: that is, how to harness new modes of interaction between public and nonstate actors without calling into question the legitimacy of public administrative goals?

Like most technologies, new governance tools often have unintended consequences. Basel II's internal models approach, which privileges proprietary interests in new financial code (i.e., the internal models) over an open discussion over the models as tools of public governance, is a case study in the tendency of soft capture to compromise a new governance initiative. In the rush to harness the socially productive financial code, the internal models approach embraces the illusion of information efficiency embodied in the Basel Brand. Future new governance inquiries into financial regulatory reform must focus on soft capture and safeguard against the possibility that, like the internal models approach, in the rush to bridge information asymmetries we adopt a reform that creates more problems than it solves.

Because new governance theory sees complexity as both a source of opportunities and dangers, new governance financial regulatory scholarship should always remain critical of complexity itself.³³⁰ When regulating complex financial systems, the alternative is never between arbitrary regulation on the one hand and deregulation, "voluntary self-regulation," or flawed new governance on the other. Regulators and policymakers need to consider a third alternative: using command-and-control techniques (e.g., maximum LTV ratios, bans on trading activities, central clearing and collateral posting for derivatives) to shape the regulated market dynamics so that regulation is not rendered arbitrary from the outset by rapid and volatile market changes. Depending on the nature of the market's complexity and the soft capture threats posed by new governance techniques, in many cases public objectives (e.g., credit formation with an acceptable risk tolerance) will be more effectively achieved by ramping back complexity itself. In this respect, new governance—as applied to financial regulation—resonates with skeptics of neoclassical economic explanations

330. See *supra* notes 25–27 and accompanying text.

of complexity as an instrumental phenomenon in pursuit of capital arbitrage or customer demands. In the real world, complexity entails significant costs, particularly for the “greater fool,” whether an investor or a regulator, on the wrong end of the information asymmetry.³³¹

331. Cf. JOSEPH STIGLITZ, *FREEFALL: AMERICAN, FREE MARKETS, AND THE SINKING OF THE GLOBAL ECONOMY* 91 (2010).

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