REGULATING RISK AND GOVERNANCE IN BANKS: A CONTRACTARIAN PERSPECTIVE

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In the lead up to the 2007–2008 financial crisis, U.S. banks engaged in systemic, excessive risk taking that drove the economy to the verge of collapse. This Article makes three contributions to understanding how this pandemic of excessive bank risk taking was possible and which policy reforms are desirable to promote more prudent banking conduct.

First, this Article counters the common narrative that blames the crisis on managerial moral hazard. Instead, it focuses on bank shareholders and debtholders, arguing that their distorted incentives drove banks to take excessive risks. Corporate finance theory teaches that debtholders charge higher interest rates in response to the shareholders’ preferences for high-risk, high-return projects. In highly leveraged firms, this incentivizes shareholders, eager to minimize the cost of debt, to seek safe governance arrangements that can commit their firms to sound risk choices. But in the banking sector, deposit insurance and bailouts undermine this balance, causing debtholders to become less sensitive to risk taking. As a result, bank shareholders, shielded by limited liability and unconstrained by debtholder monitoring, rationally support governance arrangements that incentivize risk taking.

This Article’s second contribution is normative: it develops a contractarian approach to bank regulation in order to overcome the distortions that affect bank governance. Under this approach, regulators should assume the

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hypothetical position of bank debtholders in a world without safety nets, and they should discipline banks as debtholders would in such a world. Where debtholders would offer lower interest rates in exchange for safer governance, regulators would offer lower capital requirements and lower deposit insurance premiums while demanding the same governance concessions. By promoting more socially responsible risk taking, this policy reform would add to bank safety and overall economic stability.

Finally, this Article provides a conceptual foundation for designing and implementing safe governance arrangements in banks.
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INTRODUCTION

The events leading up to the banking crisis of 2007–2008 have been extensively publicized.1 Most U.S. banks made huge investments in the highly remunerative subprime market, while disregarding the enormous risks associated with these investments. When those risks finally materialized, they almost drove the U.S. banking system to collapse.2 What is still puzzling, however, is how this was possible. Which failure can explain systematic, excessive risk taking by all of the U.S. banks?

One popular answer points to the failure of bank governance. On this view, rapacious bank CEOs usurped the corporate governance mechanisms that should have protected bank investors from excessive risk taking.3 This usurpation produced a system of skewed incentive schemes, complacent risk managers, and captured boards that allowed a pervasive culture of risk taking to flourish. This narrative, however, reflects an inadequate understanding of corporate governance theory and practice. It does not account for the causal relationship between external and internal governance. External governance is defined here as the pressure of oversight demands and backroom influence exercised by shareholders and debtholders.4 These interactions directly inform

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2 By one estimate, the amount of public money spent to counter the collapse of the banking system approached 80% of U.S. GDP, i.e., about $12 trillion. See Stiglitz, supra note 1, at 110 (citing Mark Pittman & Bob Ivry, Fed’s Strategy Reduces U.S. Bailout to $11.6 Trillion, BLOOMBERG (Sept. 25, 2009, 4:39 PM), http://www.bloomberg.com/apps/news?pid=newsarchive&sid=a3mpIdYuoB0M). More recent sources, however, have suggested that $13 trillion was the maximum level of taxpayer funds that were potentially at risk, and not an actual figure of the losses imposed by the crisis. See Jonathan R. Macey & James P. Holdcroft, Jr., Failure Is an Option: An Ersatz-Antitrust Approach to Financial Regulation, 120 YALE L.J. 1368, 1414 n.134 (2011).

3 See sources quoted infra at note 93.

4 Shareholder and debtholder governance can be grouped together as external disciplinary forces coming from capital markets. In this respect, three caveats are in order. First, capital market discipline has traditionally been limited to the market for corporate control—the trading of equity interests including both economic and control rights over the corporation. See, e.g., Henry G. Manne, Mergers and the Market for Corporate Control, 73 J. POL. ECON. 110, 112 (1965). In recent years, however, an extensive scholarship has developed on the active control exercised by creditors on their borrowers both through market and contractual mechanisms. See, e.g., George G. Triantis & Ronald J. Daniels, The Role of Debt in Interactive Corporate Governance, 83 CALIF. L. REV. 1073, 1077 (1995) (providing a seminal contribution on the interaction between debtholder and
Internal governance, which comprises the organizational rules and bodies that discipline the corporate decision-making process—features including the board of directors, compensation schemes, and internal control procedures. Understanding this causal relationship has more than mere theoretical implications: the interplay between external and internal governance exposes which regulatory approaches are cosmetic and which approaches can meaningfully constrain risk taking and preserve banking stability.

Adopting the conceptual framework above, this Article makes two important contributions: first, providing a causal analysis of the financial crisis, and second, developing a normative case for the future regulation debate. The shareholder governance); Douglas G. Baird & Robert K. Rasmussen, Essay, Private Debt and the Missing Lever of Corporate Governance, 154 U. Pa. L. Rev. 1209, 1217 (2006) (arguing that an aggressive use of covenants can "obliterate the difference between debt and equity"); Frederick Tung, Leverage in the Board Room: The Unsung Influence of Private Lenders in Corporate Governance, 57 UCLA L. Rev. 115, 115 (2009) (stating that "the extent of private lender influence rivals that of conventional governance mechanisms"). Second, it is important to note that classifying shareholder actions as external or internal to the corporate decision-making process is not always straightforward. Indeed, because of the special status enjoyed by shareholders as residual claimants, corporate law provides them with several institutional means to directly influence corporate decision making. See infra note 121 and accompanying text. However, in large corporations with dispersed shareholders, the exercise of these institutional means is mostly mediated by management, to whom shareholders delegate operational and decisional authority over corporate affairs. To this extent, shareholder governance is external to the corporate organization. See William R. Baber & Lihong Liang, Associations Between Internal and External Corporate Governance Characteristics and the Consequences of Regulating Governance Practices 2 (June 2008) (unpublished manuscript), available at http://ssrn.com/abstract=1146922 ("External governance defines the role of shareholder oversight . . . . In contrast, internal governance systems concern the interaction between or among firm insiders, specifically, management, directors, and employees."). Instead, in corporations with controlling shareholders, shareholder governance is better described as internal because blockholders directly participate in the corporate decision-making process. See K.J. Martijn Cremers & Vinay B. Nair, Governance Mechanisms and Equity Prices, 60 J. Fin. 2859, 2859–60 (2005). Finally, in addition to capital markets, managerial labor markets and product markets also serve as sources of external discipline. See Triantis & Daniels, supra at 1075–76. While the analysis of managerial labor market discipline is outside the scope of this Article, it is important to observe that, in the particular case of banks, disciplinary forces coming from product markets and capital markets are largely overlapping. This is because the largest component of banks' creditors—bank depositors—also are the most important consumers of the special good that banks produce: i.e., liquidity.

Internal control procedures generally include auditing and accounting functions. But in the case of banks, risk management—the process through which a bank identifies, controls, and makes informed decisions about the risk affecting its operations—provides the most important internal control function. See Christine M. Cumming & Beverly J. Hirtle, The Challenges of Risk Management in Diversified Financial Companies, Econ. Pol'y Rev., Mar. 2001, at 1, 2 (expounding on the importance of risk management in modern financial corporations, e.g., banks).

This Article uses the term bank differently within the positive and normative analyses that it develops. In the positive analysis of the dynamics that led to the crisis, the term bank is used to identify collectively commercial banks, stand-alone investment banks, and universal banks. In the normative analysis, the term bank identifies bank holding companies. See Bank Holding Company Act of 1956, 12 U.S.C. § 1841(a)(1) (2006) (defining a “bank holding company” as “any company which has control over any bank or over any
analytical component reframes the crisis as a moral hazard problem involving bank shareholders and debtholders, rather than bank managers. If there were no safety nets—deposit insurance and bailouts—the interaction between shareholder and debtholder governance would help to mitigate the problem of excessive risk taking. Economically, this problem arises from the shareholders’ preferences for high-risk, high-return projects. Indeed, under the limited liability of the corporate form, shareholders expect to reap the full upside from these projects, while debtholders bear most of the downside risk. Anticipating these circumstances, debtholders demand higher interest rates, which reduce expected equity returns. In response, shareholders have incentives to appease debtholders by committing their firms to sound risk policies—for example through the managerial negotiation of contractual covenants that give debtholders authority to influence corporate decision making. This Article suggests that in banks, absent safety nets, this implicit shareholder–debtholder negotiation over a firm’s risk choices would lead shareholders to seek internal governance arrangements that can distinguish their firms as safe investments. But with the introduction of safety nets, debtholders become less sensitive to risk taking. This leads to a theory of rational passivity of bank shareholders—unconstrained by debt discipline, bank shareholders have no incentives to police governance arrangements that induce risk taking. Instead, they find themselves benefitting from such arrangements.

company that is or becomes a bank holding company”). The transformation of Goldman Sachs and Morgan Stanley—the sole large investment banks that survived the crisis—into bank holding companies justifies this choice. Indeed, this change virtually put an end to the era of the independent investment bank, giving these firms access to deposit funding in return for being subject to stricter regulation. See Press Release, Bd. of Governors of the Fed. Reserve Sys., Order Approving Formation of Bank Holding Companies (Sept. 21, 2008), available at http://www.federalreserve.gov/newsevents/press/orders/20080922a.htm.


The maximization of shareholders’ returns depends on both the managerial selection of profitable investment projects (i.e., the exercise of managerial effort) and the minimization of a firm’s costs, including the cost of debt. See Teresa A. John & Kose John, Top-Management Compensation and Capital Structure, 48 J. Fin. 949, 951 (1993) (“As residual claimholders, the shareholders gain from the reduced agency costs of debt.”).

Cf. Kose John et al., A Theory of Bank Regulation and Management Compensation, 13 Rev. Fin. Stud. 95, 96 (2000) (suggesting that when debt is properly priced, the shareholders’ ex ante commitment to contractual solutions that can induce managers to implement value-maximizing investment policies is in the shareholders’ best interest).

See infra text accompanying notes 139–40 (describing the various forms of debt covenants that are most commonly used as a firm’s commitment to sound risk choices).

To counter these distorted incentives, this Article suggests that bank regulators should adopt a contractarian approach, assuming the hypothetical position of uninsured bank debtholders. In this position, they would bargain for the same governance concessions from shareholders that debtholders would otherwise demand. Where debtholders would offer lower interest rates in exchange for safer governance, regulators would offer lower regulatory costs while demanding the same governance concessions. Redirecting bank investors’ incentives toward more socially responsible risk taking, this system would promote overall economic stability.

Methodology-wise, the contractarian approach proposed by this Article involves a counterfactual analysis of what would be banks’ governance arrangements absent safety nets. “High-leveraged corporations” provide the right benchmark to develop this analysis because banks fit into this paradigm. Observation from the private debt sector as well as the venture capital sector confirms that the implicit shareholder–debtholder negotiation over a firm’s risk choices produces special governance arrangements in these corporations. Indeed, higher leverage increases shareholders’ expected returns from riskier projects, while simultaneously increasing debtholders’ exposure to losses. In these circumstances, debt covenants may fail to adequately protect debtholders’ investment expectations. Hence, shareholders of high-leverage

by contingent debt was in the interest of bank shareholders and, therefore, perfectly rational from the shareholders’ perspective)

The contractarian approach developed by this Article draws on the insights of economists Mathias Dewatripont and Jean Tirole, who suggested that bank regulators should act as representatives of bank depositors. See Mathias Dewatripont & Jean Tirole, The Prudential Regulation of Banks 31–32 (1993). For Dewatripont and Tirole, however, the role of bank regulation is to protect small depositors, who are described as unable to exercise adequate control on their banks. See id. In contrast, this Article’s contractarian approach rests on the idea that the rationale for bank regulation is protecting the integrity of the banking infrastructure. Accordingly, while Dewatripont and Tirole articulated a representation hypothesis of bank regulation in the interest of depositors, this Article develops a substitution hypothesis of this regulation in the interest of society as a whole. Under this different hypothesis, the role for bank regulators is to redress the distortions produced in banks’ governance mechanisms by safety nets, substituting for insured and, therefore, opportunistic debtholders in disciplining banks. See infra Part III.B. Moreover, Dewatripont and Tirole’s analysis was largely unconcerned with banks’ internal governance arrangements, which represents a major focus of this Article’s discussion.

In this Article, the term high-leveraged corporations identifies corporations that employ financing having priority over common stock as their main source of capital. These forms of financing may include, for example, preferred shares, subordinated debt, and other hybrid financial instruments.

See infra notes 162–67 and accompanying text.

Because high leverage increases the asymmetry of payoffs from risky projects, even the undertaking of value-decreasing projects may be privately optimal for shareholders. That is, high leverage tends to transform the debt–equity conflict over a firm’s risk choices from a distributive problem into an allocative problem. See infra Part I.A.1.
firms need a stronger commitment to sound risk policies than a majority of their corporate counterparts. This stronger commitment comes in the form of safe governance arrangements. The distinguishing feature of such arrangements is the incorporation of the debtholders’ risk preferences into the corporate decision-making process, typically through the appointment of a debtholder representative to the board. This appointee serves as a counterweight to the CEO, who, in response to the common use of equity-based executive compensation, shares the same preferences of risk-liking shareholders. The result of this adversarial interaction between the CEO and the debtholders’ appointee is that the board’s decisional outcomes are less likely to be biased toward increased risk taking, as happens under the majoritarian “CEO-centric governance model” where firms’ informational flow is controlled by risk-liking CEOs.

Consistent with this practice, this Article suggests that in an ideal contracting world banks’ governance arrangements would be built around an organizational model based on antagonistic information gathering and contrarian thinking—what economists call an advocacy model. Banks could replicate a similar decision-making structure through two basic organizational features. The first is the appointment of a “representative” of the debtholders’ interests within the bank, for example an insider whose payoff structure is selected to align her risk preferences with the debtholders’ preferences. In accordance with recent international banking guidelines that stress the importance of risk management as a primary internal control mechanism, the

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16 Recent economic studies suggest that the choice of better governance would be a standard means firms could use to lower their cost of debt. See Viral V. Acharya & Paolo F. Volpin, Corporate Governance Externalities, 14 REV. FIN. 1, 3 (2010) (“If firms need capital to invest, for example, via a public offering, firms are forced to choose a high level of governance to meet investors’ demand (formally, to meet investors’ participation constraint).”). This observation reinforces this Article’s thesis because the higher the level of leverage, the higher the need for better governance.

17 Shareholders, as residual claimants, are concerned that managers will pursue selfish interests rather than exert effort to maximize profits for the firm. The use of equity-based compensation mitigates this problem by aligning manager and shareholder interest through stock, stock options, or other similar instruments. But it also gives managers their own reasons to prefer riskier projects, to the detriment of debtholders and potentially to society as a whole. See infra Part I.A.2 (discussing in greater detail the effects of equity-based compensation on risk taking in the banking sector).

18 It is important to observe that an analogous result occurs when the corporation is controlled by a blockholder. Accordingly, this Article uses the term CEO-centric governance model to identify both the governance model of centralized-management corporations with a dominant CEO and that of controlled corporations with a controlling blockholder.

19 See sources quoted infra at note 174.

20 See BASEL COMM. ON BANKING SUPERVISION, BANK FOR INT’L SETTLEMENTS, PRINCIPLES FOR ENHANCING CORPORATE GOVERNANCE 17–18 (2010) [hereinafter BASEL PRINCIPLES FOR GOVERNANCE].
chief risk officer (CRO) emerges as a natural candidate for the role. A fully independent board of directors is the additional feature envisioned by this Article as defining advocacy in banks. This feature would be necessary to preserve the board’s ability to act as an impartial decision maker in reviewing the competing cases for risk advanced by the CEO and the CRO.

With the introduction of governmental insurance, however, safe bank governance is lost. Due to the opportunistic abandonment by debtholders of their monitoring function, shareholders have no incentives to put safe governance arrangements—such as an advocacy system—into effect. This account of bank governance dynamics not only replaces the view that managerial opportunism has been the central cause of excessive bank risk taking, but it also suggests a new direction for regulatory reform. Presently, regulators focus on capital requirements to constrain risk taking in the banking sector in the belief that higher equity levels can make riskier projects unprofitable for both shareholders and equity-compensated managers. But this is a crude and socially expensive solution, which fails to give bank shareholders incentives to move away from CEO-centric, and risk-prone, governance models. This Article proposes a richer response. It suggests that regulators should expand the set of regulatory tools they use to discipline banks, encouraging the adoption of safe governance arrangements. To this end, they should make banks’ regulatory costs—capital requirements and deposit insurance premiums—sensitive to banks’ organizational features. In practice, they should allow banks to trade safe governance features for lower regulatory costs. For example, banks opting for an advocacy-based governance model could be held to the 8% minimum capital ratio currently required for “adequately capitalized” banks. In contrast, banks that maintain a CEO-centric governance model could be held to the higher 10% capital ratio that is required for a bank to be “well capitalized.”

The remainder of this Article develops these ideas in four parts. Part I describes the economics of risk taking in banks and the potential systemic
effects it may produce. Part II describes the theory and the practice of banks’ governance mechanisms. Part III proposes a contractarian approach to bank regulation reform. Throughout, this Article relies on insights from contract theory, which provide the economic foundation for studying how asymmetric information affects agents’ interaction, and a series of stylized examples, which serve as practical illustrations of the problems therein discussed.

I. MORAL HAZARD AND LIQUIDITY PRODUCTION

Banks’ ability to operate on short-term liabilities—both in the form of deposits and deposit-like products—makes them the most important providers of liquidity in the economy. On the other hand, this same business model exacerbates risk taking. With access to deposit funding, banks are able to carry far more leverage than non-banking organizations. And with high leverage, shareholders are incentivized to take more risk because the downside is disproportionately borne by debtholders. In modern banking, this fundamental imbalance is aggravated by several factors, including the widespread use of equity-based schemes to compensate bank managers, high interbank correlation, and the increased opportunities for risk taking created by financial innovation.

24 For an introductory overview of contract theory and its basic results, see Patrick Bolton & Mathias Dewatripont, Contract Theory (2005).
25 The Article also generalizes these numerical examples with a model in the footnotes. See infra note 38 (providing the basic setting of this model).
26 Historically, access to deposit funding had been restricted to commercial banks since the Glass-Steagall Act prevented investment banks from engaging in deposit-taking activities. See Banking Act of 1933, ch. 89, §§ 16, 20, 21, 32, 48 Stat. 162, 184–85, 188, 189, 194 (codified as amended in scattered sections of 12 U.S.C.). However, with the liberalization of investment services by the 1999 Gramm-Leach-Bliley Act, many U.S. banks turned into universal banks engaged in both commercial and investment banking. See Pub. L. No. 106-102, 113 Stat. 1338 (1999) (codified as amended in scattered sections of 15 U.S.C.); see also Matthew Richardson et al., Large Banks and the Volcker Rule, in Regulating Wall Street: The Dodd-Frank Act and the New Architecture of Global Finance 189–91 (Viral V. Acharya et al. eds., 2011). Moreover, after the 2007–2008 crisis, the transformation of the surviving investment banks (i.e., Goldman Sachs and Morgan Stanley) into bank holding companies has extended access to traditional deposit funding even to these banks. See supra note 6. It is worth observing, however, that even before this institutional transformation, banks of all types had already found ways to synthetically replicate deposit funding. See infra notes 87–88 and accompanying text (discussing the progressive increase in modern banking of the use of deposit-like products, such as repurchase agreements and commercial papers).
27 While “liquidity cannot easily be apprehended through a single statistic[,]” in general it can be defined as capital that is available for investments and takes the form of either stores of value (i.e., cash) or real claims (i.e., credit). See Jean Tirole, Illiquidity and All Its Friends, 49 J. Econ. Literature 287, 288–90 (2011).
28 See Jensen & Meckling, supra note 7, at 334–37 (illustrating risk incentives of equityholders when a firm’s capital structure includes debt).
This Part discusses these problems and explains how their coincidence during the financial turmoil of 2007–2008 almost led the financial system to collapse.

A. Moral Hazard in Banks

Several types of financial entities produce liquidity. The special business model of banks, however, gives them a comparative advantage over other liquidity providers. In economic parlance, this model is called asset transformation because banks raise funds by issuing highly liquid claims, in the form of demand deposits, which they “transform” (i.e., invest) in illiquid assets such as medium- to long-term loans. This business model, however, also has less desirable consequences. For one thing, it leaves banks vulnerable to runs by exposing them to high funding liquidity risk, that is, the risk of being unable to service liquid liabilities due to asset illiquidity. No bank has sufficient funds to satisfy en masse demands for withdrawal because the majority of its deposits are invested in illiquid loans. Hence, a rumor about a bank’s financial instability or a sudden decline in asset value may give rise to a


30 A liquid investment (i.e., claim) is “one that the investor can convert into cash at a price [equal or] close to the present value of the future cash flows of the investment whenever the investor so desires.” Jonathan R. Macey & Geoffrey P. Miller, Deposit Insurance, the Implicit Regulatory Contract, and the Mismatch in the Term Structure of Banks’ Assets and Liabilities, 12 YALE J. ON REG. 1, 7 (1995). Banks can maintain this structural mismatch between illiquid assets and liquid liabilities because of their superior ability to generate private information about specific borrowers and diversify risk among many borrowers. See Douglas W. Diamond, Financial Intermediation and Delegated Monitoring, 51 REV. ECON. STUD. 393 (1984) (Swed.) (developing a formal analysis of the informational advantages of financial intermediaries).


32 The concept of funding liquidity risk concerns the distinction, recently introduced in economic theory, between funding liquidity and market liquidity. See Markus K. Brunnermeier & Lasse Heje Pedersen, Market Liquidity and Funding Liquidity, 22 REV. FIN. STUD. 2201 (2009) (introducing this distinction with respect to security markets). Funding liquidity involves raising cash on the liability side by borrowing funds, such as when a bank issues deposits or long-term debt. In contrast, market liquidity involves generating cash on the asset side by marketing assets, such as when a bank sells T-bills or other easily tradable assets. See Tirole, supra note 27, at 288–89. Accordingly, funding liquidity risk “arises when it is prohibitively expensive both to (i) borrow more funds (low funding liquidity) and (ii) sell off its assets (low market liquidity).” MARKUS BRUNNERMEIER ET AL., INT’L CTR. FOR MONETARY & BANKING STUDIES, THE FUNDAMENTAL PRINCIPLES OF FINANCIAL REGULATION 13–14 (2009). Because of their business model, banks are inherently exposed to more severe funding liquidity risk than non-banking organizations. Indeed, bank assets have lower market liquidity than industrial firms’ assets, and bank liabilities are considerably more liquid than industrial firms’ liabilities.
collective action problem among depositors. Although depositors might be better off by not withdrawing their funds, their inability to coordinate, paired with their fear that liquidity reserves will soon be exhausted, will induce them to run on the bank. And because of their destabilizing effects, runs can become self-fulfilling prophecies and force even a solvent bank into bankruptcy.

But runs are not the only risk of the asset transformation model. This structure also leads banks to have highly leveraged capital structures. And this, as explained below, makes increased risk taking the crucial agency problem in banks.

1. Risk Preferences of Bank Shareholders

The problem of increased risk taking arises out of the divergent risk preferences of debtholders and shareholders. Debtholders have a fixed claim to the corporate income stream and a right of priority of payment over equityholders. This makes their payoff schedule concave. This means that, on the one hand, debtholders are largely indifferent to increases in returns from corporate assets, but, on the other hand, they are highly sensitive to declines in asset value. In response, debtholders prefer conservative investment strategies, which better preserve asset value. On the contrary, shareholders have a convex payoff schedule. As residual corporate claimants, they are highly sensitive to increases in equity returns. But because of the protection of limited liability, they are indifferent to any loss beyond the value of their capital contribution. Given this payoff structure, once a corporation has issued debt, shareholders have incentives to engage in asset substitution—to substitute riskier, more volatile assets for safer ones, transferring wealth from the debtholders to themselves. Indeed, shareholders expect to capture the higher upside potential of riskier investments in full. In contrast, any loss produced by these investments beyond the value of equity is borne by the debtholders.

33 See Diamond & Dybvig, supra note 31, at 403.
34 See id. at 402 ("[B]ank runs cause real economic problems because even ‘healthy’ banks can fail . . . .").
35 Asset substitution is not the only means through which shareholders can act opportunistically against debtholders. Other actions that may illegitimately transfer wealth from debtholders to stockholders include the payment of excessively large dividends, the issuance of additional debt, and the rejection of projects with a positive net present value when the benefits from such projects accrue solely to the debtholders. See Clifford W. Smith, Jr. & Jerold B. Warner, On Financial Contracting: An Analysis of Bond Covenants, 7 J. FIN. ECON. 117, 118–19 (1979).
Shareholders’ incentives for asset substitution increase with the debt-to-equity ratio: the higher this ratio, the greater the measure to which losses are borne by debtholders rather than shareholders. This explains why bank shareholders have greater incentives for asset substitution than shareholders of non-banking corporations. To better see this, it is useful to introduce here a basic numerical example that this Article uses, with subsequent modifications, to examine the many nuances of risk taking in banks. In the analysis of this example and all its subsequent modifications, it is assumed that there are three periods of time. In period one, Bank Alpha, having $10 of equity capital, can invest in Project I (i.e., the base project). Project I requires an initial outlay of $100 and generates gross return of $120 with probability 90% and zero otherwise. To raise the capital needed to pursue Project I, Bank Alpha issues debt (to depositors and other debtholders) for a face value of $100—with $90 being the principal amount needed to fund Project I and $10 being the interest portion. In period two (i.e., after the issuance of debt), an alternative investment opportunity may become available to Bank Alpha. Finally, in period three, returns from the investment are generated and debt (i.e., capital plus interest) must be repaid in a lump sum with priority. Figure 1 below summarizes the timeline of these actions and events.

36 It is worth emphasizing, however, that the risk of asset substitution may be severe in non-banking firms too. Many publicly held corporations besides banks operate largely on debt, including corporations in the following industries: auto and truck, property management, natural gas utility, advertising, electric utility (central), homebuilding, maritime, newspaper, office equipment/supplies, packaging and container, power, publishing, and trucking. See Simone M. Sepe, Making Sense of Executive Compensation, 36 DEL. J. CORP. L. 189, 209 (2011). Moreover, in the vicinity of insolvency, asset substitution becomes a threat for any type of firm because the firm’s equityholders no longer have any expected liquidation interest. Therefore, they prefer “any share of a favorable outcome to the zero return” they otherwise expect to receive. Barry E. Adler, Bankruptcy and Risk Allocation, 77 CORNELL L. REV. 439, 463 n.99 (1992).

37 The examples in Part I of this Article focus on the incentives of equityholders (i.e., both shareholders and equity-based compensated managers) for increased risk taking. In other terms, these examples assume away the consequences that arise from the debtholders’ rational anticipation of such incentives, postponing this discussion until Part II.B. Accordingly, the basic setting described in the text above assumes that the interest portion on Bank Alpha’s debt (i.e., $10) is negotiated in competitive debt markets (i.e., under a zero-profit condition) and is given by the debtholders’ participation constraint. The participation constraint (or individual rationality constraint) is a property of optimal agency contracts and is satisfied when the contract leaves all participants at least as well off as they would have been if they had not participated. See Bernard Salanié, The Economics of Contracts 122 (2d ed. 2005).

38 The basic example and its subsequent modifications use binomial distribution to represent the problem of risk taking in banks. This problem, however, can be more rigorously represented through the property of second-order stochastic dominance, which compares distributions based on relative riskiness or dispersion. Mathematically, this can be expressed by observing that if two distributions $F(\xi)$ and $G(\xi)$ have the same mean (i.e., $\int \xi(x) dF(x) = \int \xi(x) dG(x)$), distribution $G(\xi)$ is riskier than distribution $F(\xi)$ if $\int \xi(x) dF(x) \geq \int \xi(x) dG(x)$, where $\xi(\xi)$ is a concave and invertible function. See generally Andreu Mas-
Finally, the probability of the outcome is riskier than the deviation of repayment of debt than Project I, which generates gross return of $150 with probability 72% and zero otherwise, is the additional project that may become available to Bank Alpha in period two. Note that Project I and Project II have the same net present value: 90%[$120] − $100 = 72%[$150] − $100 = $8. Project II, however, is riskier than Project I, since its standard deviation is higher (Project II has a standard deviation of 67.35, while Project I has a standard deviation of 36). This means that Project II is more likely to jeopardize the repayment of debt than Project I. For Bank Alpha’s shareholders, however, the distribution and transferring such mass to the endpoints of the interval.

Since this first example focuses on the different risk preferences of banks’ shareholders and debtholders, assume, for the moment, that Bank Alpha is run by a shareholder manager. Further assume that Project II (i.e., the asset substitution project), which generates gross return of $150 with probability 72% and zero otherwise, is the additional project that may become available to Bank Alpha in period two. Note that Project I and Project II have the same net present value: 90%[$120] − $100 = 72%[$150] − $100 = $8. Project II, however, is riskier than Project I, since its standard deviation is higher (Project II has a standard deviation of 67.35, while Project I has a standard deviation of 36). This means that Project II is more likely to jeopardize the repayment of debt than Project I. For Bank Alpha’s shareholders, however,

The property of second-order stochastic dominance perfectly explains the risk preferences of shareholders and debtholders: debtholders have a concave schedule like \(\xi_c\), while shareholders have a convex schedule. Therefore, the following condition applies to Bank Alpha’s shareholders: 

\[ \int \xi(x)^{-1} dF(x) \leq \int \xi(x)^{-1} dG(x). \]

The higher risk of Project II can be generalized by requiring that the possible realizations of this project are as follows: the probability of the medium state is reduced by \((\alpha^r + \beta^r) \times \frac{1}{2}\), the probability of the high state is increased by \(\alpha^r\), and the probability of the low state is increased by \(\beta^r\). Accordingly, Project II is characterized by a riskier distribution, which is dominated in the sense of second-order stochastic dominance: 

\[ \alpha^r \left( H - M \right) = \beta^r \left( M - L \right). \]
Project II is more profitable than Project I because they expect to reap the higher returns of Project II with limited liability for its potential losses. Consider the expected payoff to the shareholders from the two projects: under Project I the shareholders expect to receive 90%[\$120 - \$100] = \$18, while under Project II they expect to receive 72%[\$150 - \$100] = \$36. Hence, the shareholders always prefer to substitute Project II for Project I as long as Project II materializes, which will expropriate wealth equal to (90% - 72%)\$100 = \$18 from the debtholders.\(^{41}\) Figure 2 below summarizes the essential data of the asset substitution example.

<table>
<thead>
<tr>
<th></th>
<th>NPV</th>
<th>s.d.</th>
<th>Shareholders' Expected Payoff</th>
<th>Debtholders' Expected Payoff</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project I</td>
<td>$8</td>
<td>36</td>
<td>$18</td>
<td>$90</td>
</tr>
<tr>
<td>Project II</td>
<td>$8</td>
<td>67.35</td>
<td>$36</td>
<td>$72</td>
</tr>
</tbody>
</table>

Fig. 2 Asset Substitution

But the transfer of wealth from debtholders to shareholders is not the only effect produced by increased risk taking. Instead, this problem may also lead to a reduction in total wealth. If leverage is high enough to shift most of the potential losses from these projects to the debtholders, even risky projects that will reduce the total value of the firm can still be profitable from the shareholders’ perspective. The following variation on the above example better illustrates the difference between asset substitution and this more severe form of shareholder opportunism, which is referred to as excessive risk taking. In this case, assume that after Bank Alpha has issued debt to fund Project I, the opportunity for Bank Alpha to invest in Project III (i.e., the excessive-risk-taking project) may become available. Project III generates a gross return of \$180 with probability 55% and zero otherwise. As with Project II above, Project III is riskier than Project I (indeed, Project III has a standard deviation of 89.5, while Project I has a standard deviation of only 36). Unlike Project II, however, Project III has a net present value of negative \$1 (i.e.,

\(^{41}\) This result can be generalized by observing that the shareholders transfer wealth from the debtholders to themselves for an amount equal to \(\beta^{u}(\bar{D} - L)\) when they substitute Project II for Project I.
55%[$180] − $100 = −$1).\textsuperscript{42} Hence, substituting Project III for Project I generates a social loss of $9.\textsuperscript{43} This obviously makes Project III a bad project for Bank Alpha and society as a whole. Yet, the expected payoff to the shareholders with Project III is higher than with Project I: 55%[$180 − $100] = $44 > $18. Thus, regardless of the social loss produced by the undertaking of Project III, the shareholders will always prefer to substitute Project III for Project I, if Project III materializes.\textsuperscript{44} Figure 3 below summarizes the essential data of the excessive-risk-taking example.

<table>
<thead>
<tr>
<th>NPV</th>
<th>s.d.</th>
<th>Shareholders’ Expected Payoff</th>
<th>Debtholders’ Expected Payoff</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project I</td>
<td>$8</td>
<td>36</td>
<td>$18</td>
</tr>
<tr>
<td>Project III</td>
<td>-$1</td>
<td>89.5</td>
<td>$44</td>
</tr>
</tbody>
</table>

\textbf{Fig. 3 Excessive Risk-taking}

For simplicity, the examples above have assumed that shareholders exercise direct control over the corporate decision-making process. In reality, however, most large U.S. banks are organized as centralized management corporations,\textsuperscript{45} where managers rather than shareholders make corporate decisions. The next section develops the analysis of the problem of bank risk taking with a discussion of bank managers’ risk incentives.

\textsuperscript{42} The features of Project III (i.e., higher risk and lower present value than Project I) can be generalized by requiring that the possible realizations of this project are as follows: the probability of the medium state is reduced by \( \alpha'' + \beta'' \) where \( \frac{1}{\alpha''} > (\alpha'' + \beta'') > (\alpha'' + \beta'' ) \), the probability of the high state is increased by \( \alpha'' < \alpha'' \), and the probability of the low state is increased by \( \beta'' > \beta'' \), such that \( \beta''(M - L) - \alpha''(H - M) > 0 \).

\textsuperscript{43} Substituting Project III for Project I increases the shareholders’ expected payoff by a positive amount \( \alpha''(H - M) - \beta''(M - D) \) and decreases the debtholders’ expected payoff by \( \beta''(D - L) > \alpha''(H - M) - \beta''(M - D) \).

\textsuperscript{44} This result can be generalized by observing that the shareholders will prefer Project III over Project I as long as \( \frac{1}{\alpha'' + \beta''} (H - D) + \frac{1}{\alpha'' + \beta''} (M - D) > \frac{1}{\alpha''} (H - D) + \frac{1}{\alpha''} (M - D) \), which entails \( D > D' = \left( \frac{\alpha'' + \beta''}{\alpha''} \right) M - \left( \frac{\alpha''}{\alpha''} \right) H \).

\textsuperscript{45} See Luc Laeven & Ross Levine, Bank Governance, Regulation and Risk Taking, 93 J. FIN. ECON. 259, 263 (2009) (providing a cross-country analysis of bank ownership structures and finding that all the U.S. banks in their representative sample are widely held).
2. Risk Preferences of Bank Managers

Unlike diversified investors, managers make specific investments in their corporations, which they are unlikely to recoup in case of failure.46 This explains why corporate finance scholarship has generally described managers as more risk averse than shareholders.47 Consistent with this view, discussions of the problem of risk taking have long been limited to a subset of the central agency problem: the conflict between shareholders and managers. The concern is that managers may pursue their own interest at the shareholders’ expense—in the jargon of economists, exert insufficient effort.48 Managers may shirk by avoiding actions that involve personal costs.49 They may engage in the extraction of private benefits.50 And, finally, in order to protect their non-diversified investment in the corporation, they may select projects that are too conservative from the shareholders’ perspective.51


47 See, e.g., Henry T. C. Hu & Jay Lawrence Westbrook, Abolition of the Corporate Duty to Creditors, 107 COLUM. L. REV. 1321, 1351 (2007) (“Managers of healthy companies generally prefer taking less risk than they would if they were acting in the interests of their presumptively diversified shareholders. A shareholder has shares in many companies; a manager has only one job.” (footnote omitted)).

48 In economics, the term effort is broadly used to refer to any action the agent takes to advance the principal’s interest. See, e.g., JOHN ROBERTS, THE MODERN FIRM: ORGANIZATIONAL DESIGN FOR PERFORMANCE AND GROWTH 126–27 (2004). Conversely, insufficient effort defines any action of the agent that does not advance the principal’s interest.

49 Shirking commonly takes place when managers are not fully focused on maximizing corporate profits, as when they exert suboptimal effort in running the business enterprise. The concept of shirking, however, refers “not so much to the numbers of hours spent in the office . . . but rather to the allocation of work time to various tasks.” See JEAN TIROLE, THE THEORY OF CORPORATE FINANCE 16 (2006). For example, managers may find it unpleasant to cut costs by reallocating workers, may not spend enough time supervising their subordinates, or may overcommit themselves to tasks unrelated to the management of the corporation. Id.

50 Managers extract private benefits when they exploit delegated authority to obtain benefits to the detriment of shareholders, such as when they divert corporate opportunities, spend corporate money to purchase private jets, recruit top officers from among family and friends, and so forth. See id. at 27.

51 See, e.g., David I. Walker, The Challenge of Improving the Long-Term Focus of Executive Pay, 51 B.C. L. REV. 435, 446 (2010) (arguing that, as it concerns the problem of risk, the focus “has generally been on the problem of excessive conservatism on the part of risk-averse executives”); Rebecca S. Demsetz et al., Agency Problems and Risk Taking at Banks 1–2 (Fed. Reserve Bank of N.Y., Research Paper No. 9709, 1997), available at [insert URL] (arguing that the owner/manager agency problem is characterized by excessively safe behavior on the part of the manager, who pursues his own objectives at the expense of better diversified shareholders.

Indeed, conservative projects that reduce the variance of the outcome distribution produce the opposite effects of increased risk taking, expropriating wealth from shareholders to the benefit of fixed claimants, including wage-compensated managers. See Jensen & Meckling, supra note 7, at 353.
Stock, stock options, and performance-based bonuses, which tie managers’ financial rewards to equity value through compensation, have traditionally been emphasized as the solution to align manager and shareholder interests. This is because compensating managers with contingent equity rights makes them sensitive to increased equity returns, incentivizing them to exert optimal effort. Notably, U.S. corporate practice has adhered in full to this compensation paradigm, especially in the banking sector. From the debtholders’ perspective, however, equity-based compensation produces a negative externality, which is amplified in highly leveraged corporations, e.g., banks. Introducing convexity in the managers’ payoff schedules, equity-based compensation transforms them into agents who prefer riskier projects over safer projects.

To see this, consider again the example made above to illustrate the problem of excessive risk taking. In this case, assume that Bank Alpha’s shareholders have hired a manager to run the corporate affairs. The manager’s natural risk aversion (arising from her specific investment in Bank Alpha) is represented through a concave utility function—meaning that her marginal utility of wealth is decreasing. Specifically, suppose that the utility function

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52 See, e.g., Sanjai Bhagat & Roberta Romano, Essay, Reforming Executive Compensation: Focusing and Committing to the Long-Term, 26 YALE J. ON REG. 359, 361 (2009) (“Until the spate of accounting scandals that began with Enron, compensation in the form of stock and stock options was often emphasized as a key to improved corporate performance . . . .”); Joshua A. Kreinberg, Note, Reaching Beyond Performance Compensation in Attempts to Own the Corporate Executive, 45 DUKE L.J. 138, 140–41 (1995) (stating the traditionally dominant view that “performance pay represents the sole acceptable solution” to the problem of managerial effort).

53 Executive bonuses in the range of millions of dollars, and even tens of millions of dollars, were common practice in the banking sector before the crisis. See JOHNSON & KWAK, supra note 1, at 61. In 2009, for example, it emerged that Citigroup owed a single executive a $100 million bonus. Id. Along the same line, in 2000 the average stock option award to CEOs at twenty-seven major U.S. banks was $11.9 million, compared to $4.5 million for CEOs in non-banking corporations. See MARK WATSON ET AL., MOODY’S INVESTORS SERV., DON’T BANK ON STRONG GOVERNANCE: OBSERVATIONS ON CORPORATE GOVERNANCE IN U.S. BANKS 2 (2005), available at http://www.moodys.com/sites/products/AboutMoodysRatingsAttachments/2003700000425158.pdf. In investment banking, this phenomenon was even more pronounced, with “top executive salaries averaging only 2% of annual total [executive] compensation across the whole peer group in recent years.” See NESTOR ADVISORS, GOVERNANCE IN CRISIS: A COMPARATIVE CASE STUDY OF SIX U.S. INVESTMENT BANKS 18 (2009) (hereinafter NESTOR REPORT).

54 See Richard A. DeFusco et al., The Effect of Executive Stock Option Plans on Stockholders and Bondholders, 45 J. FIN. 617, 618 (1990) (“The asymmetric payoffs of call options make it more attractive for managers to undertake risky projects.”).

55 Under utility theory—which studies how agents make decisions based on the amount of risk they are willing to take to maximize their monetary income—a simple way to represent risk aversion is to assume that the agent’s marginal utility of wealth is decreasing. That is, risk aversion can be represented through a concave utility function. See ROGER B. MYERSON, PROBABILITY MODELS FOR ECONOMIC DECISIONS 83 (2005).
of the manager takes the form $\sqrt[3]{\cdot}$. This means that when the manager’s payoff is, for example, $8$, her utility is equal to $\sqrt[3]{8} = \$2$.

Finally, suppose that Bank Alpha’s manager is compensated through an equity-based scheme to induce her to exert optimal effort.

Under these assumptions, consider how the risk preferences of the manager change depending on the level of convexity introduced into her payoff schedule through equity-based compensation. Suppose first that the manager is compensated with a 10% equity stake. In this case, the manager will always choose Project I over Project III. This is so because, given the manager’s concave utility function, the level of convexity that a 10% equity stake introduces in her payoff schedule is not enough to make Project III profitable for her: $90\% \left[ \frac{2}{3}\sqrt[3]{10\% (\$120 - \$100)} \right] > 55\% \left[ \frac{2}{3}\sqrt[3]{10\% (\$180 - \$100)} \right]$.

Now, instead, suppose that the equity component of the manager’s pay includes a stock option package, given by the attribution of call options. Each option takes the form of $\max[0, S - K]$. $S$ is the equity value at period three. This value can be either $\$120 - \$100 = \$20$ with probability $90\%$ or $\$180 - \$100 = \$80$ with probability $55\%$ depending on whether the manager chooses Project I or Project III. $K$ is the strike price of the call option.

Under this different form of equity-based compensation, $55\% \left[ \frac{2}{3}\sqrt[3]{0.2(\$180 - \$100 - K)} \right] > 90\% \left[ \frac{2}{3}\sqrt[3]{0.2(\$120 - \$100 - K)} \right]$ holds, as long as $K > 2.26$. This means that further leveraging the payoff schedule of the manager by $2.26$ will induce her to prefer Project III over Project I.

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56 The risk aversion of Bank Alpha’s manager can be generalized by considering a utility function $u(\cdot)$, where $u'(\cdot) > 0$ and $u''(\cdot) < 0$.

57 The equity share of Bank Alpha’s manager can be generalized by posing that the manager is paid with $y \in (0,1)$ stocks.

58 Formally, this condition can be expressed as follows: $\frac{2}{3}u(y(H - B)) + \frac{1}{3}u(y(M - B)) > (\frac{2}{3} + \alpha)u(y(H - B)) + (\frac{2}{3} - \alpha)u(y(M - B))$, which implies that $(\alpha u'' + \beta u')u(y(M - B)) > (\alpha u'')u(y(H - B))$ holds.

59 This can be generalized by posing that Bank Alpha’s manager is paid with a number, $\delta \in (0,1)$, of call options, such that her schedule is $\max[0, S - K]$, where $S$ is the share value that is equal to the state contingent realization of the project minus $B$, and $K$ is the strike price of the call option.

60 Mathematically, this means that it is always possible to find a value of $K$ such that Bank Alpha’s manager prefers Project III to Project I. Indeed, the condition $(\alpha u'')u(\delta [(H - B) - K]) > (\alpha u'' + \beta u')u(\delta [(M - B) - K])$ is always satisfied when $K > K^* = \left[ M - Hu^{-1}(\frac{\alpha u''}{\alpha u'' + \beta u'}) \right]/\left[ 1 - H^{-1}(\frac{\alpha u''}{\alpha u'' + \beta u'}) \right] - B$. For example, it is apparent that when $K = M - B$, the manager always prefers Project III to Project I.
This stylized example explains why increased risk taking by bank managers has been recognized as the most proximate cause of the recent financial crisis. Contrary to the conventional representation of managers as risk-averse agents, the banking sector’s reliance on highly leveraged compensation schemes led managers to undertake increasingly outsized bets—tail risk in the jargon of finance. When the market turned sour, these reckless bets led to massive losses, which were compounded by two key elements. The first is the inherent correlation of the banking system, which may cause increased risk taking at an individual bank level to produce systemic effects. The second is the liquidity production model of modern banking, which has drastically increased the opportunity for risk taking by bank managers. Section B addresses interbank correlation. Section C explains the modern model of banks’ liquidity production.

B. Interbank Correlation

Modern banks tend to be correlated along two dimensions: the counterparty risk dimension and the asset dimension. The first dimension of correlation arises from the high volume of interbank transactions. In general, these transactions serve to efficiently circulate liquidity in several ways, including intraday advances on payment systems, overnight and term bank lending, and derivative transactions. But on the other hand, interbank exposures make it

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62 See supra note 38 (defining tail risk).

63 See SHELAGH HEFFERNAN, MODERN BANKING 66 (2005) (stating that interbank claims have risen from $1.5 trillion in 1983 to $11.1 trillion in 2000).

more likely that a decline in asset value at one bank may impose losses on other banks.\textsuperscript{65} The classical example is a bank that owes money to another bank, for example because its trading partner has unrealized gains on the contracts that link the two banks. Because of this contractual relationship, if the first bank fails, it may cause losses at the partner bank and potentially threaten its solvency.\textsuperscript{66} In the real world, these problems are likely to be compounded by simultaneity issues because banks act as both lenders and borrowers with their trading partners.\textsuperscript{67} Additionally, banks tend to be correlated along the asset dimension because their capital structures and assets are largely homogenous. As a result, a crisis at an individual bank may be interpreted by investors as a sign that similar banks are facing the same problems. This, in turn, can potentially induce investors to reduce their exposures to banks—by withdrawing their positions or demanding the posting of more collateral—similar to what takes place in a traditional run by depositors.\textsuperscript{68}

\textsuperscript{65} See Franklin Allen & Douglas Gale, \textit{Financial Contagion}, 108 J. POL. ECON. 1, 4 (2000) (showing that the equilibrium of financial contagion depends on the degree of cross-holdings of bank deposits).


\textsuperscript{67} See Markus K. Brunnermeier, \textit{Deciphering the Liquidity and Credit Crunch 2007–2008}, J. ECON. PERSP., Winter 2009, at 77, 96 (arguing that simultaneity issues in the interbank market have led modern banking to resemble an “interwoven network of financial obligations”). The widespread use of credit default swaps (CDS) has played a central role in the increase of simultaneity issues in interbank transactions. See William K. Sjostrom, Jr., \textit{The AIG Bailout}, 66 WASH. & L. REV. 943, 950–51 (2009). CDS are a particular type of derivative contract where one party pays periodic fees to a counterparty in exchange for receiving a contingent payment upon a default event (with this payment being typically guaranteed by the posting of a collateral). See, e.g., id. at 947–52 (analyzing the role played by CDS in the collapse of AIG). However, while CDS resemble insurance contracts, a CDS buyer does not need to be exposed to the risk for which it is buying protection. See René M. Stulz, \textit{Credit Default Swaps and the Credit Crisis}, J. ECON. PERSP., Winter 2010, at 73, 74. Therefore, unlike insurance contracts, CDS are heavily traded. See id. Within the net of reciprocal exposures created by the trading of these complex instruments, simultaneity issue may also lead to network (or gridlock) risk “in which multiple trading parties fail to cancel out offsetting positions because of concerns about counterparty credit risk.” See Brunnermeier, supra, at 78.

\textsuperscript{68} See DUFFIE, supra note 1, at 2. Securities are the most common collateral in the banking sector. Thus, the posting of more collateral typically takes the form of the requirement of a higher “haircut,” which is “a buffer [debtholders require] for unexpected reductions in the market value of the [collateralized securities].” Id.

\textsuperscript{69} The term \textit{fire sale} is used to refer to the phenomenon that occurs when a bank is forced to sell a large portion of its assets at a deeply discounted price in order to achieve a quicker sale and promptly satisfy the requests of its creditors (i.e., reduce the risk of default). See Andrei Shleifer & Robert Vishny, \textit{Fire Sales in Finance and Macroeconomics}, J. ECON. PERSP., Winter 2011, at 29, 31–32. When asset correlation is high, price concessions of this type are likely to produce dramatic effects because collective action problems will induce debtholders of other banks holding similar assets to take similar actions. See \textit{Squam Lake Report}, supra note 66, at 46. This, in turn, will result in a larger number of banks attempting to sell assets at the same time, which will “magnify the original . . . price drop and force more sales” in a perverse spiral. See id.
Importantly, increased risk taking at a single bank enhances the likelihood that this bank may experience a decline in asset value, serving as the initial event in a chain of contagion that may drag down correlated, but otherwise sound, banks. To see this, consider again the basic example where Bank Alpha can substitute Project II (i.e., the asset substitution project) for Project I (i.e., the base project). Recall that the two projects have the same net present value. Now suppose that there is another bank, Bank Beta, which has $100 in assets and whose capital structure and available projects are similar to the capital structure and projects of Bank Alpha. Further assume that Bank Alpha and Bank Beta are correlated along both the counterparty risk dimension and the asset dimension. This implies that a decline in the asset value of Bank Alpha—which is represented here as Bank Alpha’s default on its outstanding debt—will also affect Bank Beta. For example, assume that if Bank Alpha defaults the asset value of Bank Beta will decline to zero with probability 40%. This measure can be interpreted as the level of correlation between the two banks. It follows that, from a social welfare viewpoint, the undertaking of Project II is inefficient, despite being economically neutral for Bank Alpha. Indeed, the undertaking of Project II reduces the overall wealth by 40%(90%−72%)×$100 = $7.2 (with 90% and 72% being the probability of success of Project I and Project II respectively). In fact, as long as the level of correlation is high enough, even a riskier project that increases the

(pointing out that “[t]he size of the . . . price concession depends on how much is being sold, how quickly the firm wants to sell, and how many buyers are available and ready to trade”).

70 See Marc J. Flannery, Lecture, Using Market Information in Prudential Bank Supervision: A Review of the U.S. Empirical Evidence, 30 J. MONEY, CREDIT & BANKING 273, 278 n.11 (1998) (arguing that increased bank risk taking can create significant negative externalities and systemic risk due to interbank correlation). Viral V. Acharya has extended this argument, claiming that interbank correlation increases individual banks’ incentives for higher risk taking by replicating the debt-equity conflict at a systemic level. See Viral V. Acharya, A Theory of Systemic Risk and Design of Prudential Bank Regulation, 5 J. FIN. STABILITY 224, 224 (2009) (“The limited liability of banks and the presence of a negative externality of one bank’s failure on the health of other banks give rise to a systemic risk-shifting incentive where all banks undertake correlated investments, thereby increasing economy-wide aggregate risk.”).

71 Assuming that Bank Beta’s assets are Project I, the correlation between Bank Alpha and Bank Beta can be modeled by requiring that some mass of the distribution of Project I is shifted from the high and medium states to the low state. Specifically, the probability of the high state is reduced by \( \mu < \frac{1}{2} \), the probability of the medium state is reduced by \( \nu < \frac{1}{2} \), and the probability of the low state is increased by \( \mu + \nu \).

72 This result can be generalized by observing that when Bank Alpha undertakes Project II, the probability of insolvency increases by \( \beta^n \), which in turn reduces the value of the assets of Bank Beta from \( \frac{\mu(M + \nu)}{2} \) to \( (\frac{1}{2} - \mu)H + (\frac{1}{2} - \nu)M + (\frac{1}{2} + \mu + \nu)L \). Hence, the undertaking of Project II by Bank Alpha reduces social welfare by \( \beta^n [\mu(H - L) + \nu(M - L)] \).
expected value of Bank Alpha may be socially inefficient.73 Thus, in contrast to the conventional scholarly assumption that risk taking in the banking sector matters mainly when it is excessive,74 this simple example shows that any ex post increase in bank asset risk—even when individually efficient—may potentially lead to social losses. The likelihood that this will occur depends on the level of interbank correlation.

C. Modern Liquidity Production

In recent decades, the growth and deepening of the securities market, the liberalization of banks’ investment services, and the steady progress of financial technologies have combined to produce major changes in banking.75 The traditional banking model, in which banks use deposits to fund loans that they hold until repayment, has been increasingly supplemented by a new “originate and distribute” model.76 Under this new model, banks no longer hold loans on their balance sheets. Instead, they distribute them to investors, including other banks, through securitization transactions and other financing arrangements that can transform illiquid assets into marketable securities.77

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73 To see this, consider an alternative case where at period two Bank Alpha can replace Project I (i.e., the base project) with Project IV (i.e., the correlated project), which generates gross returns equal to $190 with probability 60% and zero otherwise. Assume again that Bank Alpha and Bank Beta are correlated, with the measure of correlation between the two banks still being 40%. Note that Project IV is riskier than Project I since it has a higher standard deviation (indeed, Project IV has a standard deviation of 93.09, while Project I has a standard deviation of 36). However, Project IV has a higher net present value than Project I: i.e., 60%[$190]−$100 = $14 > 0. (These features of Project IV—higher risk and higher present value than Project I)—can be generalized by requiring that the probability of the medium state is reduced by \((\alpha^m + \beta^m) < \frac{1}{2}\), the probability of the high state is increased by \(\alpha^m\), and the probability of the low state is increased by \(\beta^m\), such that \(\alpha^m(H - M) - \beta^m(M - L) = \Delta^m\) is positive.) Hence, for Bank Alpha the substitution of Project IV for Project I is always a good decision since Project IV increases the firm’s overall value: i.e., 60%[$190]−90%[$120] = $6. And, yet, this substitution is inefficient in terms of aggregate wealth since the expected cost Bank Beta bears when Bank Alpha undertakes Project IV exceeds the expected gain of Bank Alpha: i.e., 40%[90%−60%]×$100 = $12 > $6. (This result can be generalized under the following condition: \(\beta^m\alpha(H - L) + \alpha(M - L) > \Delta^m\), which entails \(\beta^m > \frac{\alpha^m(H - L) + \alpha(M - L) - \Delta^m}{\alpha^m(H - M) - \beta^m(M - L)}\).)

74 See, e.g., Lucian A. Bebchuk & Holger Spamann, Regulating Bankers’ Pay, 98 GEORGIA L.J. 247, 255 (2010) (limiting the analysis of the problem of managerial risk taking in banks to the undertaking of “actions . . . whose expected effect on the bank’s value is negative”).

75 See generally Charles K. Whitehead, Reframing Financial Regulation, 90 B.U. L. REV. 1 (2010) (discussing the changes that have intervened in financial markets and the banking sector since the 1970s and arguing that these changes create the need to reform current financial regulation of financial intermediaries).

76 See, e.g., Brunnermeier, supra note 67, at 78.

77 See Strahan, supra note 29, at 17. Loan sales and loan syndication are additional methods that banks use to distribute loans, which exploded in the 1980s with the development of new credit enhancement techniques. See id. at 22–23.
In a stylized representation, the typical securitization transaction begins with the issuance of commercial loans—most often mortgages—by an originator or “downstream bank,” which basically acts as a seller of loans. In the second step, loans are pooled into a large portfolio, which is then transferred, in full or in part, to an “upstream bank” that acts as a buyer of loans. The third step is the actual securitization of the loans—through a special purpose vehicle the upstream bank issues asset-backed securities to end investors, using the portfolio’s cash flows to repay capital and interest to the investors.78

The growth of securitization has been a primary factor behind the transition to a market-integrated liquidity model where banks of all types—including both investment and commercial (i.e., universal) banks79—jointly produce liquidity through a chain of interconnected bank obligations.80 Before the crisis, this model was touted as a way to improve the efficiency of capital

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78 See Gary B. Gorton & Nicholas S. Souleles, Special Purpose Vehicles and Securitization, in THE RISKS OF FINANCIAL INSTITUTIONS 560–61 (Mark Carey & René M. Stulz eds., 2006) (providing an overview of the mechanics of securitization). The asset-backed securities generated by the pool of loans are organized into senior and junior tranches having different priority of payment and different ratings. See Martin F. Hellwig, Systemic Risk in the Financial Sector: An Analysis of the Subprime-Mortgage Financial Crisis, 157 DE ECONOMIST 129, 139 (2009) (Neth.). This guarantees that senior tranches will be negatively affected by portfolio losses only where the “cushion” provided by the junior tranches is not enough to fully absorb these losses. In exchange, the interest portion paid on junior tranches virtually absorbs all the residual cash flows that the loan portfolio generates. See id.

79 See Gary Gorton & Andrew Metrick, Securitized Banking and the Run on Repo, 104 J. FIN. ECON. 425, 425 (2012) (“Securitized-banking activities were central to the operations of firms formerly known as investment banks (e.g. Bear Stearns, Lehman Brothers, Morgan Stanley, and Merrill Lynch), but they also play a role at commercial banks . . . such as Citigroup, J.P. Morgan, and Bank of America.”). Given their traditional involvement in the issuance of loans, commercial banks (and commercial subsidiaries of universal banks) typically served as downstream banks in the securitization process. Stand-alone investment banks (and investment subsidiaries of universal banks) acted both as upstream banks and end investors in this process. And universal banks were involved in all stages of securitization transactions through their commercial and investment subsidiaries.

80 By granting access to a larger liquidity platform, the “originate and distribute” model has indeed provided more and cheaper capital to all economic actors. See Margaret M. Blair, Financial Innovation, Leverage, Bubbles and the Distribution of Income, 30 REV. BANKING & FIN. L. 225, 242 (2010) (“[T]his process made a virtual avalanche of credit available to individuals and businesses.”). Political and monetary choices also contributed to the rapid expansion of the liquidity platform. The Federal Reserve’s long-standing policy of low interest rates and government policies that were designed to foster affordable housing helped U.S. banks to offer increasingly cheaper mortgages to their borrowers, with more and more people running to get a piece of the action. See Charles W. Calomiris, Financial Innovation, Regulation, and Reform, 29 CATO J. 65, 67–69 (2009); see also STIGLITZ, supra note 1, at 315 n.1 (stating that according to the U.S. Census Bureau over four million Americans became homeowners during the housing rush). As aptly observed by Margaret Blair, however, an excessive supply of liquidity through increased leverage of the banking system might be counterproductive by leading to the exponential growth of systemic risk. See Blair, supra, at 225.
allocation through more and better diversification. But the practice of securitization turned out to be different from the theory, largely due to fundamental flaws in its assumptions.

First, securitization models vastly underestimated the risk of moral hazard. Within the multiple vertical chains of buyers and sellers of securitized loans, each bank has intrinsic incentives to take risks. With each securitization transaction, the seller can externalize the cost of its own risk taking to the buyer, which, in turn, will act as seller in another transaction, replicating the same moral hazard scheme. As a result of this scheme, banks were insensitive to the quality of securitized assets. Instead, they focused on increasing securitization volumes. Perversely, the expansion of lending to riskier borrowers and the securitization of riskier loan portfolios became rational investment strategies for banks.

Second, while end investors were not passing risk to someone else, many among them turned out to be other banks rather than investors with a long investment horizon (e.g., pension and insurance funds), as predicted by the theory of securitization. And as competition for securitization operations

81 Cf. Martin Hellwig, Banks, Markets, and the Allocation of Risks in an Economy, 154 J. INSTITUTIONAL & THEORETICAL ECON. 328, 330 (1998) (Ger.) (“[A]bstract allocation theory provides the general principle that efficient risk-sharing requires a subdivision of all risks among the agents in the economy according to their respective degrees of risk tolerance.”). Pooling and tranching theoretically provide for larger risk sharing among investors. As compared to a single loan, a security that is backed by a pool of loans diversifies the risk of default across the different loans in the pool. And the issue of multiple tranches of asset-backed securities with different priority amplifies this effect by making the holders of senior tranches virtually immune from the default risk of the underlying loans. See Hellwig, supra note 78, at 141–42.


83 See Hellwig, supra note 78, at 143, 166.

84 In principle, similar distortions in risk incentives can be mitigated by structuring the operation as an agency securitization, where the downstream bank (i.e., the seller) retains the equity tranches of the securitization operation. Indeed, the downstream bank should have incentives to select portfolios of better quality when it stands first in line to bear potential losses. Günter Franke & Jan Pieter Krahnen, Default Risk Sharing Between Banks and Markets: The Contribution of Collateralized Debt Obligations, in THE RISKS OF FINANCIAL INSTITUTIONS, supra note 78, at 603, 603–04, 606–07 (arguing that the originating bank’s retention of the “first-loss position” reduces asymmetric information and moral hazard problems affecting loan trading). In practice, however, most securitization operations took the form of principal securitizations, with equity tranches sold to outside investors. See Hellwig, supra note 78, at 145 (“Originating institutions did not, in general, hold the equity tranches of the portfolios that they generated; indeed, as time went on, ever greater portions of equity tranches were sold to outside investors.”).

85 See Hellwig, supra note 78, at 140 (explaining that at a theoretical level securitization should have shifted the funding liquidity risk inherent in the traditional banking model from originators exposed to asset
became more acute, banks involved in the securitization market began to take recourse to less costly short-term financing. In particular, investment banks began to rely heavily on repurchase agreements (repos) to better face the competitive pressure of universal banks, which enjoyed the comparative advantage of access to deposit funding. Because of their deposit-like features, repos and other forms of short-term financing allowed the rapid growth of banks' balance sheets. But this higher leverage created additional incentives for risk taking. In a perverse spiral, the undertaking of risky securitization investments commanded more and more leverage and, in turn, induced more risk taking. Additionally, the use of short-term debt disproportionately increased banks' exposure to funding liquidity risk and with it the likelihood of sudden requests of withdrawal by short-term creditors. This risk finally

mismatch (i.e., high funding liquidity risk) to investors who have “long investment horizons and therefore do not consider [this risk] to be a risk at all”).

86 Cf. Brunnermeier, supra note 67, at 79–80 (suggesting that banks' recourse to shorter maturity liabilities was a factor leading to the crisis). The need for less investor monitoring explains the lower cost of short-term debt financing. Indeed, short-term investors can price increases in risk in subsequent loans or, more drastically, refuse a new loan when unwilling to bear increased risk. See Mark J. Flannery, Paper, Debt Maturity and the Deadweight Cost of Leverage: Optimally Financing Banking Firms, 84 AM. ECON. REV. 320, 321–22 (1994).

87 See Peter Hördahl & Michael R. King, Special Feature, Developments in Repo Markets During the Financial Turmoil, BIS Q. REV. (Switz.), Dec. 2008, at 37, 45 (observing that U.S. investment banks largely dominated the repo market and used repos to finance about half of their assets). Under a repo agreement, one party (e.g., the investment bank) sells securities to another party (e.g., the repo holder) and promises to buy the securities back at a higher price in the short run, in practice using the securities for collateralized borrowing. For an excellent discussion of the many implications of repo financing and its consequences during the crisis, see Gorton & Metrick, supra note 79.

88 In addition to repos, the use of short-term commercial papers—unsecured obligations that are issued for a fixed amount and bear a fixed interest rate—also added to banks' leverage capacity, providing an important supplement to deposit funding. See Brunnermeier, supra note 67, at 79. In particular, before the crisis, this form of financing was used to finance operations of the special purpose vehicles employed in securitization transactions, typically with the provision of explicit or implicit guarantees by the sponsoring bank. See id. at 80; Strahan, supra note 29, at 26.

89 See Blair, supra note 80, at 277–78 (suggesting that higher leverage poses a prisoner’s dilemma: each bank is better off using more leverage, but all of them may become worse off if the banking system as a whole becomes more leveraged, because this will increase the likelihood of systemic risk).

90 In most cases, the settlement of repo agreements was structured to take place overnight, with investment banks rolling over their repo funding on a daily basis. See Report of Anton R. Valukas, Exam’r at 3, In re Lehman Bros. Holdings Inc., 433 B.R. 113 (Bankr. S.D.N.Y. 2010) (No. 08-13555), available at http://jenner.com/lehman/lehman/VOLUME%201.pdf. So banks like Lehman Brothers, for example, “had to borrow tens or hundreds of billions of dollars in [repo] markets each day from counterparties to be able to open for business.” Id.
materialized during the crisis when short-term creditors began to deny renewal of their positions, causing the failure of several banks.91

II. BANK GOVERNANCE AND RISK TAKING

The previous Part discussed the economics of risk taking in banks and explained how it may lead to systemic crises. This Part examines the relationship between banks’ corporate governance and risk taking. Corporate governance is the complex set of legal, contractual, and social mechanisms by which corporations are organized and operated. Perhaps more important, corporate governance is understood as “one of the ways of regulating business life”92 not just within individual corporations, but for the economic system as a whole. It is thus unsurprising that in the aftermath of the crisis, weak bank governance emerged as a candidate for blame when commentators pointed to excessive risk taking by reckless bank managers and the harm caused to bank investors.93 However, while current theoretical frameworks have addressed the

91 Bear Stearns and Lehman Brothers provide paradigmatic examples of the consequences of the increase in banks’ exposures to funding liquidity risk during the crisis. Both banks had made significant investments in mortgage-backed securities, relying heavily on repurchase agreements to raise the capital for these investments. As a result, when the rate of default on mortgage-backed securities began to increase, both banks suffered huge losses in the investment portfolios they used as collateral to support their funding needs. In response, the banks’ repo creditors required more, and more liquid, collateral. Eventually they denied rollover of existing agreements, essentially playing out a modern version of the classic bank run. See DUFFIE, supra note 1, at 13–19 (discussing the dynamics underlying the failure of Bear Stearns); SKEEL, supra note 1, at 23–28 (discussing the failure of Lehman Brothers).


93 This view of the crisis has been equally endorsed by academics, policy analysts, and regulators both in the United States and Europe. See, e.g., FIN. CRISIS INQUIRY COMM’N, THE FINANCIAL CRISIS INQUIRY REPORT, at xviii (2011) [hereinafter FCIC FINAL REPORT] (observing that “dramatic failures of corporate governance and risk management at many systemically important financial institutions were a key cause of this crisis”); HAMEED MEHRAN ET AL., FED. RESERVE BANK OF N.Y., STAFF REPORT NO. 502, CORPORATE GOVERNANCE AND BANKS: WHAT HAVE WE LEARNED FROM THE FINANCIAL CRISIS? (2011) (providing an excellent overview of the governance problems that have emerged from the crisis); NESTOR REPORT, supra note 53 (discussing corporate governance ineffectiveness in six major U.S. investment banks); STIGLITZ, supra note 1, at 154 (blaming the crisis on “poor corporate governance”); Kevin Dowd, Moral Hazard and the Financial Crisis, 29 CATO J. 141, 153–54 (2009) (arguing that the failure of corporate governance to control managerial moral hazard in banks was a central theme in the crisis); Grant Kirkpatrick, The Corporate Governance Lessons from the Financial Crisis, FIN. MARKET TRENDS, Sept. 25, 2009, at 61, 62 (arguing that failures and weaknesses in corporate governance arrangements played a crucial role in the collapse of major financial institutions during the recent credit crisis); Report of the High-Level Grp. on Fin. Supervision in the EU, at 29 (2009) (concluding that corporate governance was “one of the most important failures of the . . . crisis”).
effects of governance on risk taking, they have failed to fully consider the relationship between external and internal governance. External governance comes from the oversight and influence that both debtholders and shareholders exercise over the corporation. Internal governance, instead, comprises the institutional arrangements that discipline the corporate decision-making process, such as the board of directors, compensation schemes, and risk management systems. Focusing on the causal relationship between external and internal governance reframes the failure of banks’ governance dynamics. Instead of blaming opportunistic bank managers, Part II addresses the moral hazard of the principals—opportunistic bank debtholders and shareholders.

A theoretical analysis of the interplay between external and internal bank governance suggests that debt discipline would prompt bank shareholders to seek governance arrangements that constrain risk taking. But in the real world, under the protection of safety nets (i.e., deposit insurance and bailouts), bank debtholders become almost insensitive to risk taking and opportunistically avoid monitoring banks. This debtholder opportunism, in turn, points to shareholder opportunism as the immediate cause leading to the failure of bank governance. Without the constraint of debt discipline, bank shareholders, shielded by limited liability, benefitted from apparently weak governance arrangements that incentivized managerial risk taking.

A. External and Internal Governance

The discussion that follows briefly outlines the prevailing theoretical approaches to the governance of risk taking: the policy analysis approach, the

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94 A recent empirical work by Luc Laeven and Ross Levine constitutes an exception to the lack of scholarly attention to the role played by the interaction of external and internal bank governance in leading to the crisis. See Laeven & Levine, supra note 45. However, that work primarily focuses on assessing whether bank risk taking varies with different types of banks ownership structures (i.e., concentrated or diffused ownership), while this Article attempts to provide a general theory of bank governance mechanisms.
debt contract approach, and the optimal compensation contract approach. It then explains why these approaches fail to fully account for the interaction between external and internal governance mechanisms and why a more comprehensive approach is needed.

1. The Policy Analysis Approach

The past three years have seen an upsurge in policy reports identifying flawed compensation schemes, poor risk management, and ineffective board oversight as the salient governance weaknesses underlying the crisis. According to this narrative, captured, and often inexpert, board members95 joined by complacent risk managers96 allowed CEOs to gain undisputed dominance over banking organizations.97 This led to a widespread system of excessive short-termism and “rewards for failure,” under which bank managers had everything to gain and nothing to lose as they piled risk after risk onto their portfolios.98

Focused solely on passive boards and impotent risk managers, most of these reports restrict the analysis to internal governance arrangements. True to Berle and Means’s classic vision of the corporation, where opportunistic managers exercise unbridled power over the firm,99 policy analysis largely assumes that increased risk taking is a problem of mismanagement. In other words, this perspective treats the failure of bank governance as a direct consequence of the managers’ usurpation of internal control mechanisms to their own benefit. As a result, the policy response developed under this view of


96 See, e.g., FCIC FINAL REPORT, supra note 93, at 18 (observing that “[a]t too many financial firms, management brushed aside the growing risks to their firms” mostly aided by complacent chief risk officers).

97 See, e.g., id. at 429 (“Managers of many large and midsize financial institutions in the United States and Europe amassed enormous concentrations of highly correlated housing risk on their balance sheets. In doing so they turned a building housing crisis into a subsequent crisis of failing financial institutions.”); SENIOR SUPERVISORS GRP., RISK MANAGEMENT LESSONS FROM THE GLOBAL BANKING CRISIS OF 2008, at 4 (2009) (suggesting that the failure of banks’ risk management can be in large part attributed to the unwillingness of bank managers to follow a more conservative investment approach).

98 See Kirkpatrick, supra note 93, at 65–77.

99 See ADOLF A. BERLE, JR. & GARDINER C. MEANS, THE MODERN CORPORATION AND PRIVATE PROPERTY (1933). Notably, Berle and Means were the first to suggest that the modern public corporation model with dispersed shareholders may place control over the corporate affairs in the hands of self-perpetuating management. See id. at 86–88.
the connection between bank governance and the crisis is a closer alignment of manager and shareholder interest.100

2. The Debt Contract Approach

Policy analysis critiques of bank governance are in clear contrast with the classic corporate finance theory of increased risk taking. As discussed above, this approach frames increased risk taking in terms of the conflicting investment expectations of shareholders and debtholders—a problem of shareholder opportunism rather than managerial opportunism.101 Put differently, this paradigm of risk taking assumes that managers are perfect agents of their principals, ignoring any issue of self-interested managerial behavior.102

The direct implication of this abstraction from the shareholder–manager conflict is that the governance of risk taking is reduced to a principal–agent problem between the debtholders and the firm,103 which is treated as a monolithic entity that makes decisions in the same manner as an entrepreneur.104 Therefore, under this view, the contractual negotiation between the debtholders and the firm is the primary instrument that serves to control risk taking. This reduces the problem of a firm’s risk choices to one of optimal specification of the debt contract; that is, to the negotiation of optimal contractual constraints on the firm’s activity.

100 See infra text accompanying notes 207–09 (discussing the U.S. regulators’ subscription to this approach).
101 See supra Part I.A.1.
102 See Triantis & Daniels, supra note 4, at 1077 (observing that the literature on the debtholder–shareholder conflict has developed by assuming away the shareholder–manager conflict). To the extent that it considers the manager–shareholder agency problem, this approach describes risk averse managers as a factor that may mitigate the debt–equity conflict. See Macey & O’Hara, supra note 93, at 91, 98 (suggesting that the risk aversion of managers acts as a “risk-reducing factor” in banks as in other corporations).
103 See John Armour et al., Agency Problems and Legal Strategies, in THE ANATOMY OF CORPORATE LAW 35, 36 (Reinier Kraakman et al. eds., 2d ed. 2009) (describing the agency problem that “involves the conflict between the firm itself—including, particularly, its owners—and the other parties with whom the firm contracts, such as creditors” and observing that “the difficulty lies in assuring that the firm, as agent, does not behave opportunistically”).
104 Cf. Timothy F. Malloy, Regulating by Incentives: Myths, Models, and Micromarkets, 80 TEX. L. REV. 531, 535 (2002) (discussing the currently dominant representation of the corporation as a monolithic entity and suggesting that regulation should instead take into consideration the fact that corporations are not black boxes).
3. The Optimal Compensation Contract Approach

The most recent corporate finance scholarship has taken a third path and reintroduced the shareholder–manager agency problem into the analysis of the governance of risk taking. As discussed above, complete alignment of shareholders and managers through equity compensation produces a negative externality for the debtholders: managers are transformed into risk-loving agents.105 In response, the contemporary financial paradigm suggests that managers should be given incentives to act as impartial agents of both the shareholders and the debtholders; to this end, a manager’s payoff schedule should be tied to both the firm’s equity and the firm’s debt.106 In other words, under this paradigm, the simultaneous governance problems that arise between a firm’s shareholders and managers, on the one hand, and a firm’s shareholders and debtholders, on the other, become an issue of optimal compensation design.

4. Toward a More Comprehensive Approach

This Article argues that each of these approaches to the governance of risk taking is lacking. Each of the three fails to fully consider that a firm’s internal governance is a function of the richer set of interactions between shareholders and debtholders, that is, external governance.

First, policy analysis focuses exclusively on internal governance arrangements, conceived as a set of requirements imposed by law. But the law grants investors latitude to shape these arrangements. Legal guidance on governance arrangements often comes in the form of default rules, not iron rules.107 For example, each corporation must have a board of directors, but the

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105 See supra Part I.A.2.
106 The pioneering studies on the use of executive compensation to solve the simultaneous agency problems of effort and risk are John & John, supra note 8, at 954–60, which provides a formal model of optimal compensation design and multiple agency problems, and John et al., supra note 9, at 99–121, which provides a formal model of optimal compensation design in the banking sector. For a more recent treatment of the same approach, see Bebchuck & Spamann, supra note 74, at 253, 283–84, which suggests tying bank executive compensation to a security basket representing “a set percentage of the aggregate value of common shares, preferred shares, and all outstanding bonds.”
expertise of board members and the number of meetings is left to the discretion of private actors. And even when internal governance requirements are formulated as mandatory, they may contain loopholes or receive only weak enforcement. Thus, by assuming that internal governance arrangements operate in a vacuum and omitting any discussion of external governance, the policy analysis approach is bound to provide an incomplete account of the crisis.

In opposition to this approach, the optimal debt contract approach is indifferent to the internal governance arrangements that discipline the firm’s decision-making process. Indeed, this treatment assumes a context in which the constraints arising from the debt contract are sufficient to adequately control a firm’s risk choices. In reality, however, the debtholder–firm relationship involves changing conditions, contractual incompleteness, and managers who are imperfect shareholder agents. Contracts cannot predict every possible contingency. And managers running the corporate affairs may act in their own self-interest. The debt contract approach fails to account for these dynamics and their impact on a firm’s risk choices.

Finally, the optimal compensation contract approach can be viewed as a partial explanation of the relationship between external and internal governance mechanisms. This approach reflects an understanding of the interaction existing between shareholder and debtholder governance, on the one hand, and a fundamental governance arrangement—manager compensation schemes—on the other. However, it reduces this interaction to a governance alternatives to construct governance systems. Therefore, we observe inter-firm cross-sectional differences in the portfolios of governance procedures and mechanisms that comprise corporate governance systems.

The thesis of Baber and Liang that managers themselves shape a firm’s internal governance can be reconciled with this Article’s thesis about the governance role of shareholders and debtholders by observing that managers respond to the activism of these investors in choosing specific governance arrangements.

This is what happened, for example, with independency requirements established by the New York Stock Exchange (NYSE). See N.Y. STOck Exch., LISTED COMPANY MANUAL § 303.A00 (2012), available at http://nysemanual.nyse.com/LCMTools/PlatformViewer.asp?selectednode=chp_1_4&manual=%2Flcm%2Fsections%2F1cm-sections%2F. Before the crisis a large majority of banks’ board members qualified as independent pursuant to these rules. See NESTOR REPORT, supra note 53, at 8. After the crisis, however, several commentators have expressed doubts about the material independence of board members. See Mehran et al., supra note 93, at 11–12 (2011) (“The challenge for supervisors is, irrespective of official independence . . . .”).


See supra text accompanying notes 49–51 (discussing several ways in which managers’ actions may depart from the pursuit of shareholders’ interests).
problem of optimal compensation design. Therefore, it fails to take into account issues of contractual incompleteness and, primarily, monitoring, which is, instead, an essential governance component. Conditions may change and compensation schemes may fail to provide managers with the right incentives to act as perfect agents, potentially demanding the undertaking of corrective action by the principals. And these incompleteness issues are likely to be compounded when managers are required to act simultaneously as common agents of both shareholders and debtholders.

The discussion that follows attempts to fully incorporate the interaction between external and internal governance mechanisms into the analysis of the effects of bank governance on risk taking. To this end, this discussion will use insights from contract theory to develop a counterfactual analysis of what bank governance would be absent safety nets. First, it will investigate the general dynamics of the interaction between external and internal governance in corporations. Second, it will apply the results of this investigation to corporations with high leverage, since banks fit into this paradigm. Finally, it will contrast these results with the reality of the distortions introduced in governance mechanisms by deposit insurance and other safety nets.

B. Multi-Dimensional Moral Hazard and the Dynamics of Governance

On a general level, the governance activity of both shareholders and debtholders has two components—monitoring and the exercise of governance

111 See DEWATRIPONT & TIROLE, supra note 12, at 120 (suggesting that the limited verifiability of the manager’s actions makes the compensation contract insufficient to provide adequate disciplining incentives and requires the provision of additional incentives by means of the “external involvement” of the firm’s investors, i.e., both shareholders and debtholders). For a more detailed discussion of the limits of the optimal compensation approach to bank governance, see infra Part III.C.3.

112 In the economics of information, a common agency problem arises when a single agent performs tasks on behalf of multiple principals who have divergent preferences. See B. Douglas Bernheim & Michael D. Whinston, Common Agency, 54 ECONOMETRICA 923, 923–24 (1986). Consistent with this paradigm, in the modern corporation managers act as both agent of the shareholders and the debtholders. On the one hand, managers exercise delegated authority over the enterprise on behalf of the shareholders. On the other hand, in this position, they execute the debtholders’ contract with the firm. In my prior work, I have investigated the applicability of the common agency model to the modern corporation at greater length, suggesting that this model provides a better descriptive and normative account of corporate agency problems than the traditional principal-agent paradigm. See Simone M. Sepe, Corporate Agency Problems and Dequity Contracts, 36 J. CORP. L. 113, 124–33 (2010).

113 The term multi-dimensional moral hazard is used to refer to moral hazard that involves “effort choices and risk choices at the same time.” See Martin F. Hellwig, A Reconsideration of the Jensen-Meckling Model of Outside Finance, 18 J. FIN. INTERMEDIATION 495, 496 (2009) (introducing this concept of moral hazard); see also Biais & Casamatta, supra note 38, at 1293.
levers. Monitoring involves the collection and processing of both prospective (i.e., forward-looking) and retrospective (i.e., backward-looking) information about the firm. The exercise of governance levers consists of the actions investors take—based on the information they gather through their monitoring activity—to protect their investment expectations. Drawing on the insights of Albert Hirschman’s classic taxonomy of the relationships between individuals and organizations, these actions can be aggregated into two broad categories: exit and voice. Exit involves the termination of the investors’ participation in the corporation, while voice involves the exercise of control rights.

1. The Effort Dimension

As residual corporate claimants, shareholders act simultaneously as the constituency that cares the most about managerial effort and that faces the most severe contracting challenges while protecting their investment expectations. Indeed, even complex sets of contractual rules cannot completely solve the informational asymmetry problems that shareholders bear while attempting to control daily management actions. Equity-based compensation is useful to mitigate shareholder–manager conflicts, but it faces similar limitations: it is an imperfect instrument to solve problems of contractual incompleteness. First, manager performance is difficult to verify, which may limit the effectiveness of incentive-based compensation. Second, while equity-based compensation deters shirking, it is less effective in

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116 Id. at 30. Like in Hirschman’s work, in this Article the term voice is used not only to refer to formal powers of decision making, but also to any form of influence (including backroom influence and “jawboning” activities) that shareholders and debtholders may be able to exercise on corporate decisions. In contrast to Hirschman, however, this Article refers to transferability rights, such as sale of stock or other corporate securities, as a form of exit. Although the right to transfer one’s corporate participation to another does not exactly correspond to termination of participation in an organization, what matters for this Article is that transferability rights are a powerful means to influence corporate decisions.
117 However, it is important to emphasize that all the firm’s constituencies, including debtholders, benefit to some extent from increased managerial effort, because higher effort increases the likelihood of successful firm performance and the likelihood that the firm will be able to meet its debt obligations. See Triantis & Daniels, supra note 4, at 1078. From this perspective, this section extends the thesis of Triantis and Daniels that exit by a firm’s lenders provides valuable information for disciplining managers’ effort choices, arguing that the interaction between debtholder and shareholder governance produces beneficial effects along the dimension of managers’ risk choices as well.
119 See supra note 111 and accompanying text.
constraining private benefits extraction. Indeed, the managers’ ability to extract private benefits typically matures over time. Therefore, this form of opportunism may be difficult to prevent through contract at the outset of the shareholder–manager relationship. Further, equity-based compensation may be of little help in constraining entrenchment. Managers’ first concern is preserving their power. Thus, the appeal of a better return on their equity stake may not be sufficient to prevent them from undertaking suboptimal projects that secure their control position.

In response to these problems, corporate law provides shareholders with a variety of institutional means, including voting rights and fiduciary duties, to exercise influence (i.e., voice) over the corporate decision-making process. In addition, public shareholders have the right to exit from the corporation by transferring (i.e., selling) their shares to other investors. Because share transfers can impose negative consequences on the corporation, shareholders can successfully interfere with governance arrangements with the mere threat of exit. Accordingly, the exercise of shareholder governance involves a fluid

120 See Andrei Shleifer & Robert W. Vishny, Management Entrenchment: The Case of Manager-Specific Investments, 25 J. FIN. ECON. 123, 123–24 (1989) (suggesting that managers may invest in suboptimal projects that require their specific contribution in order to secure their control position).

121 Shareholders also have the power to remove the board, although commonly removal must be for cause. See Campbell v. Loew’s, Inc., 134 A.2d 852, 858 (Del. Ch. 1957) (establishing that a director may be removed for cause). In addition, under some statutes, they can directly intervene in the governance of the corporation through the amendment of corporate bylaws. See, e.g., CAL. CORP. CODE § 211 (West 1990); DEL. CODE ANN. tit. 8, § 109(a) (West 2006) (amended 2010); N.Y. BUS. CORP. LAW § 601(a) (McKinney 2003). Further, shareholder-initiated proposals are possible under Rule 14(a)-8 of federal proxy rules (i.e., the town meeting rule), which gives shareholders voice in several governance subjects, including executive compensation, board organizational rules, and anti-takeover measures. See 17 C.F.R. § 240.14(a)-8 (2011). For a thorough discussion of shareholder voice, see Luca Enriques, Henry Hansmann & Reinier Kraakman, The Basic Governance Structure: The Interests of Shareholders as a Class, in THE ANATOMY OF CORPORATE LAW, supra note 103, at 55, 55–87.

122 See Armour et al., supra note 103, at 41 & n.26. While transferability of shareholder claims is not provided for in unlisted corporations, buyout agreements and withdrawal rights often grant shareholders of these corporations a contractual right of exit. See id.

123 Exit can have a negative impact on share prices, especially when it is exercised by large shareholders. To this extent, exit punishes corporations as long as their compensation is equity-based. See Anat R. Admati & Paul Pfleiderer, The “Wall Street Walk” and Shareholder Activism: Exit as a Form of Voice, 22 REV. FIN. STUD. 2645, 2646 (2009). More drastically, exit in the form of transfer rights “permits the replacement of the current shareholder/principal(s) by a new one that may be more effective in controlling the firm’s management.” See Armour et al., supra note 103, at 41. Hence, “a transfer of control rights, or even the threat of it, can be a highly effective device for disciplining management.” Id.
process where exit and voice act as complementary means of organizational discipline.\textsuperscript{124}

However, shareholders’ interest in profit maximization does not just involve inducing managers to exert effort. Instead, shareholders also want to minimize costs, including the cost of debt. Under this more complete representation of the shareholders’ optimization problem, shareholder governance emerges as a disciplining mechanism that naturally interacts with debtholder governance.

2. The Risk Dimension

In order to better understand the factors at play in the interaction between shareholder and debtholder governance, it is helpful to start with a simple observation. On the one hand, as residual claimants protected by limited liability, shareholders want high-risk, high-return projects;\textsuperscript{125} on the other hand, they want to minimize the cost of debt.\textsuperscript{126} Instead, debtholders, as fixed claimants, want low-risk projects that preserve asset value.\textsuperscript{127} These divergent risk preferences are managed through implicit negotiation between shareholders and debtholders. Accordingly, in a world of complete information, shareholders and debtholders would always be able to negotiate for complete contracts that eliminate inefficient risk taking. That is, debtholders would be able to demand interest rates that are fully contingent on the actions taken by the firm.\textsuperscript{128}

The following variation of the above example on excessive risk taking will better illustrate the point.\textsuperscript{129} Bank Alpha may still have the opportunity to substitute Project III for Project I. Under the original setting of the example, the undertaking of Project III will penalize the debtholders if the interest rate ($r$) they bargain for is based on the assumption that Bank Alpha will undertake Project I: i.e., $90\%[90(1 + r)] = 90$, from which $r = (1/90\%) - 1 = 11.11\%$. But in a world of symmetric information, the debtholders would

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\textsuperscript{124} See Hansmann & Kraakman, \textit{supra} note 107, at 3 (arguing that exit, voice, and liability are complementary organizational means, rather than alternative means as suggested by Hirschman).

\textsuperscript{125} See \textit{supra} Part I.A.1.

\textsuperscript{126} See John & John, \textit{supra} note 8, at 951.

\textsuperscript{127} See \textit{supra} Part I.A.1.

\textsuperscript{128} See Alan Schwartz, \textit{Incomplete Contracts}, in \textit{THE NEW PALGRAVE DICTIONARY OF ECONOMICS AND THE LAW} 277, 277 (Peter Newman ed., 1998) (“A complete contract prescribes payoff-relevant actions for every possible state of the world and the payoffs for these actions.”).

\textsuperscript{129} See \textit{supra} Part I.A.1.
anticipate that the manager could use the proceeds from debt to substitute Project III for Project I. And they would also observe which project Bank Alpha undertakes afterward. Accordingly, as shown in Figure 4 below, they would be able to write a contingent contract under which the interest rate applicable to Project III is: 55%[90(1+r)] = 90, from which \( r = (1/55\%) - 1 = 81.82\%.^{130} \) This higher interest rate would compensate the debtholders for the wealth expropriation they bear under Project III. As a result, the substitution of Project III for Project I would no longer be profitable for the shareholders. Indeed, the higher gains they would receive from Project III would be offset by the increase in the cost of debt; i.e., 55%[180 − 90(1 + 81.82%)] = $9 < 90%[120 − 90(1 + 11.11%)] = $18.\(^{131}\)

\[
\begin{array}{|c|c|c|}
\hline
\text{Interest Rate (r)} & \text{Shareholders' Expected Payoff} & \text{Debtholders' Expected Payoff} \\
\hline
\text{Project I} & 11.11\% & $18 & $90 \\
\text{Project III} & 81.82\% & $9 & $90 \\
\hline
\end{array}
\]

\textbf{Fig. 4} Contingent Contract

\(^{130}\text{This result can be generalized by distinguishing two cases. See supra note 38 (providing a description of the basic setting of the model that is used to generalize the examples in the text). Consider first the case where the principal and the interest portion to be repaid to the debtholders at } t_2 \text{ are lower than the return of the middle state, i.e., } D(1 + r''') < M. \text{ In this case, the condition that determines the equilibrium interest rate is}
\[
\left( \frac{1}{3} + \alpha''' \right) D(1 + r''') + \left( \frac{1}{3} - \alpha''' - \beta''' \right) D(1 + r''') + \left( \frac{1}{3} + \beta''' \right) L = D, \text{ which gives } r''' = \left[ \frac{\beta'''(\alpha''')(n-1) - \frac{1}{3} \beta'''}{\frac{1}{3} \beta''' + D} \right].
\]

\text{Note that the interest rate is increasing in } \beta'''. \text{ Indeed, since in this case the debtholders are paid in full upon realization of the middle state, they are more concerned with a reduction in the probability of realization of the middle state (i.e., } \alpha'' + \beta''') \text{ than they are interested in a marginal increase in the probability of the high state (i.e., } \alpha'''). \text{ Consider now the case where the principal and the interest portion to be repaid to the debtholders at } t_2 \text{ are, instead, higher than the return of the middle state, i.e., } D(1 + r''') > M. \text{ Here, the condition that determines the equilibrium interest rate is}
\[
\left( \frac{1}{3} + \alpha''' \right) D(1 + r''') + \left( \frac{1}{3} - \alpha''' - \beta''' \right) D(1 + r''') + \left( \frac{1}{3} + \beta''' \right) L = D. \text{ After some algebraic manipulation, } r''' = \left[ \frac{\beta'''(\alpha''')(n-1) - \frac{1}{3} \beta'''}{\frac{1}{3} \beta''' + D} \right] \text{ holds. Also here the interest rate is increasing in } \beta'''. \text{ However, in this case the debtholders bear losses both under the middle state and the low state. That is, they are repaid in full only upon realization of the high state. Therefore, the interest rate is decreasing in } \alpha'''.
\]

\(^{131}\text{In both the cases identified supra in note 130, under } r''' \text{ the undertaking of Project III becomes unprofitable for the shareholders since } \alpha''')(H-M) - \beta'''(M - D(1 + r''')) < 0.
In reality, however, the scarcity of observable and verifiable information leaves debtholders incapable of bargaining for contingent interest rates. As a result, in order to protect their investment expectations, debtholders price debt through a pooling mechanism: they pool firms in risk categories and price debt based on the average risk of each category. The pooling mechanism of debt pricing, however, leads to an inefficient allocation of debt capital. For low levels of adverse selection, it may produce cross-subsidization effects, increasing the likelihood that projects like Project III are funded in place of more efficient projects like Project I. More radically, for high levels of adverse selection (i.e., when in the market there are many projects like Project III), it may lead to credit rationing because debtholders are aware that the demand for higher returns is not a perfect compensatory mechanism. In the context of our example, these adverse effects imply that Bank Alpha’s shareholders may either face a higher cost of debt or be unable to raise the capital needed to finance Project I (recall that Project I is Bank Alpha’s available project at the issuance of debt, while Project III only is a future possibility). Explained simply, the pooling mechanism of debt pricing reduces expected equity returns. This serves to produce a disciplinary effect: in order to minimize their cost of debt, shareholders have incentives to send a signal to the debtholders that they can credibly commit their firm to sound risk policies. Debtholders, in turn, incorporate credible signals into the cost of debt, moving from a pooling to a separating equilibrium.


133 Cross-subsidization is the problem that arises when good firms (i.e., firms that undertake projects like Project I) receive worse terms (i.e., higher interest rates) from the market than would if their nature were known; whereas bad firms (i.e., firms that undertake projects like Project III) receive far better terms. See Tirole, supra note 49, at 252.

134 Credit rationing describes a market condition where creditors offer less aggregate credit, with the consequence that good business projects might risk going unfunded. See generally Joseph E. Stiglitz & Andrew Weiss, Credit Rationing in Markets with Imperfect Information, 71 Am. Econ. Rev. 393 (1981) (modeling credit rationing in loan market equilibrium).

135 See supra text accompanying notes 36–38.

136 In economics of information, signaling is used in the context of asymmetric information when the agent has private information that she wants to reveal to the principal in order to obtain better contractual terms. See generally Michael Spence, Job Market Signaling, 87 Q. J. Econ. 355 (1973) (defining and examining the characteristics of market signaling). Since a credible signal is always costly to the agent, it
Consistent with the common law view of the debt contract as the essential source of debtholder governance,\(^{138}\) the negotiation of contractual covenants giving debtholders authority to condition the firm’s decisions is the standard form the shareholders’ commitment to sound risk policies takes. Among the several types of contractual covenants that allow debtholders to condition their debtors’ decisions,\(^{139}\) there are (i) informational covenants that facilitate monitoring, (ii) investment restrictions that constrain the firm’s discretion over investment policies (often in the form of veto powers), and (iii) financial covenants that provide for minimum financial goals that the debtor is continually required to meet.\(^{140}\) In addition to control covenants, all debt contracts typically provide for exit in the form of a *right of withdrawal* upon bargained-for trigger events.\(^{141}\) The threat of exercising this right offers a powerful governance lever to debtholders, allowing them to dynamically react to unforeseen contingencies. This happens because withdrawal can trigger insolvency if the corporation is not liquid enough to pay back its debts or is unable to refinance. In this respect, the debt contract only represents the reference point in the exercise of active control by debtholders, with the threat


\(^{138}\) See, e.g., Prod. Res. Grp., L.L.C. v. NCT Grp., Inc., 863 A.2d 772, 787 (Del. Ch. 2004) (“It is presumed that creditors are capable of protecting themselves through the contractual agreements that govern their relationships with firms.”). There are, however, some laws that are designed to protect creditors’ interests under specific circumstances, including federal securities laws that impose mandatory disclosure duties on the debtor, rules on capital regulation, fraudulent conveyance law, and the equitable powers of “piercing the corporate veil.” See generally ROBERT CHARLES CLARK, CORPORATE LAW § 2.4, at 71–74 (1986). From a contractarian perspective, this minimum set of “creditor-protecting rules” can be seen as a mandatory contract that binds parties even when they have not bargained for such protections. See id. § 2.1, at 37.

\(^{139}\) It is important to emphasize here that while this Article examines banks as debtors, the general theory of debtholder governance is based on the benchmark of banks’ conduct as creditors of non-banking firms. See Triantis & Daniels, supra note 4, at 1080–81; Tung, supra note 4, at 125–26. More recent economic studies, however, have suggested that bondholders also engage in active governance, mostly by bargaining for risk-event covenants. See K.J. Martijn Cremers et al., *Governance Mechanisms and Bond Prices*, 20 REV. FIN. STUD. 1359, 1362 (2007).

\(^{140}\) See Tung, supra note 4, at 135–40 (providing a detailed description of the various types of debt covenants); see also Smith & Warner, supra note 35, at 125–46 (examining the ways in which bond covenants are written to control conflicts between stockholders and debtholders).

\(^{141}\) See Triantis & Daniels, supra note 4, at 1084 (describing the several forms that exit in the form of a right of withdrawal can take).
of exit forcing renegotiation and allowing debtholders to “complete” the contract over time.142

So far the discussion of the governance dynamics that address risk choices within corporations has assumed away the role of the managers. In reality, however, unless the corporation is controlled by a blockholder, it is the managers that run the negotiation with the debtholders on the shareholders’ behalf. To this extent, self-interested managerial behavior also matters for the governance of risk choices, demanding shareholder control of such choices. This is because a manager’s compensation contract may fail to perfectly align her risk preferences with those of the shareholders, even when the manager is compensated through equity-based schemes.143 Thus, the manager may have private incentives to undertake riskier projects that offer her a remunerative private benefit even when these projects are unprofitable for the shareholders.144 Moreover, equity-based compensation might present additional problems with respect to optimal risk choices. At the time they are granted, stock options add an additional layer of leverage in the managers’ payoff schedules that serves to align the managers’ risk preferences with those of the shareholders.145 But if a riskier project materializes after a grant of the stock options, the wedge created by this additional leverage might make such a project profitable for the manager even when its undertaking is inefficient from the shareholders’ viewpoint.146

142 Debt covenants are often designed to trigger further governance actions upon violation. A typical scenario might feature debtholders threatening to exit unless they receive monetary concessions. Thus, renegotiation is often an agreed upon and standard feature of debt agreements. See Greg Nini et al., Creditor Control Rights, Corporate Governance, and Firm Value, 25 REV. FIN. STUD. 1713, 1720 (2012); see also Michael R. Roberts & Amir Sufi, Renegotiation of Financial Contracts: Evidence from Private Credit Agreements, 93 J. FIN. ECON. 159, 160 (2009) (reporting that more than 90% of private debt with stated maturity exceeding one year is renegotiated).
143 See supra Part II.B.1.
144 See George A. Akerlof & Paul M. Romer, Looting: The Economic Underworld of Bankruptcy for Profit, BROOKINGS PAPERS ON ECON. ACTIVITY, no. 2, 1993, at 1, 10 (observing that bank managers may invest in projects so risky as to be sure failures as long as they can divert money for personal use through these projects).
145 See Bebchuk & Spammann, supra note 74, at 264.
146 Thus, in the example in Part I.A.2 it might be initially optimal for Bank Alpha’s shareholders to compensate the manager with a stock option plan where the wedge of the manager’s additional leverage is given by $K > 2.26$ (where $K$ is the strike price of the manager’s call option). Indeed, setting $K$ at a high value induces the manager to undertake ProjectIII, but limits the positional rents the manager can extract. Positional rents are returns above the manager’s agency rent, which is “the minimum expected monetary payoff to be left to the [agents] to preserve incentives.” See Tirole, supra note 49, at 117. However, if a project riskier than ProjectIII materializes ex post, a high $K$ can make the riskier project profitable for the manager, while the same project could be unprofitable for the shareholders.
C. Governance with High Leverage

Examining the factors generally at play in the governance of corporations sets the stage for discussing the case of high-leveraged corporations. In particular, the discussion that follows will consider the specific sub-case where debtholders of high-leveraged corporations bargain for rapid exit from the original contract. These exit rights can take several forms: for example, rights of withdrawal, acceleration, or conversion. This paradigm fits the case of banks, since their business model employs high leverage and most bank debtholders can exercise a right of withdrawal at will.

With high leverage and rapid exit rights, the debtholders can promptly gain corporate control by triggering insolvency or converting their investment if dissatisfied with firm performance. As a result, the threat of exit grants debtholders an extremely powerful governance lever to “manage” unforeseen contingencies. Anticipating the severe consequences that might follow from the exercise of this right, shareholders will have stronger incentives to distinguish their firms as safe investments. This leads to a theory of efficient shareholder signaling in high-leveraged firms, which serves as the counterfactual conditional for banks’ governance dynamics without insurance. A variation of this Article’s running example on excessive risk taking will illustrate this theory.

1. Signaling with High Leverage

Suppose again that, after the issuance of debt, Bank Alpha’s manager may have the opportunity to substitute Project III for Project I. In this case, however, the debtholders anticipate that Bank Alpha, i.e., the manager, may switch to a riskier project before the debt becomes due and, therefore, engage in monitoring. Assume that, for the debtholders, monitoring has an expected cost of $3.6, which they pass on to Bank Alpha in pricing debt. Thus, the initial equilibrium interest rate \( (r) \) of the debt contract is determined by the

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147 See supra note 13 (explaining this Article’s specific use of the term high-leveraged corporations).

148 Conversion rights allow investors to both withdraw the value of an investment they have made and simultaneously reinvest this value in another investment. Convertible bonds, a classic example, allow convertible bondholders to turn a debt participation into an equity participation. Puttable stock provides an additional example. This hybrid financial instrument gives the holder the right to put stock back to the issuing corporation for a predetermined price, to be corresponded either in cash or through (newly issued) common stock. See Sepe, supra note 112, at 151–55 (examining the governance implication of securities providing for conversion and redemption rights).

149 See supra text accompanying notes 29–32.
following equation: $90[(1 + r)] - 3.6 = 90$, from which $r = (1/(90%)) - 1 + (3.6/90) = 14\%$.150

Suppose now that, after signing, the debtholders discover through their monitoring that Project III may become available to Bank Alpha. The debtholders also infer, but do not get additional information about, the probability that Bank Alpha will switch from Project I to Project III. For example, suppose that the debtholders expect Bank Alpha to undertake Project I with probability $3/4$ and Project III with probability $1/4$. Further suppose that, given this expectation, the debtholders threaten to withdraw their investment if Bank Alpha does not increase the interest rate to the level where the breakeven condition is satisfied: $r = (3/4)14\% + (1/4)81.82\% = 30.1\%$.151 Note that the increase in the interest rate demanded by the debtholders is the result of a pooling equilibrium since the debtholders have no certainty as to whether Bank Alpha’s manager will switch ex post to Project III, but only a positive inference of this probability.152

The pooling interest rate compensates the debtholders ex ante for the risk that the manager may substitute Project III for Project I. However, if Project III ultimately fails to materialize, this interest rate will increase the agency cost of debt borne by Bank Alpha’s shareholders. Indeed, the shareholders’ expected returns under the initial interest rate of $4\%$ are equal to $90\%[120 - 90(1 + 4\%)] = 15.66$. Instead, under the pooling interest rate of $30.1\%$, the shareholders’ expected returns are reduced to: $90\%[120 - 90(1 + 30.1\%)] = 2.62$. Thus, in order to pay a lower interest rate, the shareholders will have incentives to send a signal to the debtholders that they can credibly commit Bank Alpha, i.e., the manager, to the undertaking of Project I.153 As long as the shareholders can credibly commit to Project I

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150 Assuming that monitoring has a cost $c$ for the debtholders, the initial equilibrium interest rate is analytically determined by the following condition: $\frac{2}{3}[D(1 + r_m^I)] + \frac{1}{3}L = D + c$, which gives $r_m^I = \frac{1}{2}(D - L) + c / (\frac{2}{3}D)$, where $c$ is such that $r_m^I < r^m$.

151 The breakeven condition is the condition that satisfies the debtholders’ participation constraint. See supra text accompanying note 37 (defining participation constraint).

152 Formally, the debtholders only know the distribution of banks that will switch to Project III. Such distribution induces $f(r)$ over the support $[r_m^I, r^m]$. Hence, the debtholders demand a pooling interest rate equal to $r_{pooling} = \frac{1}{r_m^I} \int r' f(r')dr$.

153 A credible signal is one that can change the debtholders’ belief. Let us consider the case where the shareholders can credibly signal to the debtholders that Bank Alpha will not substitute Project I with Project III at the convex cost $C(e)$, where $e \in [\underline{e}, \overline{e}]$ is the level of effort exerted by the shareholders to signal Bank Alpha’s type. Using standard assumptions, when $e = \underline{e}$ the signal is uninformative and $C(\underline{e}) = 0$. Instead, when $e = \overline{e}$, the signal is fully informative and $C(\overline{e}) = \infty$. The signal has the effect of changing the
with probability 1, the equilibrium interest rate will go back to the initial rate of 14%. This implies that signaling will always be efficient for the shareholders as long as its cost is lower than the net gains the shareholders obtain under the lower interest rate. Thus, the cost of signaling for the shareholders must be lower than $15.66 - 2.62 = $13.04.\footnote{Two considerations are worth exploring here. First, under the original assumptions of the example, the compensation contract of Bank Alpha’s manager perfectly aligns her preferences with the preferences of the shareholders. See supra Part I.A.2. But in reality, Bank Alpha’s manager may have private reasons to continue to prefer Project III even under the pooling interest rate. See supra text accompanying notes 143–46. Hence, the shareholders need to monitor the manager’s activity in the negotiation with the debtholders. Second, note that because bank assets create a high level of adverse selection, even a single agent’s attempt to distinguish herself would be enough for the principal to conclude that the remaining, non-signaling agents are bad. Thus, if Bank Alpha failed to separate, the debtholders would infer that the manager will undertake Project III with probability 1. Therefore, they would demand an interest rate of 81.82%, jeopardizing the conclusion of the debt contract. Under this scenario, sending a signal to the debtholders might thus be the only supportable equilibrium for the shareholders to raise debt financing.}{154}

Which form will the shareholders’ signal take in a highly leveraged corporation like Bank Alpha? As discussed above, the negotiation of control covenants is the standard signal that firms employ to reduce the costs of debt pricing.\footnote{See supra text accompanying notes 138–40.}{155} Covenants, however, are costly: they may burden firms with high opportunity costs\footnote{See, e.g., Squire, supra note 11, at 1153, 1162 (observing that covenants need monitoring to be effective and, therefore, may be costly).}{156} and they may burden debtholders with high monitoring costs.\footnote{See TIROLE, supra note 49, at 167. In addition, deadweight losses may be attached to collateralization, including ex ante and ex post transaction costs, the presence of ownership benefits not enjoyed by third parties, the suboptimal maintenance of the pledged asset by the debtor, and high opportunity costs upon financial distress of the debtor. See id.}{157} Thus, the posting of costly collateral is an additional signal that firms use to contain increases in interest rates, while simultaneously reducing the costs of covenants. On the other hand, there are circumstances in which the nature of the debtor’s assets may make collateralization an inadequate instrument to protect the debtholders’ interests.\footnote{See, e.g., Sepe, supra note 112, at 145–46 (explaining that the rigid structure of debt covenants may deprive firms of the flexibility needed to pursue profitable investment opportunities).}{158} This is especially likely in the banking sector, where assets are highly fungible, because this feature
makes it easier to “hide” increased risk taking.159 The venture capital context is another example where collateralization has limited signal value because start-ups depend almost solely on intangible assets like human capital.

Thus, control covenants and collateralization alone might fail to provide credible signals to the debtholders, especially when a firm’s capital structure is highly leveraged. In these circumstances, shareholders will need a “validating signal”: a signal that can corroborate other signals, which would be useless by themselves to differentiate the shareholders’ firm from other firms (i.e., move the mechanism of debt pricing to a separating equilibrium).160 To concretize this idea, consider again the case of venture capital. Two features make venture capital a clear context where the shareholders (i.e., the venture’s founders) need to send a validating signal to their financiers (i.e., the venture capitalists). The first is the inherent limit of collateralization in start-up firms. The second is the high non-common equity financing employed by these firms.161 Observation from the practice suggests that these firms adopt special governance arrangements as a validating signal. Compared to other corporations of similar size, start-ups’ boards have fewer executive directors

159 See Levine, supra note 93, at 2–3 (pointing out that banks, unlike other types of firms, can quickly alter the composition, and, therefore, the risk, of their assets). Moreover, financial innovation and the development of risk-distribution technologies have hugely increased the ability of banks to “play” with their assets so as to hide actual risk exposures. Cf. Robert P. Bartlett, III, Making Banks Transparent, 66 VAND. L. REV. 293, 295–96 (2012) (arguing that the opacity of financial institutions was one of the crucial problems of the recent crisis).

160 See Stephen A. Ross, The Determination of Financial Structure: The Incentive-Signalling Approach, 8 BELL. J. ECON. 23, 27 (1977) (suggesting that in adverse selection contexts manager liability might be “a means of validating financial signals” which would otherwise be useless to achieve separation). In different contractual contexts, scholars have discussed the benefits of liquidated damage clauses and private antifraud rules as validating signals. See Robert Forsythe et al., Cheap Talk, Fraud, and Adverse Selection in Financial Markets: Some Experimental Evidence, 12 REV. FIN. STUD. 481, 487 (1999) (arguing that an antifraud rule punishing sellers who make false statements as to the quality of their products constitutes a way to give the “seller a means to credibly communicate its quality”); Lars A. Stole, The Economics of Liquidated Damage Clauses in Contractual Environments with Private Information, 8 J.L. ECON. & ORG. 582 (1992) (Eng.) (arguing that liquidated damage clauses may be used to communicate valuable information and move from a pooling to a separating equilibrium).

161 Venture capitalists’ claims are most commonly structured as preferred shares. See George G. Triantis, Financial Contract Design in the World of Venture Capital, 68 U. CHI. L. REV. 305, 312 (2001) (book review). However, as observed by Douglas Baird and Robert Rasmussen, “[w]hether the venture capitalist formally fits into the pigeonhole of ‘creditor’ or ‘shareholder’ is something she cares about only if something turns on it.” Baird & Rasmussen, supra note 4, at 1217. Baird and Rasmussen also observed that in Sweden, where venture capitalists do not have the bankruptcy-related concerns of their U.S. counterparts, venture financing often takes the form of debt. See id. at 1217–18.
and more independent directors.\textsuperscript{162} It is also common practice for the venture capitalists to personally choose the venture’s independent directors (with the acquiescence of the firm’s founders) and appoint individuals with whom they have strong personal and professional ties.\textsuperscript{163} Even more importantly, empirical evidence shows that start-ups’ independent directors play a causal role in the firms’ decision-making processes, acting as a “counterweight to CEO control.”\textsuperscript{164} This feature of start-ups’ boards is similar to another example of a validating signal: the “use” by private debt borrowers of a bank’s representative on the board of directors.\textsuperscript{165} In addition to enabling superior monitoring by the firm’s lenders, affiliated bankers on a board can exert increased control over the borrower’s decision making.\textsuperscript{166} Thus, similar to the venture capital context, in private debt, firms employ special governance arrangements to mitigate the potential conflict with their financiers and minimize the cost of debt.\textsuperscript{167}


\textsuperscript{164} See Baker & Gompers, supra note 162, at 593 (“Venture capitalists appear to be a counterweight to CEO control. Not only do venture capitalists reduce inside representation indirectly by reducing the control of the CEO with their concentrated outside ownership stakes, but reputable venture firms are also directly associated with greater outsider representation on the board.”).


\textsuperscript{166} See Kroszner & Strahan, supra note 165, at 419 (suggesting that the presence of bank representatives among outside board members reduces information asymmetry between the bank and the debtor); David Erkens et al., Affiliated Bankers on Board and Conservative Accounting? (Mar. 2011) (unpublished manuscript), available at http://www.bus.miami.edu/assets/files/faculty-and-research/conferences-and-seminars/finance-seminars/Subramanyam%20-%20Paper.pdf (“Lender representation on the board increases the scope and dynamics of the firms’ relationship[s] with their lenders by allowing better monitoring and increased control from the affiliated bank.”).

\textsuperscript{167} This view is supported by empirical evidence about the positive correlation between the lower costs of debt capital and key governance features, such as the presence of a banker on board and independent directors on boards or accounting committees. See Ronald C. Anderson et al., Board Characteristics, Accounting Report Integrity, and the Cost of Debt, 37 J. ACCT. & ECON. 315, 332–33 (2004) (finding that yield spreads decrease with higher numbers of independent directors on a firm’s board and fully independent audit committees); Daniel T. Byrd & Mark S. Mizruchi, Bankers on the Board and the Debt Ratio of Firms, 11 J. CORP. FIN. 129, 132 (2005) (finding association between bankers on board and lower cost of debt).
Because of banks’ high-leveraged capital structures and the opacity of bank assets, governance theory predicts that bank shareholders would also need to employ a validating signal in negotiating with the debtholders. Drawing on the insights offered by the venture capital and private debt contexts, the next section discusses which form this signal could take.

2. Advocacy

Firms in the venture capital and private debt contexts employ special governance arrangements to make their commitments to sound risk policies credible to debtholders. These special governance arrangements share a common feature. They both depart from models with dominant CEOs, whose risk preferences are aligned with those of shareholders through equity-based compensation plans. Under those models, CEOs control the corporate decision-making process, that is, the flow of information from lower corporate layers to the board of directors. Indeed, the board’s role is to aggregate information from lower layers and produce decisional outcomes. Risk-liking CEOs occupy the highest position of the information hierarchy, often sitting on the board—a circumstance that enables them to exercise large control over the information aggregation process and the firm’s decisional outcomes.

In contrast to this CEO-centric model, the governance arrangements of start-up firms and many private debt borrowers provide for debtholders to make some board appointments. The rationale for this alternative structure is that placing individuals with divergent risk preferences in top positions of the firm’s information hierarchy fosters contrarian thinking and, therefore, less biased decision making. Research from information theory teaches that individuals acquire and pass along information based on their preferences. Combining the disparate risk preferences of CEOs and debtholders’ appointees...

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168 See supra Part II.C.1.
169 See supra Part II.A.1.
170 See, e.g., NESTOR REPORT, supra note 53, at 4–5. The Nestor Report observed that the CEO also occupied the position of board chairman at all major U.S. investment banks before the crisis, with the CEO of Lehman Brothers having held his double appointment for eighteen years (from 1990 until the firm’s bankruptcy in 2008). See id. at 4.
171 See supra notes 163–65 and accompanying text.
172 Augustin Landier et al., Optimal Dissent in Organizations, 76 REV. ECON. STUD. 761, 769–73, 775 (2009) (Swed.) (providing a formal model that conceptualizes the value of dissent and preference heterogeneity in organizational models and information production). For a description of the interdependence between decision rights and information structures, see Philippe Aghion & Jean Tirole, Formal and Real Authority in Organizations, 105 J. POL. ECON. 1 (1997).
thus results in a process of information aggregation that may only return heterogeneous information. As a result, directors informed by antagonists will have a broader evidentiary base underlying their decisions. In opposition, a CEO-centric model may only present the board with biased information that favors risk taking.

Organizational theorists and information economists define similar decisional models as *advocacy systems*. The distinguishing feature of such systems is to provide for a decision-making structure that combines an independent decision maker with the competing interaction of individuals who are appointed to be advocates of specific causes. For example, most judiciary systems are built on the idea that judges, as impartial decision makers, benefit from the partiality of the defense attorney and the prosecutor who stand in front of them to respectively defend and argue against the defendant’s reasons. An additional example comes from regulatory hearings in which lobbyists advance their own causes and proxy advocates (e.g., the state attorney general and consumer counsels for consumers) defend the interests of comparatively disorganized groups of individuals. Economists have re-conceptualized the benefits of these and other advocacy structures by suggesting that the exploitation of rivalry between advocates improves

173 See Landier et al., supra note 172, at 762 (arguing that “dissent fosters the use of objective information in decision making . . . . as it allows individual biases to ‘cancel each other out’”).

174 The seminal economic contribution on the informational and organizational value of advocacy systems is due to Mathias Dewatripont and Jean Tirole. See Mathias Dewatripont & Jean Tirole, *Advocates*, 107 J. POL. ECON. 1 (1999) (providing a formal discussion about the use of such systems in various organizational contexts); see also Paul Milgrom & John Roberts, *Relying on the Information of Interested Parties*, 17 RAND J. ECON. 18 (1986) (providing a seminal model on decisional mechanisms relying on information provided by interested parties); Hyun Song Shin, *Adversarial and Inquisitorial Procedures in Arbitration*, 29 RAND J. ECON. 378, 378–80 (1998) (showing that decisional procedures in which “the opposing parties are invited to make their cases” are superior to procedures in which the arbitrator adjudicates “on the basis of the information [he] uncovered” because the former procedures “allocate the burden of proof in an effective manner, thereby extracting the maximal informational content”).

175 See Dewatripont & Tirole, supra note 174, at 2.

176 In the words of Justice Scalia, what defines the adversarial system of justice is “the presence of a judge who does not . . . conduct the factual and legal investigation himself, but instead decides on the basis of facts and arguments pro and con adduced by the parties.” McNeil v. Wisconsin, 501 U.S. 171, 181 n.2 (1991). The American Bar Association’s defense of the adversarial system also provides a suggestive representation of the inherent merits of advocacy in decision making. See Professional Responsibility: Report of the Joint Conference, 44 A.B.A. J. 1159, 1160 (1958) (“[A]ny arbitrator who attempts to decide a dispute without the aid of partisan advocacy . . . must undertake, not only the role of judge, but that of representative for both of the litigants. Each of these roles must be played to the full without being muted by qualifications derived from the others. . . . If it is true that a man in his time must play many parts, it is scarcely given to him to play them all at once.”).

177 See Dewatripont & Tirole, supra note 174, at 2–3; see also Shin, supra note 174, at 378.
decision-making processes by leading to broader information production and constraining bias.

This analysis suggests the existence of a “sound argument,” i.e., a logical argument following from true premises: in an ideal contracting world, bank shareholders, who want to send a validating signal to their debtholders, would employ advocacy-based governance arrangements. These arrangements would be perceived as safer by debtholders and, therefore, minimize the costs of debt. In a stylized representation, these safe governance arrangements would have two defining features. The first is the appointment of a representative of the debtholders’ interest within the bank. This debtholders’ advocate would operate as a counterweight to the CEO, who, in response to the use of equity-based compensation, would serve as an advocate for risk-liking bank shareholders. Such an organizational model would not necessarily command the appointment of a debtholders’ fiduciary to the bank’s board. Instead, a similar result could be replicated by appointing an insider whose payoff structure is selected to align her risk preferences with the debtholders’ preferences. Consistent with recent international banking recommendations that stress the importance of the chief risk officer (CRO) in ensuring effective bank risk management, the CRO would be a natural candidate for the role of debtholders’ advocate. In practice, this would require compensating the CRO with a payoff schedule that decreases with the level of the bank’s risk taking, i.e., a concave payoff schedule.

The second defining feature of an advocacy system in banks would be a fully independent board of directors. This would guarantee the impartiality of the board as adjudicator of the competing panel of risk information provided by the CEO and the CRO. Given the natural risk aversion of individuals within corporations, the possibility that board members would exclude the CRO’s

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178 See Basel Principles for Governance, supra note 20. Among other issues, in the new Principles for Enhancing Corporate Governance, enacted in 2010, the Basel Committee recommended that the CRO should (i) “[be] an independent senior executive with distinct responsibility for the risk management function”; (ii) “not have any management or financial responsibility in respect of any operational business lines or revenue-generating functions”; and (iii) “have sufficient stature, authority and seniority within the organisation.” See id. at 17–18.

179 This means that the payoff schedule of the CRO should echo the concave payoff schedule of debtholders. See supra Part I.A.1.

180 Because of the specific investments they make, individuals within a corporation—including board members—tend to be risk averse in the absence of contractual mechanisms that induce different risk preferences. See supra Part I.A.2 (discussing managers’ intrinsic risk aversion).
evidence in aggregating risk information is negligible. Additionally, in an advocacy system, “there is always someone to blow the whistle on an abusive decision maker.” This is because in this system each advocate has the right incentive to raise her voice if she believes that the board has been corrupted and unduly favored her opponent to the detriment of sound decision making.

D. Governance and Insurance

The above analysis has explained that in an undistorted world, debt discipline would induce bank shareholders to actively seek safe governance arrangements, e.g., advocacy models. The ensuing discussion explains why, in the real world, safety nets—deposit insurance and bailouts—give rise to the adoption of governance arrangements that promote rather than constrain risk taking.

1. Moral Hazard of Bank Debtholders

Federal deposit insurance—which guarantees qualified bank deposits in the event of bank failure—is justified by the need to protect depositors and the desire to avoid destabilizing bank runs. An analogous rationale justifies bailout interventions, which provide several forms of government-funded financial support to failing banks. Indeed, given the interconnectedness of the banking sector, the need to maintain financial stability might arise independently from the protection of depositors’ interests at individual banks. In modern banking, this risk has been compounded by banks’ increasing exposure to short-term (and therefore run-prone) liabilities. As the 2007–2008

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181 To this extent, the organizational features defining the board of directors under the advocacy system envisioned by this Article resemble the “mediating hierarchy” model of the board articulated by Margaret Blair and Lynn Stout in their influential 1999 paper on team production in corporations. See Margaret M. Blair & Lynn A. Stout, A Team Production Theory of Corporate Law, 85 VA. L. REV. 247, 254 (1999) (suggesting that “directors should not be under direct control of either shareholders or other stakeholders”). However, Blair and Stout viewed the inclusion of creditors among the corporation’s factors of production (i.e., team members) as just “possible.” Id. at 253 (“[B]oards exist . . . to protect the enterprise-specific investments of all the members of the corporate ‘team,’ including shareholders, managers, rank and file employees, and possibly other groups, such as creditors.”). But banks’ primary function is to produce liquidity. Hence, in these organizations, creditors—together with shareholders—are a vital factor of production and, therefore, an essential, rather than possible, governance component.

182 See Dewatripont & Tirole, supra note 174, at 6.

183 Milton Friedman and Anna Jacobson Schwartz famously noted that deposit insurance “has succeeded in achieving what had been a major objective of banking reform for at least a century, namely, the prevention of banking panics.” MILTON FRIEDMAN & ANNA JACOBSON SCHWARTZ, A Monetary History of the United States 1867–1960, at 440 (1963).
crisis demonstrated, in this highly leveraged environment runs are no longer undertaken only by depositors, but are also initiated by large, sophisticated debtholders (i.e., interbank creditors). Short-term debtholders, no matter how sophisticated, choose to run if they expect trouble.

But while safety nets protect the integrity of the banking infrastructure against runs, they also create a problem of their own. Shifting the cost of potential bank losses on to taxpayers, these measures make debt capital less expensive for bank shareholders. That is, shareholders’ profit maximization expectations become virtually unconstrained with explicit or implicit governmental insurance of debtholders’ claims. As a result, shareholders no longer have incentives to distinguish their banks as sound by actively seeking to implement safe governance arrangements.

A variation of the above example on signaling can better illustrate these dynamics. Imagine that Bank Alpha can be bailed out with probability 85%. This means that in the event of default, the debtholders of Bank Alpha will receive the face value of debt with probability 85%, almost as if they had privately insured their credit. Thus, when Bank Alpha raises debt of $90 to invest in Project I, the equilibrium interest rate \( r \) will be determined by

\[
90 \times \frac{1}{(1 + r)} + 0.85 \times [90 \times \frac{1}{(1 + r)}] - 3.6 = 90,
\]

from which \( r = 5.5\% < 14\% \). (Recall that 14% is the interest rate the debtholders would apply for Project I absent insurance and $3.6 is the cost the debtholders bear for monitoring.) This shows that the cost of debt decreases when the debtholders are insured, which, in turn, shifts a cost equal to

\[\text{See supra Part II.C.1.}\]

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184 The events that took place in the repo market during the crisis provide a vivid example of how bank runs have expanded into other categories of bank debtholders. See supra text accompanying notes 86–91 (discussing the implications of the increased use of repos and other short-term liabilities by modern banks).


186 When insurance is implicit (i.e., not expressly provided for ex ante, as in the case of deposit insurance), bank debtholders are willing to accept lower interest rates for two reasons. First, they may expect to directly benefit from future rescue intervention by the government. This explains why this distorted set of incentives tends to be more severe in too-big-to-fail financial institutions. See Macey & Holdcroft, supra note 2, at 1371. Second, debtholders indirectly benefit from both explicit and implicit government guarantees that are granted to depositors and fellow debtholders because these guarantees reduce the risk of bank failure. See SQUAM LAKE REPORT, supra note 66, at 21.

187 This can be modeled by observing that in event of default of Bank Alpha the debtholders will be paid back with some probability \( \pi \in [0,1] \).

188 In the model, this condition becomes: \( \frac{3}{2} \left( D(1 + \eta_{\text{ex}}) \right) + \frac{1}{2} \left( \pi D(1 + \eta_{\text{ex}}) \right) + \left( (1 - \pi) L \right) = D + c \), which gives \( r_{\text{ex}} = \left( \frac{3}{2} \right) \left( D - L \right) + c \right) / \left( (\frac{1}{2} \pi D(1 + \eta_{\text{ex}}) + (1 - \pi) L) \right) = D + c \), where \( \eta_{\text{ex}} < \eta_{\text{ex}} \).

189 See supra Part II.C.1.
interest rate. Instead, with debt insurance, they expect to receive: $\text{\textdollar}36.92.193$

Now, assume that the debtholders, as above, expect Bank Alpha to stick to Project I with probability $3/4$ and to switch to Project III with probability $1/4$. Under this assumption, the breakeven interest rate becomes: $r = (3/4)5.5\% + (1/4)7.24\% = 5.93\%$. This shows that when debtholders are insured, they are less sensitive to increased risk taking, which weakens the disciplinary effects of debt.194 Indeed, in the above example (i.e., without insurance), the shareholders expected to receive $2.62$ under the pooling interest rate. Instead, with debt insurance, they expect to receive: $90\% \times (120 - 90(1 + 5.93\%)) = 22.2.195$

Analytically, the taxpayers will suffer a cost equal to $\frac{1}{2} \pi [D(1 + r_{\text{ins}})]$.190

This condition can be generalized as follows: $\left(\frac{1}{2} - \beta''\right) D(1 + r_{\text{ins}}) + \left(\frac{1}{2} + \beta''\right) \pi [D(1 + r_{\text{ins}})] + \left(\frac{1}{2} + \beta''\right) (1 - \pi)L = D$, which gives $r_{\text{ins}} = \frac{\pi [D(1 + r_{\text{ins}})] - \left(\frac{1}{2} - \beta''\right) D(1 + r_{\text{ins}})}{\left(\frac{1}{2} + \beta''\right)(1 - \pi) - \left(\frac{1}{2} + \beta''\right) L}$.192

See supra text accompanying note 130.

Analytically, the taxpayers will suffer a cost equal to $\left(\frac{1}{2} + \beta''\right) \pi [D(1 + r_{\text{ins}})]$.193

Consistent with this simple example, spreads applied to U.S. banks did not increase before the crisis. RAJAN, supra note 1, at 148 (“Bank debt spreads . . . remained very moderate until just before the crisis.”). Indeed, bank debtholders fully anticipated a bailout and the rescue of Bear Stearns confirmed their expectations, making them confident that the government would intervene again. In this environment, it is unsurprising that the remaining big banks, including Lehman, did very little to reduce their risk exposures. Significantly, spreads for credit default protection against a Lehman bond default were static until shortly before Lehman filed for bankruptcy. See SKEEL, supra note 1, at 24, 28.

In the formal representation of the problem, it is easy to see that $r_{\text{ins}}$ and $r_{\text{ins}}'$ are decreasing in $\pi$, with a distance of zero in the case of full insurance, i.e., when $\pi = 1$.195

It could be argued that this argument does not apply to bank depositors, since this category of bank debtholders would be structurally unable to monitor bank risk taking. In fact, whether depositors would engage in active governance in a world without insurance is highly debated. Some commentators defend the argument that free-riding problems and the lack of sophistication of most depositors prevent them from exercising
debtholders decide to save the cost of monitoring. In this case, the debtholders’ participation constraint becomes: 

\[(1 - p) \left[ (98.5%) \left( \$90(1 + 5.5\%) \right) \right] + p \left[ (93.25%) \left( \$90(1 + 5.5\%) \right) \right] \geq \$90, \]

where \( p \) is the probability that Bank Alpha will undertake Project III. The solution of the participation constraint is given by \( p \leq 0.7 \). This means that, as long as the debtholders expect that the proportion of banks that will switch to Project III is no higher than 70%, monitoring is not efficient for them. And if debtholders are fully insured in the case of a bank failure—like depositors are—then they will never have an incentive to engage in monitoring.\(^{198}\)

2. Inactive Bank Shareholders

The distortions introduced by safety nets lead to a theory of rational shareholder passivity. As shown by the simple examples above,\(^{199}\) with bank debtholders’ opportunistic abandonment of monitoring, bank shareholders have no incentives to police governance arrangements that induce risk taking. Instead, these arrangements serve their interests. The fact that shareholders suffered large losses during the crisis does not contradict this thesis. This is adequate monitoring. See, e.g., DiMESTRAPPS & T Ano, supra note 12, at 31–32. Others, instead, argue that without insurance, depositors would exercise governance to discipline their banks’ risk taking. See, e.g., Macey & O’Hara, supra note 93, at 98. This Article is inclined to agree with this second view. Deposit insurance currently covers up to $250,000 for each bank customer’s account that meets the requirement of the different ownership categories the FDIC’s regulation provides for. See FDIC Insurance Coverage Basics, Fed. DEPOSIT INS. CORP., http://www.fdic.gov/deposit/deposits/insured/basics.html (last updated Aug. 22, 2011). This potentially extends insurance coverage up to $1,250,000. It seems thus reasonable to assume that at least bank customers holding similar amounts would monitor their banks without insurance. And even assuming that small bank depositors have limited ability to discipline their banks, this Article’s theory of bank governance is still robust because interbank depositors, subordinated debtholders, and bondholders would have both the incentives and the resources to discipline banks in a world without bailouts.

\(^{197}\) Here, the participation constraint is determined as follows. The debtholders expect to receive the value of their claims with probability \((1 - p)\) when Bank Alpha undertakes Project I. That is, they expect to receive: 

\[90\%[90(1 + 5.5\%)] + 10\%(89\%)[90(1 + 5.5\%)].\]

Conversely, they expect to receive the value of their claims with probability \( p \) when Bank Alpha undertakes Project III, with the interest rate on debt still being 5%. Indeed, because the debtholders avoid monitoring and, therefore, have no inference on the undertaking of Project III, the interest rate remains unchanged. Hence, under Project III, the debtholders expect to receive 

\[90\%[90(1 + 5.5\%)] + (4\%(185\%))[90(1 + 5.5\%)],\]

which equals \(98.5\%[90(1 + 5.5\%)]=98.0\%\).\(^{198}\) With insurance, the pooling interest rate is determined on the reduced support, which is \[r_{I,I}^{U}\]. Therefore, Bank Alpha’s shareholders solve the following maximization problem:

\[
\max_{\hat{\theta}} \int_{x_p}^{x_I} \left[ \frac{1}{2} \left( 1 + \int_{r(x)}^{\hat{\theta}} [f(G,x)] \, dr \right) \right] - C(\hat{\theta}) \]

whose solution \( \hat{\theta} \) is given by the first order condition:

\[
-\frac{1}{2} \int_{x_p}^{x_I} [f(G,x)] \, dr = C'(\hat{\theta}).
\]

It is simple to verify that since \( r_{I,I}^{U} - r_{I}^{U} < r' - r \), then \( \hat{\theta} < \theta * \). In particular, in the case of full insurance, since \( r_{I,I}^{U} = r_{I,I}^{U} \), the shareholders have no incentive to signal.\(^{199}\) See supra Part II.D.1.
merely the ex post story. Decisions were made ex ante. And ex ante there was
weak, if any, debtholder discipline. Bad outcomes were only remote risks.
Hence, managers pursuing more risk taking were acting in the interests of their
shareholders, who had no incentives to actively counter risky management
actions.

Consistent with this theoretical explanation, empirical studies observe that
the banks that suffered the largest losses during 2007–2008 were also the ones
that enjoyed the highest equity returns in the prior years. Significantly, these
studies also find that while banks that made aggressive use of equity-based
compensation were among the worst performers during the crisis, they also
outperformed the market before the crisis. This same story explains why
shareholders tolerated lax risk management in the run-up to the crisis. Under
the modern model of liquidity production, a single asset can be more or less
risky depending on how it is managed. In other terms, risk management
basically serves to control tail risk. But because shareholders profited from
tail risk, they had no incentives to encourage stringent risk management.
Finally, the theory of rationally passive bank shareholders also connects to the
abundant empirical evidence about captured or ineffective bank boards.

"Truly independent" directors put their reputations at stake. Because
independent directors will suffer blows to their reputations in the event of a
bank failure, they are unlikely to share the preferences of shareholders who are

See, e.g., Andrea Beltratti & René M. Stulz, Why Did Some Banks Perform Better During the Credit
Crisis? A Cross-Country Study of the Impact of Governance and Regulation 2 (European Corporate
1433502 (“[T]he banks in the worst quartile of performance during the crisis [2007–2008] had an average
return of –87.44% . . . but an average return of 33.07% in 2006.”).

See Ing-Haw Cheng, Harrison Hong & Jose A. Scheinkman, Yesterday’s Heroes: Compensation and
www.nber.org/papers/w16176 (suggesting that the banks tarred today because of the aggressive use of equity
compensation were “yesterday’s heroes”).

See Gilles Bénéplanc & Jean-Charles Rochet, Risk Management in Turbulent Times 7
(2011) describing risk management functions as decisions on: (i) “[h]ow much risk to take”; (ii) “[h]ow
much of this risk to retain and how much to insure or transfer to financial or insurance markets”; (iii) how
much capital to keep as a buffer against the potential losses arising from retained risk; and (iv) “[h]ow
much liquid reserves to maintain”). Apart from the first decision, which relates to the acquisition of an asset, the other risk
management decisions are designed to modify the risk the asset’s holder bears. To this extent, asset risk
depends on the risk management policy of the asset’s holder.

Consistently, empirical findings show that before the crisis banks with stronger risk control invested
less in securitization operations, despite the higher profits. Andrew Ellul & Vijay Yerramilli, Stronger Risk

See supra notes 95, 108.
seeking tail risk. Therefore, it was in the interest of bank shareholders not to counter widespread dual-hatting practices or demand more independent boards.

III. REFORMING BANKS’ REGULATORY DISCIPLINE

The previous Part discussed banks’ governance mechanisms in theory and in practice, explaining that an apparently weak governance of risk is rational for bank shareholders unconstrained by debt discipline. Part III puts forward a normative case for a reform of bank regulation aimed at incentivizing more socially desirable bank governance structures.

The corporate governance deficiencies exposed by the financial crisis have induced Congress to include in the Dodd-Frank Wall Street Reform and Consumer Protection Act a number of governance-related provisions, including new provisions on executive compensation and shareholders’ access to proxy materials. In the banking sector, however, the new legislation is unlikely to improve corporate governance practices in the long run. Subscribing to the view that weak governance arrangements in banks have been the result of managerial opportunism, the measures introduced by the Dodd-Frank Act aim at empowering shareholder voice. This reform

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205 Several policy reports have attributed the lack of true directors’ independence to the widespread practice of vesting CEOs with the position of board chairman. See, e.g., BASEL PRINCIPLES FOR GOVERNANCE, supra note 20, at 18–20 (highlighting the importance of measures designed to constrain the potential negative influence of dual-hatting practices).

206 This argument is also supported by empirical evidence finding that shareholders at financial institutions with more independent directors suffered larger losses because independent board members encouraged their banks to raise more equity capital. See David H. Erkens et al., Corporate Governance in the 2007–2008 Financial Crisis: Evidence from Financial Institutions Worldwide, 18 J. CORP. FIN. 389, 390 (2012) (investigating a sample of banks in thirty countries from January 2007 to September 2008). Indeed, while the actions of independent directors promoted banking stability, they transferred wealth from the shareholders to the debtholders. Id. This is consistent with the idea that opportunistic shareholders will tend to dislike truly independent directors.

207 See Dodd-Frank Wall Street Reform and Consumer Protection Act, Pub. L. No. 111-203, §§ 951–57, 124 Stat. 1376, 1899–1907 (2010) (codified in scattered sections of 12 U.S.C. and 15 U.S.C.). The governance provisions introduced by the Dodd-Frank Act affect all public companies in the United States, not just banks and other financial companies. Among others, these provisions include non-binding shareholder votes (i.e., say-on-pay), measures on the independence of compensation committees, compensation limits, and clawback provisions. Id. In addition, Subtitle G of Title IX of the Dodd-Frank Act, which is titled “Strengthening Corporate Governance,” includes a limited number of provisions about shareholders’ access to proxy materials and disclosure obligations for companies that combine the CEO and board chairman position. See id. §§ 971, 972, 124 Stat. at 1915.

208 See Sepe, supra note 36, at 229–31 (discussing features of shareholders’ empowerment introduced by Dodd-Frank).
approach, however, disregards the fact that the absence of debt discipline in the banking sector makes shareholders opportunistic principals who favor increased risk taking.\(^{209}\)

This Part suggests that a better approach to improve bank governance would restore effective disciplining incentives for bank shareholders. Empowering private monitoring of banking organizations through the elimination of safety nets could appear as the natural solution to achieve this goal. But safety nets are an inevitable response to bank runs and the macroeconomic shocks from individual bank failures. Therefore, they cannot be eliminated. Accordingly, the necessary premise for effective private ordering of the banking sector is lacking. In response, this Part focuses on reform of the prudential regulation of banks—or “safety-and-soundness” regulation as this body of rules is more commonly referred to in the United States. This regulation currently focuses on banks’ capitalization, based on the belief that larger equity cushions provide sufficient deterrence against the undertaking of inefficient risks in the banking sector.\(^{210}\) But concentrating on capital requirements alone is not only socially expensive, it is also an imperfect method to constrain incentives for increased risk taking. Instead, ongoing legislative efforts to strengthen prudential regulation would benefit from the endorsement of a contractarian approach: bank regulators should act as substitutes for bank debtholders, exerting the same kind of discipline debtholders would bargain for if they were not implicitly or explicitly insured. Consistent with this contractarian ideal, regulators should expand the set of regulatory tools they use to discipline banks, making capital requirements and deposit insurance premiums sensitive to the risk propensity of a bank’s organizational structure. This would incentivize bank shareholders to depart from current CEO-centric models and to seek, instead, the implementation of safe governance arrangements. As this Article’s analysis suggests, shareholders should be driven to accept advocacy models.

A. Self-Regulation and Safety Nets

In the absence of safety nets, governance theory predicts that bank shareholders would actively seek safe governance arrangements. Accordingly, the elimination of safety nets would be a path to supposedly beneficial self-

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\(^{209}\) See id. at 225–27 (arguing that Dodd-Frank’s failure to consider simultaneity issues in executive compensation design has the potential to exacerbate, rather than improve, compensation practices).

\(^{210}\) See infra text accompanying notes 231–32.
regulation of the banking sector. Advocates for self-regulation point out that this reform would expose bank investors to a real threat of failure and therefore give them the right incentives to monitor and discipline banks’ risk taking. However, two reasons suggest that this is neither a desirable nor credible direction for policy reform. The first is that safety nets successfully protect the banking system in uncertain times, avoiding catastrophic spillover effects. The second, which follows as a corollary of the first, is that legislative commitments against the future use of safety nets are not credible.

Safety nets are needed to avoid individual bank failures that may result in macroeconomic shocks. Even a single run may have systemic effects, either through contagion effects (i.e., “bank panics”) or interbank correlation. And, as discussed earlier, in modern banking the risk of runs has drastically increased because of banks’ growing recourse to short-term liabilities. Therefore, the protection of safety nets is needed even more today to protect the integrity of the banking system.

Given the essential functions served by safety nets, no legislation can be trusted to end use of these measures. Despite promises for the future made by the current administration and the explicit anti-bailout declaration

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211 For a recent scholarly treatment of financial self-regulation, see Saule T. Omarova, Wall Street as Community of Fate: Toward Financial Industry Self-Regulation, 159 U. Pa. L. Rev. 411, 413 (2011), which suggested that a policy of selective intervention designed to exclude systemic institutions’ access to safety nets would be beneficial to promote effective industry self-regulation. Self-regulation advocates also suggest that empowering private monitoring of banks would mitigate the informational asymmetry problems that affect regulatory action. Therefore, it would also reduce regulatory arbitrage, which occurs when regulated subjects employ “a perfectly legal planning technique . . . . [that] exploits the gap between the economic substance of a transaction and its legal or regulatory treatment.” Victor Fleischer, Regulatory Arbitrage, 89 Tex. L. Rev. 227, 229 (2010).

212 Since the crisis began, 490 banks have failed, as compared to the 26 bank failures that were registered between 2000 and 2007. See Failed Bank List, Fed. Deposit Ins. Corp., http://www.fdic.gov/bank/individual/failed/banklist.html (last updated Oct. 11, 2012). While these figures are significant, they are not even comparable to those experienced during the 1933 banking crisis, before the adoption of deposit insurance. Indeed, about 9,000 banks failed between 1930 and 1933. See The First Fifty Years, Fed. Deposit Ins. Corp., http://www.fdic.gov/bank/analytical/firstfifty/chapter3.html (last updated July 24, 2006).

213 See supra Part I.B.

214 See supra text accompanying notes 183–85.


216 Before the enactment of the Dodd-Frank Act, President Barack Obama expressly stated that this was a central intention of his administration. See David M. Herszenhorn & Sheryl Gay Stolberg, White House and Democrats Join to Press Case on Financial Controls, N.Y. Times, Apr. 15, 2010, at B1 (“I am absolutely
included in the preamble of the Dodd-Frank Act, these commitments are simply not credible. In the jargon of economists, anti-bailout commitments are affected by a time-inconsistency problem. Before a crisis—or in its immediate aftermath—policymakers understand that expectations of future government support will engender moral hazard and other inefficiencies. Ex post, however, the need to avoid systemic collapse will induce policymakers to renege on prior promises, especially in the case of large (i.e., too big to fail) financial institutions. Therefore, policy reform efforts should take the safety-net system for granted and focus on prudential regulation, that is, the body of rules that is designed to keep banks safe and sound.

B. A Contractarian Approach to Prudential Regulation

Prudential regulation comprises the system of key requirements and restrictions that regulators employ to maintain the solvency of financial institutions. At the heart of this system there are four key sets of provisions: (i) supervision rules; (ii) activities restrictions; (iii) deposit insurance rules; and...
(iv) capital adequacy requirements.\textsuperscript{221} The need to protect small bank depositors—perceived as unable to adequately protect their interests because of insufficient sophistication and coordination problems—has provided the traditional rationale for subjecting banks to such an extensive body of rules.\textsuperscript{222} However, the steady increase of deposit insurance coverage and the evolution of modern banking have paved the way for the emergence of a more fundamental rationale for prudential regulation: preventing systemic risk and, with it, costly ex post interventions by the government in support of failing banks.\textsuperscript{223}

From a contractarian perspective,\textsuperscript{224} these rationales can be unified under a common substitution hypothesis.\textsuperscript{225} According to this hypothesis, prudential regulators should act as substitutes for opportunistic bank debtholders, exerting on banks the same kind of discipline debtholders would bargain for if they were uninsured. The benefits of this substitution are easily grasped. The public provision of governance functions addresses the vacuum left in banks’ governance mechanisms by insured debtholders’ relinquishment of power. The realism of such an approach to banks’ regulatory discipline is confirmed by the close resemblance that key prudential rules bear to the exercise of debtholder governance in private contracting.\textsuperscript{226} Like monitoring and informational covenants, banks’ supervisory systems provide for close scrutiny of banking activities. Banks are required to disclose a massive amount of information to regulators and are subject to periodic evaluations, which produce examination ratings.\textsuperscript{227} Along the same line, restrictions on bank activities—similar to

\textsuperscript{221} For a general discussion of the basic principles of the prudential regulation of banks in the United States, see \textsc{Richard Scott Carnell, Jonathan R. Macey \& Geoffrey P. Miller}, \textit{The Law of Banking and Financial Institutions} (2009), and \textsc{Lissa L. Broome \& Jerry W. Markham}, \textit{Regulation of Bank Financial Service Activities} (2d ed. 2001).

\textsuperscript{222} See \textit{supra} note 183 and accompanying text.

\textsuperscript{223} See \textit{Acharya, supra} note 70, at 225 (“It is thus broadly understood that the goal of prudential regulation should be to ensure the financial stability of the system as a whole, i.e., of an institution not only individually but also as a part of the overall financial system.”).

\textsuperscript{224} Contractarianism, as a general approach to institutions, assumes that legal norms “find legitimacy, when they do, in their ability to secure (under the appropriate conditions) the agreement of those to whom they apply.” Geoffrey Sayre-McCord, \textit{Contractarianism}, in \textit{The Blackwell Guide to Ethical Theory} 247, 247 (Hugh LaFollette ed., 2000) (providing an excellent discussion of contractarianism in contemporary moral and political thought). Modern contractarianism finds its roots in the monumental contribution of \textsc{John Rawls}, \textit{A Theory of Justice} (1971).

\textsuperscript{225} For a discussion of the differences between this Article’s substitution hypothesis and the representation hypothesis articulated by economists Mathias Dewatripont and Jean Tirole, see \textit{supra} note 12.

\textsuperscript{226} See \textit{Dewatripont \& Tirole, supra} note 12, at 87.

\textsuperscript{227} See \textit{infra} notes 254–55 and accompanying text (discussing examination ratings).
investment restrictions included in debt agreements—constrain banks’ abilities to take actions that may jeopardize their solvency. These restrictions include operating non-financial lines of business, concentrating risk exposures to one borrower, or having excessive interbank credit exposures. Further, provisions on risk-based pricing of deposit insurance premiums approximate interest-rate negotiations. As riskier debtors are required to pay higher interest rates, banks that pose a higher risk of causing a loss to the insurance fund are required to pay higher insurance premiums. Finally, minimum capital requirements that mandate banks to maintain a minimum ratio of capital to risk-weighted assets in addition to liquidity ratios can be likened to financial covenants included in debt agreements.

But the substitution hypothesis offers more than just a better descriptive account of the need for prudential regulation; it provides a normative framework to define the scope and shape of this regulation. The contractarian argument underpinning this hypothesis calls for a reform intervention that is “normatively constructivist,” under which “deliberative rationality” provides the justification for banks’ regulatory discipline. This means that reform intervention should lead to a regulatory framework that replicates the hypothetical outcome in which bank shareholders would self-interestedly agree

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228 See infra note 257 and accompanying text (discussing the mechanics of deposit insurance premiums).

229 U.S. bank capital regulation is largely based on the guidelines issued by the Basel Committee in 1988 (known as Basel I). See Basel Comm. on Banking Supervision, International Convergence of Capital Measures and Capital Standards (1988), available at http://www.bis.org/publ/bcbs04a.pdf. As embraced by U.S. regulation, these guidelines provide for a risk-weighting system of capital ratios, based on the assignment of assets to risk buckets, each associated with a different risk weight. Under this system, a bank is deemed adequately capitalized if its ratio of capital to risk-weighted assets exceeds an 8% threshold—with eligible capital being defined on a consolidated basis as primarily consisting of common equity; preferred stock and other hybrid instruments; subordinated debt; and disclosed and undisclosed bank reserves. See 12 C.F.R. § 225 (2012). In 2004, the Basel Committee enacted a new set of rules (known as Basel II), introducing an additional methodology for risk computation in large banks (i.e., the “advanced approach”). Under this novel approach, banks can opt for an alternative system based on internal risk management models and rating agencies’ credit assessments. See Basel Principles for Governance, supra note 20. In the United States, the advanced approach was introduced in November 2007, with applicability limited to large banks. See Bd. of Governors of the Fed. Reserve, Interagency Statement—U.S. Implementation of Basel II Advanced Approaches Framework (2008), available at http://www.federalreserve.gov/boarddocs/srletters/2008/sr0804a1.pdf. In the wake of the crisis, Basel II has undergone intense criticism for giving too much leeway to banks in effectively setting their own capital requirements. See, e.g., Kimberly D. Krawiec, The Return of the Rogue, 51 ARIZ. L. REV. 127, 144–49 (2009).

230 See David Gauthier, Political Contractarianism, 5 J. Pol. Phil. 132, 133 (1997) (“The contractarian position is . . . constructivist. That is, the entire normative structure of a society is conceived by the contractarian to depend on the deliberative normativity of its individual members. Each from her own deliberative stance must judge the social norms . . . as ones to which it would make sense for her to agree . . . .”).
to negotiate with uninsured bank debtholders. Governance theory predicts that this outcome would involve bank shareholders’ commitment to more conservative risk choices through the use of safe governance arrangements. But, in contrast with the contractarian ideal, the current regulatory practice largely fails to consider bank governance and focuses instead on capital-related rules—primarily, capital requirements. However, as explained below, this is a crude response to address banks’ risk taking and the negative consequences this conduct may have at both the individual bank level and economy-wide level.

1. The Limits of Capital Requirements

The argument for the overwhelming role of capital standards in banks’ regulatory discipline is straightforward: reckless risk taking is unprofitable for shareholders of adequately capitalized banks. A larger equity buffer reduces the expected gains from taking more risk, functioning as a sort of deductible to be paid out of the pockets of shareholders before the trigger of deposit insurance or other safety-net measures. Based on the same argument, recent proposals to improve the effectiveness of prudential regulation have suggested that reform interventions should be directed to raise capital requirements. But concentrating prudential regulation on capital requirements is an imperfect and limited approach. To understand why, consider again the example on excessive risk taking, in which Bank Alpha may substitute Project III after the issuance of debt. This time, however, assume, for simplicity, that Bank Alpha’s capital structure only includes equity and fully insured deposits. Under this assumption the interest portion on debt will always be zero. Hence, Bank Alpha’s capital structure becomes $100 equity and $90 debt. Note that this change does not affect the preferences of Bank Alpha.


232 See, e.g., Viral V. Acharya et al., Capital, Contingent Capital, and Liquidity Requirements, in REGULATING WALL STREET: THE DODD-FRANK ACT AND THE NEW ARCHITECTURE OF GLOBAL FINANCE 143–81 (Viral V. Acharya et al. eds., 2011) (suggesting raising banks’ capital ratios and liquidity ratios); Admati et al., supra note 231, at 2 (arguing that “better capitalized banks are less inclined to make excessively risky investments that benefit shareholders and managers at the expense of debt holders or the government”).

233 Full insurance implies that all of Bank Alpha’s depositors will be fully reimbursed with probability 1 in the event of bank failure. See supra note 187. Accordingly, since $\pi = 1$, $r' = r^{\text{MU}} = 0$ always holds and therefore the outstanding debt is always $D$. 
Alpha’s shareholders for Project III, since this project remains the most profitable for them: i.e., $[55\% \times ($180 - $90)] = $49.5 > [90\% \times ($120 - $90)] = $27$.

Suppose now that bank regulators anticipate that projects like Project III may become available to banks, including Bank Alpha. Therefore, they require Bank Alpha to raise additional equity capital equal to $\Delta E$ to deter the undertaking of Project III. Further suppose that Bank Alpha’s manager, as occurs in reality, will invest $\Delta E$ into one of the available projects (i.e., either Project I or Project III). This implies that the shareholders’ expected payoff from Project I and Project III become respectively: $90\% \times [($100 + $\Delta E) 1.2 - $90] \text{ and } 55\% \times [($100 + $\Delta E) 1.8 - $90]$. Note that 1.2 (i.e., $\frac{180}{100}$) and 1.8 (i.e., $\frac{180}{100}$) are the gross returns in the event of success of each project. Thus, in order to redress the shareholders’ incentives for the undertaking of Project I—and therefore their incentives for exercising adequate monitoring on the manager—the regulators will need to set $\Delta E$ to satisfy the following condition: $90\% \times [($100 + $\Delta E) 1.2 - $90] > 55\% \times [($100 + $\Delta E) 1.8 - $90]$.\(^{234}\) It is easy to see that the appropriate capital requirement to deter the undertaking of Project III is $\Delta E > $250 (i.e., $\Delta E > [(55\% \times ($180 - $100)) - [90\% \times ($120 - $100)]]/[90\% (1.2) - 55\% (1.8)]).\(^ {235}\)

This simple example offers several insights into the use of capital requirements to constrain increased risk taking in banks. There is, however, a preliminary consideration. For simplicity, the example has assumed that regulators are perfectly informed about possible increases in the risk of a bank’s asset pool. But regulators generally face informational lags vis-à-vis banks.\(^ {236}\) Therefore, they may fail to accurately determine the riskiness of bank assets, which, in turn, may compromise their ability to provide for well-measured and appropriate capital requirements. Even leaving aside this difficulty, the example above shows that capital requirements need to be very high in order to provide effective deterrence against excessive risk taking.

\(^{234}\) Formally, with the new equity injection, the shareholders’ expected payoff becomes $\frac{1}{2} \times [(1 + \Delta E) H - D] + \frac{1}{2} \times [(1 + \Delta E) M - D]$ under Project I and \(\left(\frac{1}{2} + \alpha^m\right) \times [(1 + \Delta E) H - D] + \left(\frac{1}{2} - \alpha^m - \beta^m\right) \times [(1 + \Delta E) M - D]\) under Project III.

\(^{235}\) The amount $\alpha^m[(1 + \Delta E) (H - M)] - \beta^m[(1 + \Delta E) M - D]$ that the shareholders would get by switching to Project III is no longer positive when $\Delta E > \Delta E^* = \frac{\beta^m (H - M) - \beta^m (M - D)}{\alpha^m (H - M) - \alpha^m (M - D)}$. The latter condition requires that $\beta^m (M) > \alpha^m (H - M)$, which is always satisfied since Project III by assumption has a negative net present value, i.e., $\beta^m (M - L) > \alpha^m (H - M)$.

\(^{236}\) See supra note 211.
Specifically, Bank Alpha’s debt-to-equity ratio needs to change from \( \frac{90}{10} = 9 \) to \( \frac{90}{(10 + 250)} = 0.346 \) to eliminate the shareholders’ incentives for the undertaking of Project III. In fact, the complete eradication of incentives for excessive risk taking would command such high capital requirements that there would be a radical transformation of banks’ business models and banks would be unable to fulfill “their economic missions,” which is “the provision of liquidity to firms and markets.”\(^{237}\)

This result changes only quantitatively when one considers that in reality capital requirements have the more limited purpose of constraining, rather than eliminating, incentives for excessive risk taking. Capital requirements are a function of a bank’s estimated probability of default or, in the financial jargon, a bank’s expected loss given default (LGD).\(^{238}\) The LGD is the credit loss that a firm’s creditors bear upon the firm’s default. In the specific case of banks, however, this loss is largely borne by the government, as insurer of bank deposits and lender of last resort, and, ultimately, the taxpayers who stand behind public rescue plans. Thus, the essential function of capital requirements is to reduce the LGD that the public system bears upon a bank’s failure.

However, this more truthful representation of how capital regulation works does not change the fact that capital requirements need to be very high in order to be effective. Although capital regulation has less draconian consequences than those envisioned by the above example, it still tends to be socially expensive. Banks may escape higher capital requirements by accepting fewer deposits. This, in turn, may create distortions in banks’ lending decisions by reducing available loans or inducing banks to charge higher interest rates on the loans they make.\(^{239}\) Additionally, high capital requirements may penalize bank shareholders excessively, which, in turn, generates other social costs. For one thing, shareholders’ incentives for increased risk taking may increase under higher capital requirements. Shareholders may perceive the extra profits of riskier projects as compensation for the negative impact of capital regulation.

\(^{237}\) Dewatripont et al., supra note 185, at 49; see also Macey & Holdcroft, supra note 2, at 1411–12 (observing that for capital regulation to solve banks’ moral hazard problems, it should be so extreme that banks “would cease to play any role in providing capital to the economy”).


on their investment. More drastically, high capital requirements may induce shareholders to redirect their investments toward more profitable industries, with the result of reducing banks’ funding sources and, therefore, available lending. Further, restrictive capital regulation may exacerbate procyclicality problems: it may amplify negative business fluctuations. Economic shocks lower banks’ capital. In response, regulators force banks to raise additional capital. But a time of recession is precisely when capital is hardest to raise. Therefore, capital regulation may have contractionary effects on liquidity production, which, in turn, can exacerbate the negative effects of economic shocks.

But the example above yields an additional, and perhaps more important, insight on the use of capital regulation to constrain bank risk taking: counter-intuitively, appropriate capital requirements need to be highest when the impact of increased risk taking is lowest. So, in the example, $\Delta E$ increases when the loss in the gross return is lower (i.e., $[90\%(1.2) - 55\%(1.8)]$). This implies that there are scenarios where using capital regulation alone to constrain increased risk taking is not just inefficient, it is ineffective. Indeed, the above example shows that no feasible capital requirement can deter the undertaking of asset substitution. This form of increased risk taking tends to be perceived as a minor problem because it has only distributive effect at the individual firm level. Instead, excessive risk taking has allocative effects, that is, it destroys total wealth. But conflating these two issues or placing them on equal footing is a fallacious oversimplification; as shown in this Article, it neglects to consider that asset substitution strategies might lead to aggregate welfare losses when banks are highly interconnected.

2. Contracting Around Bank Governance

The above analysis of capital regulation has shown that even high and well-measured capital requirements cannot optimally constrain banks’ incentives for increased risk taking. And, in any event, such requirements are likely to burden

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240 See Laeven & Levine, supra note 45, at 260 (“Owners might compensate for the loss of utility from more stringent capital requirements by selecting a riskier investment portfolio.”).

241 See Fin. Stability Bd., Addressing Financial System Procyclicality: A Possible Framework 7 (2008), available at http://www.financialstabilityboard.org/publications/r_0904e.pdf (advancing policy proposals to mitigate the problem of procyclicality of capital regulations); Repullo & Suarez, supra note 238 (arguing that Basel II has exacerbated the procyclical effects of banks’ capital requirements).

242 See supra Part I.A.1 (discussing asset substitution).

243 See supra Part I.B (providing an example of the potential systemic risk that arises from asset substitution, given high interbank correlation).
banks’ shareholders with excessive regulatory costs. This analysis suggests that there is room for Coasean bargaining between banks and regulators. To see why, consider this Article’s introductory example on asset substitution, where after the issuance of debt Bank Alpha may switch from Project I to Project II.

As in the example in Part III.B.1, suppose that Bank Alpha’s capital structure only includes equity for $10 and fully insured deposits for $90. This change to the original setting enhances the preference of Bank Alpha’s shareholders for Project II, since $[72%($150 − $90)] = $43.2 > [90%($120 − $90)] = $27. Now, as above, suppose that the regulators anticipate that Project II may become available to banks, including Bank Alpha. This time, however, suppose that the regulators will more realistically set the appropriate capital requirement based on Bank Alpha’s loss given default (i.e., the credit loss the public system bears in case of Bank Alpha’s default). Under Project I the LGD is equal to 10%($90) = $9, while under Project II it is 28%($90) = $25.2. Thus, the undertaking of Project II determines an increase in the LGD equal to $25.2 − $9 = $16.2. Assume that the regulators determine that the maximum LGD the public system (i.e., the government and the taxpayers) can bear is equal to $10. This implies that they will need to set Bank Alpha’s capital requirement to reduce the LGD under Project II to $10. That is, the regulators will need to demand an injection of additional equity capital that is sufficient to bring Bank Alpha’s leverage down from $90 to $35.71 (since 28%($35.71) = $10). As a result, in order to meet the $100 outlay required to pursue either Project I or

\[ \frac{1}{4}(D - L) = \psi' \]

Formally, Project I has an LGD equal to \( \frac{1}{4}(D - L) = \psi' \). Instead, when Bank Alpha switches to Project II the LGD increases to \( \left( \frac{1}{4} + \beta' \right)(D - L) = \psi'' > \psi' \), where \( \psi'' - \psi' = \beta''(D - L) \).

\[ \frac{1}{4}(D - L) = \psi' \]

The level of acceptable LGD can be interpreted as a function of, for example, the targeted value of the FDIC Deposit Insurance Fund (DIF) for the current year, the level of national deficit, and the shadow costs of bureaucracy. The latter are the transaction costs that the government bears to channel public funds to troubled banks. See Jean Tirole, Overcoming Adverse Selection: How Public Intervention Can Restore Market Functioning, 102 AM. ECON. REV. 29, 55 (2012) (suggesting that the magnitude of government intervention must be balanced against the cost of public funds, since the use of these funds is not a mere transfer of resources but implies high transaction costs).
Project II. Bank Alpha’s capital structure will need to change from $90$ debt plus $10$ equity to $35.71$ debt plus $64.29$ equity.$^{247}$

What effects does this mandated change in Bank Alpha’s capital structure have on the shareholders’ investment and the costs the public system bears to avoid bank failure? To address this question, start by considering the payoffs of Bank Alpha’s shareholders—measured here in terms of expected gross return on equity (ROE)$^{248}$—with and without the additional equity injection. Under the original equity ratio of $90/10$, the shareholders’ expected gross ROE is $[90 \%(120 - 90)]/(10) = 2.7$ when Bank Alpha undertakes Project I and $[72 \%(150 - 90)]/(10) = 4.32$ when Bank Alpha undertakes Project II. Under the increased debt/equity ratio of $35.71/64.29$, the shareholders’ expected gross ROE instead is $[90 \%(120 - 35.71)]/(64.29) = 1.18$ when Bank Alpha undertakes Project I and $[72 \%(150 - 35.71)]/(64.29) = 1.28$ when Bank Alpha undertakes Project II.

Consider now the payoff of regulators (i.e., the public system), expressed for convenience as the negative of the actual LGD relative to the socially tolerable LGD of $10$. Under the original equity ratio of $90/10$, the regulators’ expected payoff is $-(9/10) = -0.9$ when Bank Alpha undertakes Project I and $-(25.2/10) = -2.52$ when Bank Alpha undertakes Project II. Under the increased equity ratio of $35.71/64.29$, the regulators’ expected payoff instead is $-[(10/35.71)]/(10) = -0.357$ when Bank Alpha undertakes Project I and $-[(28/35.71)]/(10) = -1$ when Bank Alpha undertakes Project II.

The matrix depicted in Figure 5 below illustrates the payoffs of Bank Alpha’s shareholders and the regulators for the combination of possible actions that they can play:

$^{247}$ Letting $\psi'$ be the socially optimal LGD, the required increase in Bank Alpha’s equity capital is determined by the following equation: $\left(1 + \beta^u\right) \left((D - \Delta E) - L\right) = \psi'$, which gives $\Delta E = \left[\beta^u(D - L)\right] \left(1 + \beta^u\right)$.

$^{248}$ Here the expected equity returns of Bank Alpha’s shareholders are measured through ROE to make the dilution effects that higher capital requirements produce on equity clearer.

$^{249}$ This is a simple normalization of the regulators’ payoff, which does not change the regulators’ preferences over the available courses of action.
The matrix shows that the only equilibrium of the “game” between the regulators and Bank Alpha’s shareholders is the strategy profile $\text{Project II; Additional Capital}$. What matters the most, under the rules of the game (i.e., the existing regulation), is that the selection of $\text{Project II; Additional Capital}$ is an equilibrium in dominant strategy. This means that whatever the strategy (i.e., the course of action) of the regulators, Bank Alpha’s shareholders are always better off by selecting $\text{Project II}$. And, similarly, whatever the strategy (i.e., the course of action) of Bank Alpha’s shareholders, the regulators are always better off by selecting $\text{Additional Capital}$. But the strategy profile $\text{Project II; Additional Capital}$ also is the most inefficient outcome of the game, being the one that yields the lowest aggregate payoff, i.e., $0.28$. Instead, the efficient outcome would be the strategy profile $\text{Project I; Status – quo Capital}$, which yields an aggregate payoff of $1.8$. This strategy also yields higher payoff for both Bank Alpha’s shareholders and the regulators relative to the payoff each of them obtains under $\text{Project II; Additional Capital}$. Thus, the equilibrium of the game shows that there is

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250 In game theory, a dominant strategy is a strategy that each player plays independently from what the other is doing. See generally John F. Nash, Jr., Equilibrium Points in N-Person Games, 36 Proc. Nat’l Acad. Sci. U.S.A. 48, 48–49 (1950).

251 Indeed, even with the higher capital requirement, $\text{Project II}$ is still more profitable for the shareholders. Formally, by switching to $\text{Project II}$, the shareholders gain $a^\alpha(H - M) - b^\beta[M - (D - D\Delta)]$, which is positive since $D - D\Delta = \frac{\Delta H - \psi'(H)}{\psi''(H)} = H > L$.

252 This is trivially given by the fact that $\psi'_D < \psi''_D$.

253 It is important to emphasize that while the strategy profile $\text{Project I; Status – quo Capital}$ also yields an aggregate payoff of $1.8$, the strategy $\text{Project I; Status – quo Capital}$ is more efficient under the
room for Coasean bargaining, as long as two conditions are satisfied. The first is that the shareholders commit to the undertaking of Project I by using a credible signal. The second is that regulators reward this commitment through the exclusion of the additional capital requirement. This simple illustration shows that the use of safe governance arrangements, such as an advocacy system, would be a rational choice for bank shareholders, if this choice were rewarded with lower regulatory costs, such as lower capital requirements. Under this regulatory scheme, given a risk level acceptable to the regulators, bank shareholders would be able to make optimal trade-offs on two margins: the cost of advocacy and the cost of capital requirements. This means that Bank Alpha’s shareholders would optimize their regulatory cost of capital by choosing, for example, an advocacy model over a CEO-centric model.

Under the current regulatory framework, however, there are only superficial references to banks’ governance arrangements. The only extant provisions on regulating bank governance come from examination ratings, such as the CAMELS ratings used for depository institutions. These criteria, however, are more oriented to assess bureaucratic features than real authority in corporate decision making. Thus, because of the manner in which they are formulated, governance requirements only provide general guidelines, which have little, if any, binding force. More fundamentally, governance provisions play almost no role in the regulators’ evaluation of a bank’s appetite for risk. While in principle governance ratings are incorporated in the Federal Deposit

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assumption that the shadow cost of public funds is non-zero (i.e., not negligible). See supra note 246. Under this assumption, since the regulators’ expected bailout costs are higher for Project II, the outcome Project II; Status = quo Capital is strictly dominated by the outcome Project I; Status = quo Capital.


For example, the evaluation of a bank’s risk management system is based on very detailed provisions in the examination ratings. But even detailed risk management regulation is virtually useless when the overall organizational structure is subordinated to a CEO with a large appetite for risk. Unfortunately, existing examination rules fail to adequately tackle fundamental issues of control, such as board composition, expertise, or independence; instead, these rules are vague and only employ loose definitions, referring to indefinite attributes, such as “ability,” “adequacy,” “accuracy,” “[r]esponsiveness,” “[r]easonableness,” and “willingness.” See FDIC EVALUATION POLICIES, supra note 254, § 4.1.
Insurance Corporation’s (FDIC) determination of deposit insurance premiums,256 in practice these ratings constitute a minimal part of a broad evaluation that is predominantly devoted to assessing a bank’s capitalization.257

Thus, in contrast to what uninsured debtholders would do, bank regulators fail to bargain for many “contractual features” that would include not just capital requirements but also governance arrangements. As a result, prudential regulation is currently unsuitable for restoring bank shareholders’ incentives to select more socially responsible governance structures. To remedy this inefficiency, this Article suggests that bank shareholders should be allowed to trade safe governance arrangements for lower regulatory costs, including lower capital requirements and deposit insurance premiums.258 The discussion that follows attempts to devise potential measures to implement this change and addresses the possible objections.

C. Incentivizing Advocacy in Banks

In an ideal world, this Article’s proposal would inherently lead banks’ governance models to converge toward safe governance arrangements. And there is a sound argument for claiming that such arrangements would be built around an advocacy model. Assuming that regulators could hand-tailor

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257 It is worth observing that in the case of capital requirements, a theoretical exchange between safe governance arrangements and lower capital ratios is provided in the prompt corrective action system introduced by the 1991 Federal Deposit Insurance Corporation Improvement Act (FDICIA). Federal Deposit Insurance Corporation Improvement Act of 1991, Pub. L. No. 102-242, 105 Stat. 2236. This system classifies banking institutions in five capital-based categories, ranging from well-capitalized to critically undercapitalized. As a bank’s capital rating declines, prompt corrective action rules impose progressively stricter regulatory requirements. These rules also provide that a bank can be treated as if it belonged to the next lower capital category if it has received an unsatisfactory rating under the CAMELS system and has taken no corrective action. See 12 C.F.R. § 325.103 (2012). In practice, however, the largely residual scope of application of this rule, combined with the bureaucratic nature of the CAMELS governance provisions, makes it highly unlikely that this principle can have real teeth. In fact, when one considers the broader context of the prompt corrective action system, it becomes apparent that within this system bank governance only matters when a bank’s capital level falls to extremely low levels.

258 Under the same logic, banks adopting safe governance arrangements could be subject to less stringent activity restrictions. Since these restrictions impose opportunity costs on banks, they are a subset of regulatory costs. See John et al., supra note 9, at 96 (jointly considering activity restrictions and capital requirements as suboptimal and costly means to discipline banks).
negotiations with banks and appropriately price the risk incentives in banks’ governance arrangements, shareholders would rationally seek the implementation of such a model. In reality, however, regulators stand at a greater informational disadvantage vis-à-vis banks than debtholders in private contracting. Debtholders only need to monitor a limited number of borrowers and generally enjoy vast economic resources to accomplish this task. In contrast, regulators are called to supervise the banking system as a whole and may face severe budget constraints. Thus, imagining a regulatory system that perfectly mimics the operating methods of private contracting raises feasibility concerns. Monitoring the risk propensity of governance arrangements at thousands of U.S. banks would make this system so costly as to be potentially unmanageable. One would have to be willing to accept a high risk that banks’ governance arrangements might be “mispriced” by regulators.

Thus, while this Article’s analysis applies without distinction to all kinds of banks, the need to address the above implementation issues suggests that the adoption of two different regulatory regimes would be desirable. As explained below, regulators should resort to one-on-one negotiations only in the case of “large, interconnected bank holding companies”—as defined in sections 115 and 116 of the Dodd-Frank Act (i.e., bank holding companies “with total consolidated assets” of $50 billion). The remaining banks not falling within the Dodd-Frank Act’s categorization (i.e., non-systemic banks) should instead be subject to a standardized system.

1. The Standardized System: Small and Medium-Sized Banks

The theoretical background offered by contract theory assists in better understanding what the standardized system this Article proposes for regulating governance issues in non-systemic banks would entail. Contract theory suggests that in contexts of asymmetric information, a way for the principal to elicit private information from the agent is offering the agent a menu of contractual choices—a collection of payoff-relevant alternatives—to choose from. As long as this mechanism is well-designed, the agent’s choice

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260 See supra note 24 and accompanying text.
261 An example is offering a menu of contracts where each contract specifies a given price and quality label. The underlying intuition is that adding another contractual dimension to the negotiation between principal and agent (i.e., the quality label besides price) enables the principal to infer more information about the agent’s type. Economically, the adoption of this strategy implies a model of screening, rather than
of a given contract within the menu reveals her private information to the principal. Explained simply, this process sorts good types from bad types.

Applied to judging governance at banks, a similar mechanism could be implemented through regulation that “offers” banks a menu of standardized regulatory contracts. Under these contracts, a fixed set of regulatory costs would correspond to some predefined combinations of organizational features. By opting for a given mix of organizational features, banks would reveal information about their risk appetite to regulators, basically assessing the quality of their own governance arrangements. In pragmatic terms, the implementation of this system would require regulators to devise a framework of proxies for evaluating bank governance: i.e., governance metrics. Based on these proxies, regulators could identify more and less risky combinations of organizational features and assign a corresponding set of regulatory costs.

For feasibility issues, this Article suggests that the regulatory menu should include just two “contracts.” These contracts would limit banks’ alternatives to either an advocacy model or a CEO-centric model, with the distinction between these two options being based on a restricted, and readily observable, set of governance metrics. The first contract (i.e., the “advocacy contract”) would offer banks a fixed set of regulatory costs and an advocacy-based governance model. As for the set of costs, for example, it could be established that banks opting for the advocacy contract would be held to the standard 8% capital ratio that current capital adequacy rules require for adequately capitalized banks. As for the governance component, this contract would select a combination of organizational features that integrates the minimum signaling. The seminal contribution in this field is Michael Rothschild & Joseph Stiglitz, *Equilibrium in Competitive Insurance Markets: An Essay on the Economics of Imperfect Information*, 90 Q.J. ECON. 629, 643 (1976), which studied screening in the insurance market. A model of screening—where the principal rather than the agent takes action—better characterizes the nature of the regulators’ intervention. Nevertheless, screening is equivalent to signaling: both strategies aim at achieving a separating equilibrium.

This Article opts for a two-governance system instead of a large number of regulatory contracts because benefits from having multiple contracts are uncertain. At first glance, an increase in available regulatory contracts could seem to add to the precision of the system by synthetically replicating an assessment method based on individual negotiations with banks. But, in fact, this system can never ensure that the self-interest choice of bank shareholders for a given combination of governance features and regulatory costs is socially optimal—as it happens, instead, under an ideal system of one-on-one negotiations with banks. At the margin, enlarging the set of available contracts may increase, rather than decrease, the risk of mispricing. And even assuming that providing for more regulatory contracts could add some precision to the system, designing such a system would bring about enormous implementation costs and, therefore, raise feasibility issues.
requirements any advocacy model should provide for. As discussed above, two features could form the baseline. The first is a board composed only of independent directors. The second is the provision that the compensation of the chief risk officer (CRO) cannot be tied to stock performance or any other equity-based measure. Moreover, there are additional organizational features that this stage of the analysis suggests should be included among the minimum requirements for implementing an advocacy model. For example, a substantial portion of board members should be financial experts; the CRO should be granted access to specified budget and staff; the CRO should only report to the board; and, finally, the CRO should be removable from her position only by the board and with cause. This combination of features would counteract a bias toward increased risk taking by implementing a system where the CRO has both the incentives and the resources to effectively exercise her risk control functions, acting as counterweight to risk-loving CEOs. That is, this system would enable the CRO to effectively provide the first line of reporting on risk choices, preventing risk management from becoming some cosmetic regulatory compliance, as it has often been at many banks in the years prior to the crisis. It would also prevent CEOs from repressing conservative risk managers who disagreed with them, as also happened at several prominent banks.

The second contract to be included in the regulatory menu offered to banks (i.e., the “CEO-centric contract”) would provide for a pair of terms that includes a set of fixed, but higher, regulatory costs and a CEO-centric governance model. The regulatory costs could, for example, be set to the 10% capital ratio that current capital adequacy rules require for well-capitalized

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265 See supra Part II.C.2.
266 Some empirical studies show a positive correlation between the financial expertise of board members and volatility. See Bernardette A. Minton et al., Board Composition, Risk Taking and Value: Evidence from Financial Firms 2–3 (Aug. 16, 2009) (unpublished manuscript), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1455997. But this evidence does not show causation. In a CEO-centric governance model, the expert decides on the basis of the restricted, and biased, evidence provided by the CEO. Instead, in an advocacy model, experts are likely to add to the information aggregation process because they would be better able to assess the conflicting risk information produced by the CEO and the CRO.
267 These requirements are largely in accordance with the Basel Committee’s recommendations on improving bank governance. See BASEL PRINCIPLES FOR GOVERNANCE, supra note 20, at 18–19 (Principles 6.72, 6.74, 6.78, and 6.79).
268 See RAJAN, supra note 1, at 140 (observing that “risk management was used primarily for regulatory compliance rather than as an instrument of management control”).
269 See FCIC FINAL REPORT, supra note 93, at 18–19 (reporting that repressing non-complacent risk managers was a regular practice at major banks, including Lehman Brothers, Citigroup, and Bear Stearns).
banks. As for governance provisions, this contract would include any governance structure that does not implement the advocacy model described above.

2. The Tailored System: Systemic Banks

Despite the positive features of the standardized system, large, interconnected bank holding companies (as defined in the Dodd-Frank Act) should be subject to a different regulatory regime. Under this regime, the trade-off between advocacy and lower regulatory costs should be based on individual negotiations between banks and regulators. Two reasons underlie the need for differentiated regimes based on size. First and foremost, a standardized system can never eliminate the likelihood of misalignment between optimal private sorting and optimal social sorting. Under this system, there is always the risk that a bank can choose an advocacy model to lower its capital requirements, even when higher capital requirements would be socially desirable. That is, a standardized system can reduce, but not eliminate, the risk of “mispricing” a bank’s governance arrangements. In the case of large, interconnected banks, this risk is likely to increase and have more severe consequences due to the complexity of these banks’ asset pools and their systemic importance. Second, the relatively small number of large, interconnected banks (about thirty today) would make an assessment system based on individual negotiations feasible, whereas the high number of small and medium-sized banks would make it impossible.

Practically, an individualized assessment system of the trade-off between advocacy and lower regulatory costs would involve the following steps. First,

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270 See supra notes 23, 229.
273 It is worth observing that the proposed adoption of a different regulatory regime for small and medium-sized banks, on the one hand, and systemic banks, on the other, would replicate the practice of private debt contracting. Banks routinely use standardized contracts when lending to small businesses or households. In contrast, lending to corporate clients involves detailed, lengthy, and sophisticated negotiations.
consistent with the new provisions introduced by the Dodd-Frank Act for systemic banks, capital requirements for these banks should be determined ad hoc through individual stress tests that simulate breaking-point future scenarios. A similar approach should be applied to evaluate these banks’ risk-based insurance premiums. Second, the set of organizational features implementing advocacy should be determined on a case-by-case basis. This means that the relative impact factor of a large bank’s organizational features on that bank’s risk appetite should be evaluated by taking into consideration a wide range of control variables, including its “capital structure, riskiness, complexity, financial activities (including the financial activities of [its] subsidiaries), size, and any other [appropriate] risk-related factors.” Additionally, it would be desirable for regulators to include in their “checklist” of relevant organizational features, for example, the relative power of the CRO, as measured by her share of the total pay given to all the bank’s top executives, and the size of the CRO’s budget and staff. Finally, the measure of the trade-off between advocacy and lower regulatory costs should also be evaluated ad hoc, taking into consideration idiosyncratic features and the impact of this trade-off on a bank’s risk appetite. Most importantly, as private lenders do when negotiating with their debtors, regulators could ask for

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275 Bank regulators have already performed similar tests. After the crisis, the Federal Reserve, the Office of the Comptroller of the Currency, and the FDIC jointly launched the Supervisory Capital Assessment Program. The program was tailored to estimate the losses and liquidity needs of nineteen U.S. bank holding companies with assets exceeding $100 billion. The test found that ten out of the nineteen banks under examination would have required an additional capital buffer to remain solvent. See Bd. of Governors of the Fed. Reserve Sys., The Supervisory Capital Assessment Program: Overview of Results 19–37 (2009), available at http://www.federalreserve.gov/bankinforeg/bcreg20090507a1.pdf. For some banks the required additional buffer was significant. For example, as regards the level of Tier 1 capital (i.e., common stock and disclosed reserves), Bank of America would have required a 19.6% increase. See id. at 21. The 19.6% increase is obtained by dividing the SCAP buffer of Bank of America, i.e., 33.9%, by the bank’s Tier 1 capital as of December 31, 2008, i.e., $173.2 billion.

276 To this end, regulators should also privilege on-site examinations and resident examiners over off-site monitoring through certified reports. See FDIC Evaluation Policies, supra note 254, ¶ 1.1.


278 Recent empirical studies confirm that the relative power of risk managers vis-à-vis top executives, as measured through risk managers’ relative compensation, is among the most important determinants of banks’ risk management policies. This argument is supported by the fact that banks in which risk managers enjoyed more relative power invested less in risky assets before the crisis and performed better during the crisis. See Ellul & Yerramilli, supra note 203 (manuscript at 16) (finding that the presence of a risk manager with high relative power is negatively correlated with increased risk taking before the crisis and positively correlated with better performance during the crisis); Keys et al., supra note 82, at 702 (finding that relative power of risk managers has negative correlation with loan default rates).
changes in a bank’s organizational features. For example, when a bank is highly systemic, regulators could even demand the presence of a public supervisor on the bank’s board for making the trade-off between governance and lower regulatory costs available to that bank.\(^{279}\)

3. Objections

This Article’s proposal is that making banks’ regulatory costs sensitive to banks’ organizational features would incentivize bank shareholders to adopt safe governance arrangements, adding to both the stability of individual banks and the banking system as whole. However, the question of how this proposal should be implemented is complex and open-ended. What is the optimal set of organizational features that regulators should focus on? How often should regulators evaluate a bank’s governance arrangements to avoid the risk of ex post shifts toward riskier governance models? These are only two of the additional questions that need to be addressed. It is important to emphasize, however, that experience would help to answer these questions. Especially in the case of large banks, the experience gained with one bank would provide information on the best course of regulatory action to undertake with other banks. Based on this experience, regulators could continue to impose governance measures that have proven successful to constrain risk and jettison

those that have not. Over time, regulators would also gain insights that would assist them in “pricing” the regulatory contracts offered to banks. And this, in turn, would enable them to better calibrate enforcement strategies, allowing for a more accurate determination of the appropriate “price difference” between one model and the other.

A potential objection to the adaptive regulatory approach proposed here is that it would be costly. But the costs associated with implementing such an approach should be put into perspective against the benchmark of “the truly enormous, immediate, direct, long-lasting out-of-pocket expenses associated with bailouts.” In addition, this approach should not be built from scratch. For example, regulators could rely on the regulatory infrastructures provided by examination ratings. They could also count on existing deposit insurance rules for incorporating bank governance into the determination of deposit insurance premiums. Clearly, these regulations should be reformed to provide for real consideration of banks’ decision-making processes and give actual weight to governance arrangements in the determination of both deposit insurance premiums and capital requirements. Nevertheless, they would provide an important institutional setup to start from for implementing this Article’s reform proposal. Similarly, in the case of large, interconnected banks, this proposal would fit in with the institutional responsibilities and powers that the Dodd-Frank Act delegates to the Financial Stability Oversight Council (FSOC). The vast range of operational powers granted to the FSOC—including (i) the ability to recommend the application of individual prudential standards, (ii) the power to request special certified reports on a variety of subject matters, and (iii) the implementation of studies about the feasibility of ad hoc capital requirements—would largely facilitate the adoption of the individual “negotiation” approach. Finally, in the long run, governance-focused regulatory intervention might better allocate limited public resources. On the one hand, after enacting this regulatory scheme for some period of time, regulators could begin to trust banks with advocacy models. This increased trustworthiness in banks’ internal control mechanisms could spare regulators the costs of more intense scrutiny, in part “delegating” regulatory monitoring

280 It is worth observing that shareholders, through the services offered by corporate governance rating agencies, already use corporate governance metrics to evaluate the soundness of potential investments. See Paul Rose, The Corporate Governance Industry, 32 J. CORP. L. 887, 917 (2007). While regulatory governance metrics should be tailored to measure stability rather than profitability, the experience of the corporate governance industry could serve as support to the regulatory identification of key governance features.

281 Macey & Holdcroft, supra note 2, at 1409.

282 See Dodd-Frank Wall Street Reform and Consumer Protection Act §§ 115–16.
to banks themselves. On the other hand, these newly available resources could be effectively channeled toward banks with CEO-centric models, which pose the greatest risk.

A more radical objection to this Article concerns the ability of bank shareholders to engage in active governance. Especially in large banks with dispersed shareholders, coordination problems could prevent the shareholders from engaging in the costly information-gathering process required by the exercise of voice. This argument, however, overlooks the fact that shareholders can always “vote with their feet” and discipline managers through the threat of exit. Bank shareholders could have acted in this way before the crisis if dissatisfied with their banks’ governance arrangements. Instead, they rationally chose to remain passive because riskier governance arrangements were profitable. But under a regulatory scheme that penalizes banks opting for such arrangements, shareholders would have the correct incentives to actively exercise their exit rights if dissatisfied with the governance choices of management. In addition, the rise of activist hedge funds and private equity funds suggests that there may be great room for shareholder voice in large banks. These investors have both the sophistication and economic resources to be directly involved in shaping a bank’s governance arrangements. The fact that the Federal Reserve has relaxed regulations restricting these investors’ ability to acquire positions in banks and bank holding companies is likely to

283 See, e.g., Rajan, supra note 1, at 147 (observing that the high volatility of the banks’ equity market was matched by high equity values).

284 Since the rise of institutional investing in the 1980s, scholarly representations of shareholders as passive and uncoordinated have increasingly given way to a new shareholder rights movement. See Bernard S. Black, Shareholder Passivity Reexamined, 89 Mich. L. Rev. 520, 522 (1990) (rebutting what he calls the “passivity story” as obsolete and superficial in light of the growth of institutional investors). This movement has strongly defended the ability of shareholders to improve managerial performance and accountability through active voting. In fact, in recent years, the focus of this debate has shifted from the possibility of shareholder democracy to its efficiency. See, e.g., Lucian Arye Bebchuk, The Case for Increasing Shareholder Power, 118 Harv. L. Rev. 833 (2005).

285 See William W. Bratton, Hedge Funds and Governance Targets, 95 Geo. L.J. 1375, 1381 (2007) (explaining that hedge funds have been incredibly successful at using the proxy system to pursue governance issues); Marcel Kahan & Edward B. Rock, Hedge Funds in Corporate Governance and Corporate Control, 155 U. Pa. L. Rev. 1021, 1029 (2007) (“Hedge funds have increasingly tried to influence the business strategy and management of corporations.”); Ronald W. Masulis & Randall S. Thomas, Does Private Equity Create Wealth? The Effects of Private Equity and Derivatives on Corporate Governance, 76 U. Chi. L. Rev. 219 (2009) (suggesting that the great success of private equity funds is largely due to their superior ability at managing corporate governance issues).
incentivize further activism. With the right incentives, the governance skills of these investors would add to the efficiency of banking organizations.

A different kind of objection can be raised to the fact that this Article does not propose the mandatory adoption of advocacy models, given the thesis it develops about the efficiency of advocacy. There is a basic reason for this: for small, local banks, adopting advocacy models might prove too onerous. The requirements of having a board composed only of independent directors and a qualified CRO (with a structured risk management department) might be difficult in practice and excessively costly. More importantly, these added costs might be unjustified in contexts where the systemic risks posed by a bank are inherently constrained by the bank’s size.

Finally, it is important to distinguish the advocacy approach proposed here and recent proposals advanced within the optimal compensation framework. As noted above, these proposals suggest that anchoring executive compensation to both a firm’s debt and a firm’s equity would per se provide a credible commitment to sound risk policies by banks. However, giving managers “non-partisan incentives,” by linking pay to the total value of a bank’s liabilities (including equity), is a task with serious feasibility issues, especially when these claims are not traded. In contrast, the incentive structure provided by advocacy is immune to these problems because it involves agents (i.e., the CEO and the CRO) who are left to manage their own partisan incentives. More radically, because dominant CEOs can potentially modify a bank’s capital structure, the commitment provided by compensation schemes could be unreliable. In opposition, advocacy models would be more


287 See Masulis & Thomas, supra note 285, at 259 (“There may be great opportunities for private equity to become involved in improving the operations of [financial] institutions.”).

288 Moreover, the costs that a bank bears to implement an advocacy model are likely to be private information.

289 See Sepe, supra note 36, at 211; see also Bhagat & Romano, supra note 52, at 370 (suggesting that feasibility issues might prevent firms from implementing executive compensation packages that adequately calibrate managers’ risk incentives).

290 See Dewatripont & Tirole, supra note 174, at 5 (arguing that advocacy systems are superior to systems where “a single agent is given a nonpartisan incentive scheme” to pursue simultaneously conflicting causes).
difficult to change because modifying a firm’s governance model requires time and involves complex procedures. Finally, managerial compensation contracts are always subject to contractual incompleteness problems, even if adjusted frequently. Both idiosyncratic and non-idiosyncratic factors, such as variations of the business cycle, could cause these problems. Conversely, the combination of organizational rules and decisional bodies that form a firm’s internal governance structure is exactly designed to solve similar problems in a timely and contingent manner, especially in the case of advocacy.

**CONCLUSION**

Shareholders and debtholders have conflicting preferences over risk taking, especially in banks. This conflict is generally mitigated by negotiations between the parties. But when debt claims are insured, debtholders lose their incentives to participate in negotiation. Thus, bank shareholders, unconstrained by debt discipline, have no incentives to seek governance arrangements that constrain risk taking. Instead, in this environment, the risk-prone, CEO-centric model becomes the norm.

Institutionally, there are three potential responses to this outcome that can help to preserve banking stability. First, regulators can solve the debt–equity conflict at the investor level, mandating that banks be government-owned. However, the efficiency gains of this solution are questionable. Second, regulators can mandatorily require banks to compensate their managers with schedules that calibrate risk-taking incentives. However, compensation contracts are necessarily incomplete, leaving room for residual managerial opportunism. The third solution is to promote a corporate governance system

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291 When the manager’s compensation contract is sensitive to risk (such as the implicit volatility of bank assets), it is exposed to the countercyclical effects of exogenous factors. For example, during times of high volatility, the manager could be too conservative with respect to the optimal level of risk. Conversely, during times of low volatility, the manager could undertake too much risk.

292 Government-owned banking is widespread worldwide: in the early 2000s about 40% of bank assets in emerging market banking systems were held in state-run banks. Rafael La Porta et al., Government Ownership of Banks, 57 J. Fin. 265, 275 (2002). For a critical assessment, see Levine, supra note 93, at 12, which observed that government might have “less benevolent motivations than enhancing the corporate governance of banks.” In the midst of the crisis, Nobel Economist Joseph Stiglitz provocatively suggested that both the U.S. and the U.K. governments would have benefitted from letting troubled banks fail and setting up a new banking system under temporary state control. See Judy Chen, Stiglitz Says U.S. Is Paying for Failure to Nationalize Banks, BLOOMBERG (Nov. 1, 2009, 1:10 PM), http://www.bloomberg.com/apps/news?pid=newsarchive&sid=aGR4KXaGwx8; Ambrose Evans-Pritchard, Let Banks Fail, Says Nobel Economist Joseph Stiglitz, TELEGRAPH (Feb. 2, 2009, 12:44 AM), http://www.telegraph.co.uk/finance/newbysector/banksandfinance/4424418/Let-banks-fail-says-Nobel-economist-Joseph-Stiglitz.html.
that attempts to solve the debt–equity conflict within the bank. This Article has argued for this third position.

To implement a governance solution, the contractarian approach is the most desirable: regulators would substitute themselves for a complacent class of insured debtholders. Under this substitution hypothesis, regulators would discipline banks as debtholders would in a world without government insurance. Shareholders would respond by adopting safe governance arrangements in the hope of minimizing regulatory costs. But this change would require regulators to adopt governance as a centerpiece in the regulatory regime. Instead, existing regulation focuses on capital requirements, with only superficial references to banks’ governance arrangements. This blunt approach is socially expensive and maintains the CEO-centric status quo. In order to remedy this inefficiency, this Article has suggested that bank regulators should negotiate with banks over an expanded domain of regulatory options, offering lower costs to banks that adopt safe governance structures.

Framing the specific regulatory options that will fulfill this objective is a daunting task. This Article has presented a tentative solution, conceptualizing safe governance arrangements in banks as a model of advocacy. Under this model, an advocate for the debtholders, for example the CRO, would serve as antagonist to the CEO, who, in turn, would act as an advocate for bank shareholders. The rivalry between the CEO and the CRO within the bank’s decision-making process would foster unbiased decision making and promote more socially responsible risk taking. To this end, regulators should make capital requirements and deposit insurance premiums sensitive to banks’ governance features. Small and medium-sized banks could receive a fixed set of regulatory options, while large banks could negotiate directly with regulators in a closer simulation of debtholder–shareholder bargaining. This latter approach would prevent an outcome where large banks exploited the trade-off between safe governance and lower regulatory costs in a manner that is privately optimal but socially inefficient.

Refining this implementation strategy, and developing empirical evidence, is a challenge for future research. But a discussion of the potential for

293 Cf. Geoffrey P. Miller & Gerald Rosenfeld, Intellectual Hazard: How Conceptual Biases in Complex Organizations Contributed to the Crisis of 2008, 33 HARV. J.L. & PUB. POL’Y 807, 808 (2010) (arguing that intellectual hazard and conceptual biases may impair “the acquisition, analysis, communication, and implementation of information within an organization” and that these factors played a fundamental role in the 2008 crisis).
advocacy in banks is a first step toward bringing banks’ governance practice closer to banks’ governance theory.