MAKING SENSE OF EXECUTIVE COMPENSATION

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ABSTRACT

On July 21, 2010, President Obama signed the Dodd-Frank Act. The Act implements a number of significant regulations regarding executive compensation. This article argues that Congress has failed to accurately answer three basic questions in the enactment of this legislation: (i) what are the key problems that plague executive compensation, (ii) what is the possible solution, and (iii) what is the role of regulation in implementing the solution?

Addressing these questions, the article comes to three conclusions. First, it argues that any comprehensive reform of executive compensation must take into account two moral hazard problems: inducing managers to perform and preventing them from taking either too much or too little risk.

Second, it suggests that analyzing manager employment contracts as relational in nature, as they are in reality, offers crucial insights into how to implement efficient compensation schemes. Because continuation of employment matters to managers, expectation of high fixed payments can promote effort. Under this result, the use of fixed compensation emerges as an efficient means of countering the incentive for excessive risk produced by equity-based compensation. This property of fixed pay allows the firm to implement mixed payment schedules that induce managers to perform while fully internalizing risk externalities.

Third, the article argues that regulation is necessary for remedying inefficiencies within the organizational structure of the public corporation that hamper adoption of optimal mixed payment schedules. It discusses why

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the Dodd-Frank Act fails to meet this goal and outlines the measures that should be on the agenda of future compensation reform.

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INTRODUCTION

"[W]e all win when folks are rewarded based on how well they perform, not how well they evade accountability."

—President Obama1

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On July 21, 2010, nearly two years after the explosion of the global credit crisis and after months of heated political debate, President Obama signed the Dodd-Frank Wall Street Reform and Consumer Protection Act (hereafter, the Dodd-Frank Act or the Act)\(^2\)—the most comprehensive reform to overhaul regulations of the financial industry since the Great Depression. While many of the Dodd-Frank Act's provisions relate primarily to financial institutions,\(^3\) the new legislation also includes a number of significant executive compensation rules that will affect all public companies in the United States.\(^4\) These measures attempt to address widespread public outrage over executive pay. This outrage has been fueled by the media, which persists in blaming bloated executive pay and the appetite for excessive risk-taking resulting from widespread use of equity-based compensation as key causes of the financial crisis.\(^5\) The Dodd-Frank Act's compensation provisions address both these issues, providing for compensation restrictions and measures aimed at better aligning manager and shareholder interests. Among others, these measures include provisions to bolster the independence of compensation committees and the introduction of non-binding shareholder votes (i.e., say-on-pay) on executive compensation.\(^6\)

This article suggests that the Dodd-Frank Act has missed the opportunity to substantially improve compensation practices.\(^7\) In the

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\(^3\)The broad range of financial industry-related issues covered by the Dodd-Frank Act includes, among others, systemic risk, regulatory supervision, derivatives, hedging, consumer protection, and credit rating agencies. See id. §§ 113, 115, 165, 404, 734, 725, 955, 1024-25, 1108.

\(^4\)See id., e.g., §§ 951, 953, 955.

\(^5\)President Obama's remarks echoed the widespread disparagement of existing compensation practices:

[Executives] paid themselves customary lavish bonuses. . . [That] is the height of irresponsibility; [that is] shameful. And that's exactly the kind of disregard for the costs and consequences of their actions that brought about this crisis: a culture of narrow self-interest and short-term gain at the expense of everything else.


\(^6\)See infra notes 163-64, 172-73.

\(^7\)In an op-ed written for the Wall Street Journal just before the Dodd-Frank Act was finalized, former SEC Chairman Arthur Levitt defined the bill as one in which "[t]here are many missed opportunities." Arthur Levitt, A Missed Opportunity on Financial Reform, WALL ST. J., June 24, 2010, at A19. In particular, Levitt criticized the reform's failure to promote shareholder access to the corporate proxy, an intervention that in his opinion would have provided "a measure of oversight that does not exist in any other form." See Karen Weise, Q&A: Former SEC Chairman Sees Financial Reform as Changes on the Margin, PROPUBLICA (June 28, 2010), available at http://www.propublica.org/article/q-a-former-sec-chairman-sees-financial-reform-as-changes-on-the-
enactment of this new legislation, Congress has failed to accurately answer three basic questions: (i) what are the key problems that plague executive compensation, (ii) what is the possible solution, and (iii) is there a role for regulation in implementing the solution, and if so, what is it?

This article addresses these questions, shedding light on the economics of executive compensation. It makes three contributions. First, it offers a trade-off analysis of the moral hazard problems affecting executive compensation, which include (a) inducing managers to perform (i.e., promoting effort) and (b) deterring inefficient risk-taking. Second, it provides an analytical framework under which the inclusion of high fixed compensation in executive pay emerges as an efficient way of boosting effort while fully internalizing risk-externalities. Third, it argues that policymakers failed to make a comprehensive analysis of the "two-dimensional moral hazard problem" affecting executive compensation, and outlines directions for more effective regulation. In particular, the article recommends adoption of a standardized mandatory procedure to regulate the activity of compensation committees and strengthen shareholders' power to displace management.

Part I of this article identifies the problems that plague executive compensation, using a hypothetical for demonstration. This part begins by illustrating the problem scholars have traditionally emphasized as the crucial issue in determining optimal executive compensation: promoting manager "effort." In the jargon of economists, managers are said to exert effort when they avoid opportunistic behaviors such as shirking, the extraction of private benefits, the undertaking of entrenchment strategies, and so forth. For over two decades, the most popular suggestion has been that tying managers' financial rewards to equity value, rather than providing fixed compensation, is the optimal response to the problem of effort. A further reason, put forth by scholars, to prefer equity incentives is that fixed compensation can make managers excessively conservative. In the aftermath of the financial crisis, however, the problem of risk has gained major importance in the executive compensation debate. As a result, the focus of this debate has shifted from the beneficial effects of equity-based compensation on effort to its

margins.

See infra note 27-30 and accompanying text.

See infra Part II.B.1.
unfortunate side effect, increasing managers’ incentive to take excessive risk at the shareholders’ expense.

There is another element to this same issue that has been widely overlooked, however. In some circumstances, shareholder interests are actually served by managers’ excessive risk-taking. As has long been acknowledged by finance theorists, shareholders may benefit from the undertaking of high-risk, high-return projects when a corporation has outstanding debt. Shareholders expect to reap the full upside from these projects, while under the limited liability of the corporate form debtholders bear most of the risk of loss. Economists refer to this problem as overinvestment (or asset substitution). As dramatically showed by the recent financial crisis, overinvestment increases the cost of debt capital. Anticipating that shareholders and managers—when given equity incentives—may share overinvestment preferences, creditors demand higher interest rates from all debtors, irrespective of whether they actually engage in this form of opportunism. This leads to an inefficient allocation of debt capital and other social costs.

Hence, an incentive puzzle affects efficient compensation design. On the one hand, equity-based compensation induces effort but leads managers to take too much risk, to the detriment of either shareholders or creditors. On the other hand, fixed compensation may make managers excessively conservative and, according to conventional wisdom, cannot promote effort.

Part II introduces the relational-contract analysis of executive compensation. The law and economics literature about executive compensation has traditionally relied on a model where the firm-manager relationship is portrayed as being a one-shot exchange transaction. In reality, however, manager employment contracts are relational—i.e., ongoing. They last an average of five years (and often more), during which managers

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12See sources cited infra at note 70.

13Because of their limited liability shield, shareholders bear losses only up to the value of their investment in the corporation. Debtholders bear all remaining losses.

14In this article, the terms "excessive risk-taking from the shareholders’ point of view" and "overinvestment" (or "asset substitution") are used to refer to, respectively: (i) excessive risk-taking that is detrimental to the shareholders’ interests, and (ii) excessive risk-taking that is detrimental to the creditors’ interests. The term "excessive risk-taking" is used to refer generically to both (i) and (ii).

15See Les J. Young, Does the Corporate Bond Trade Still Have Legs?, MFC GLOBAL INVESTMENT MANAGEMENT (July 27, 2010), available at https://hermes.manulife.com/Canada/repsrcfm-dir.nsf/Public/DoestheCorporateBondTradeStillHaveLegs/$File inv_mnfcorpbondtrade.pdf (providing evidence that in mid-2008—that is, in the middle of the financial crisis, where information about managers’ excessive risk-taking became publicly available—"[s]preads on corporate issues balloon to record heights, with credit spreads reaching over three times their long-term averages for investment grade and high yield issues").
undertake several investment projects. This article suggests that this neglected feature of manager contracts can offer crucial insights into how to find a solution to the executive compensation puzzle.

The hypothetical discussed in Part II offers a detailed analysis of these solutions, but here they may be illustrated using a simpler example. Suppose that Alan, an entrepreneur, decides to hire Henry, an investment manager, to develop some investment projects. Alan’s investment activity is partially financed by a lender, Jon, who in exchange receives a fixed income. Jon is the first to be paid, provided that funds are available. After hiring Henry, Alan must decide how to pay him. Since Alan is a clever guy, he knows that paying Henry on a fixed basis will not induce Henry to care as much as he should about the investment’s success. Hence, he decides to give Henry a stake in his future profits, if there are any. This, however, will cause Henry to prefer risky bets. If Jon’s financial contribution to the venture is high, however, both Alan and Henry will be served by these bets, to the detriment of Jon.¹⁶

Alternatively, let us now imagine that Alan hires Henry for several years to develop a long-term business. If the business performs poorly, Alan has the right to reassess Henry’s pay or even fire him. The extension of Henry’s stay as manager radically alters the compensation issue. As long as the annual salary (i.e., fixed compensation) Alan pays Henry is high enough, Henry will not need an equity stake to care about the success of Alan’s business. The expectation of future fixed pay (i.e., the continuation payoff) will suffice to induce Henry to perform, since poor business performance could lead to a downward reassessment of his pay or the termination of the relationship. This pay schedule will not give Henry incentive for excessive risk (either at the expense of Alan or Jon), unlike when equity incentives are used, since taking more risk could jeopardize the continuation of the business. Yet,

This simple story suggests that—contrary to conventional wisdom—because continuation of employment is valuable to managers as long as they are paid enough, fixed compensation can induce effort. At the same time, it constrains managers’ incentives for excessive risk, leading them to prefer more conservative investment strategies. The analysis developed in Part II shows that these properties of fixed pay allow the firm to implement mixed payment schedules that promote effort without giving the managers

¹⁶ Alan, like Henry, expects to capture the full upside from risky bets, while limited liability insulates him from losses beyond his capital contribution to the venture. See supra note 13. In contrast, Jon will bear most of the losses in case of failure, since his right of repayment is conditioned upon funds being available.
incentives to take either too much or too little risk—i.e., fully internalizes risk externalities. The analysis also shows that the firm’s capital structure is crucial to the determination of the efficient fixed-equity mix. High levels of leverage increase the risk of overinvestment by providing a “debt cushion” that absorbs most losses in the case of failure. Accordingly, in such firms the fixed-equity ratio of executive pay should be tied to the debt-equity ratio of the firm’s capital structure, in order to exploit the property of fixed-compensation of countering managers’ excessive risk incentives. In contrast, equity-based compensation should be preferred in low-leveraged firms, where overinvestment concerns are less severe given the smaller debt cushion. Accordingly, in these corporations the equity-based portion of executive pay should exceed the fixed-pay portion, since equity-based compensation is generally more effective in inducing managers to perform.

Part III develops the case for regulating executive compensation. This part begins by explaining that the organizational structure of the publicly held corporation prevents firms from implementing the optimal solutions derived under the relational-contract analysis of executive compensation. For the reasons outlined above, especially in high-leveraged firms, shareholders might prefer compensation schemes that give managers overinvestment incentives. As a result, the corporate pay setting process tends to be "equity-compensation biased," causing boards to prefer equity pay components over fixed-pay components, regardless of what the most efficient solution may be. In addition, within the organizational structure of the large corporation, shareholders have limited effective power to displace the board and its management. As a result, they lack the credible retaliatory power that the relational-contract analysis of executive compensation shows necessary to implement efficient compensation schemes. Shareholder preferences for excessive risk may also play a role in threatening the credibility of their retaliatory capability. Therefore, regulatory intervention

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18In our story, if Alan largely operates on money borrowed from Jon, Alan might dislike paying Henry on a fixed basis. Under this payment schedule, in fact, Henry will no longer share Alan's appetite for risky bets at Jon's expense.

19This is consistent with empirical evidence. Before the explosion of the crisis, equity incentives in manager pay packages far exceeded the amount of fixed holdings. See Richard Shaw, Bank Executive Compensation and the Bailouts, SEEKING ALPHA (July 20, 2008), available at http://seekingalpha.com/article/85806-bank-executive-compensation-and-the-bailout (reporting data of the 2008 Corporate Library Database, according to which equity-based compensation exceeded 70 percent (and over) of manager overall pay in many financial institutions).
is required to remedy these inefficiencies and promote better compensation practices.

The Dodd-Frank Act is unlikely to achieve this goal. Neglecting to consider all the pieces of the compensation puzzle, the provisions introduced by the Act only provide partial solutions to the two-dimensional moral hazard problem of effort and risk that plagues executive compensation. The non-binding approval of executive compensation by shareholders (i.e., say-on-pay) can produce benefits to deter managers’ excessive risk-taking from the shareholders’ viewpoint. However, it cannot eliminate managers’ overinvestment incentives, because shareholders are served by them. In addition, because the Act limits the amounts of executive pay, firms could be prohibited from offering the high levels of fixed compensation that are necessary to make continuation of employment valuable to managers. This article suggests that a more effective regulatory approach to improve current compensation practices should provide for intervention that primarily takes two forms. First, regulators should implement rules to tackle equity-compensation biases in the corporate pay-setting process (i.e., shareholder overinvestment incentives), such as an SEC-mandated standardized procedure for regulating the activity of the compensation and risk committees. Because such a procedure would help solve the problem of overinvestment, shareholders would always have the right incentives to remove underperforming management. Therefore, the second intervention this article proposes is strengthening shareholder powers to displace managers.

I. THE COMPENSATION PUZZLE

In contemporary corporate scholarship, few issues have attracted as much scrutiny and heated controversy as executive compensation.20 Yet, in the midst of this controversy, one important aspect of executive compensation remains undisputed. Well-designed pay arrangements should incentivize managers to further shareholder interests, or, in the jargon of economists, should induce more effort.21 For almost two decades, the use of performance-based compensation has been emphasized as the best available solution to achieve this goal. After the explosion of the 2007-2008 financial


21See infra note 30.
crisis, however, the focal point of the executive compensation debate has shifted from the problem of effort to the problem of risk. Now the standard argument among academics is that the beneficial effects of equity-based compensation on effort come at the expense of distorted manager incentives to take short-term excessive risk, to the detriment of shareholder long-term interests.22

Despite emerging acknowledgment of the problem of excessive risk-taking in executive compensation scholarship, no comprehensive analysis of the "two-dimensional moral hazard problem" of effort and risk that plagues efficient compensation design has yet appeared in the executive compensation literature.23 This part fills that gap, using a simple hypothetical to make the problems of effort and risk more tangible.

A. The Problem of Effort

Within the principal-agent economic framework of the firm,24 an agency problem may arise between managers and shareholders because the principal (the shareholders) cannot adequately monitor the actions taken by the agent (the managers).25 As a result, the agent has incentive to pursue her own interests rather than the best interests of the principal, a problem generally labeled "moral hazard."26 Managerial moral hazard, in particular, may include shirking,27 entrenchment,28 and the extraction of private

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22 See sources cited infra at note 76.
23 See Hellwig, supra note 8.
25 Shareholders, as residual corporate claimants, delegate control over the corporation to managers, who run the business enterprise on the shareholders' behalf. In this sense, shareholders are "principals" and managers are "agents." See id. at 308 (defining "an agency relationship as a contract under which one or more persons (the principal(s)) engage another person (the agent) to perform some service on their behalf which involves delegating some decision making authority to the agent").
26 See JEAN-JACQUES LAFFONT & DAVID MARTIMORT, THE THEORY OF INCENTIVES 145 (2002) ("By the mere fact of delegation, the principal often loses any ability to control those actions [of the agent] that are no longer observable . . . Those actions cannot be contracted upon because no one can verify their value. In such cases we will say that there is moral hazard." (emphasis added)).
27 Shirking is the term commonly used to define situations where managers are not fully focused on maximizing corporate profits. See, e.g., Margaret M. Blair & Lynn A. Stout, A Team Production Theory of Corporate Law, 85 VA. L. REV. 247, 249 n.3 (stating that "[s]hirking' occurs when individuals fail to make optimum efforts to ensure a joint project's success, instead free-riding on others' efforts"). 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
benefits. In each case, managers avoid taking action that may impose a cost on them or they take actions meant to benefit only themselves and not the firm. Economists refer to this as an "effort problem." The other aspect of moral hazard as it applies to executive compensation is risk-taking, which will be discussed later in Part B.1.

The literature on executive compensation has essentially developed as an application of agency theory, focusing on compensation arrangements as the key mechanism for solving the manager-shareholder agency problem. For a long time, this literature has described pay-for-performance contracts as the optimal response to this problem. Under such contracts, managers

 reallocating workforce, may not spend enough time supervising their subordinates, or may overcommit themselves to tasks unrelated to the management of the corporation. Id.

 Entrenchment occurs when managers take actions that may hurt shareholders in order to secure their control position. A typical example of entrenchment is investing in businesses that make the manager's contribution indispensable. See Andrei Shleifer & Robert W. Vishny, Management Entrenchment The Case of Manager-Specific Investments, 25 J. FIN. ECON. 123, 123 (1989).

 The consumption of on-the-job perks can include numerous activities, including diverting corporate opportunities, spending corporate money to purchase private jets, recruiting top officers from among family and friends, and so on. The corporate scandals of the early 2000s are a good benchmark for grasping the scope of the problem. Before the company's bankruptcy, Worldcom's CEO borrowed $1 billion against his company shares to buy luxury estates and yachts. Similarly, Tyco's CEO and top executive officers were assessed to have appropriated over $100 million in illegitimate private benefits. Other cases in point include RJR's Nabisco fleet of ten aircraft with thirty-six company pilots, and the appointment by Dillard's CEO of four of his children to the company board. See TROLE, supra note 27, at 16-17.

 See, e.g., JOHN ROBERTS, THE MODERN FIRM 127 (2004) ("For simplicity we call the action being taken [by the agent] 'effort provision,' but numerous other interpretations are possible.").

 See Kevin Murphy, Executive Compensation, in 3 HANDBOOK OF LAB. ECON. 2485, (ed. Ashenfelter & Card, 1999) ("The modern history of executive compensation research paralleled the emergence and general acceptance of agency theory."). Two exceptions, according to sociologists and organizational behaviorists, are executive compensation studies on social comparison and wage dispersion, which do not typically employ the agency-theory framework. See, e.g., Charles A. O'Reilly III et al., CEO Compensation as Tournament and Social Comparison: A Tale of Two Theories, 33 ADM. SC. QUART. 257-58 (1988).


 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, 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 effort] and that other alleged remedies are
are compensated through the attribution of firm stock or stock options—i.e., equity-based compensation—\(^\text{34}\) in addition to receiving a fixed salary.\(^\text{35}\) The rationale behind the use of performance contracts has by now become well-known. According to conventional wisdom, salary and other forms of fixed compensation fail to give managers the right incentive to act in the shareholders’ best interests.\(^\text{36}\) When financial rewards are guaranteed, managers have no reason to bear the cost imposed by taking more effort. In contrast, when pay is anchored to successful firm performance, managers become as interested in profit maximization as shareholders.\(^\text{37}\) This results in a situation that induces them to exert the optimal amount of effort.

A hypothetical may better illustrate the problem of effort and the incentive function of equity-based compensation. To keep things simple at this stage of the analysis, let us assume that there are only three periods of time.\(^\text{38}\) In Period 0, corporation *Alpha* is created. *Alpha* is financed in part by equity and in part by zero coupon debt, for a total value of liquid assets equal to $100.\(^\text{39}\) In Period 1, multiple investment projects become available. This induces *Alpha* to hire a professional manager, to whom it delegates the development of the corporate investment policy. The manager then chooses one of the available projects.\(^\text{40}\) In Period 2, the outcomes of the projects are

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\(^{\text{34}}\) In the absence of more immediate proxies for evaluating corporate results, stock market value is described as the most reliable indicator of the "value of the entire future stream of expected cash flows." See Michael C. Jensen, *A Theory of the Firm: Governance, Residual Claims, and Organizational Forms* 146 (2000).

\(^{\text{35}}\) In fact, manager pay typically includes: (i) fixed compensation that does not depend on performance, (ii) equity-based compensation that depends on the performance of the firm’s stock price (such as stock and stock options), and (iii) performance-based compensation that depends on firm performance as measured by accounting metrics (such as accounting-based bonuses). See, e.g., Carola Frydman & Dirk Jenter, *CEO Compensation* 4, (Rock Ctr. For Corp. Governance at Stanford Univ., Working Paper No. 77, 2010), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1582232 (describing main components of CEO pay).


\(^{\text{38}}\) As the article discusses infra, the venture’s time line is of crucial importance and does affect qualitative results. See infra text accompanying notes 97-101.

\(^{\text{39}}\) Both equity and debt are expressed in U.S. dollars.

\(^{\text{40}}\) This setting departs from traditional agency models where funds are raised by the owner-
known and proceeds from the selected project are distributed to Alpha’s investors.

The technology\(^1\) of available projects is known, but the investment choice made by the manager cannot be verified by Alpha. Consistent with the principal-agent framework of the hypothetical, this assumption precludes the possibility that Alpha can negotiate for a compensation agreement where the manager’s payoff schedule is contingent on the choice of the project.\(^2\) The other assumptions on which the hypothetical is based are standard.\(^3\) Imagine now that two investment opportunities materialize in Period 1: Project 1 (the suboptimal effort project), which has a 75% probability of generating $140 in revenue and a 25% probability of ending up worthless; and Project 2 (the efficient project), which has an 85% probability of generating $140 in revenue and a 15% probability of yielding no returns. However, in order to undertake Project 2 the manager would have to assume a personal cost of $0.8.\(^4\) This cost can be interpreted as the “disutility of effort” the manager bears under Project 2.\(^5\) For practical purposes, this cost may take the form of Project 2 delivering less perks than Project 1, failing to offer manager entrenchment opportunities or requiring more oversight of subordinates, amongst other possibilities.

The social welfare loss arising from the problem of effort is apparent. Project 2 is the efficient project,\(^6\) and maximizes the value of shareholder

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manager, who acts as agent for the investors. Since executive compensation is the focus here, it is assumed that Alpha’s financial means are raised by some original funders, who subsequently decide to hire a professional manager to better run the business enterprise. For simplicity, however, both in the basic hypothetical and its subsequent modifications, Alpha (rather than the original funders) is referred to as the principal in the relationship with the manager. In other terms, the hypothetical is developed under the assumption of the reification of the corporation.

\(^1\)In this article, the term technology is used to identify a number of features of a project, including the distribution of the project’s payoffs, the initial outlay the project requires, and the possible additional costs implied by its implementation.

\(^2\)See supra note 26.

\(^3\)In particular: (i) There is no discounting over periods. (ii) All the parties are risk neutral. In principal-agent models, this assumption is made for simplicity and implies that parties do not discount the future within the periods. Although in actuality managers are typically more risk-averse than investors, this does not affect the general results of the hypothetical. See infra note 60. (iii) The manager is protected by limited liability. This implies that the manager’s payoff schedule cannot take negative values. (iv) The manager’s reservation value (i.e., the value of her outside opportunities) is normalized to zero.

\(^4\)In the hypothetical, it is assumed that the project requiring (more) effort has a higher probability of success. See Bengt Holmström, Moral Hazard and Observability, 10 BELL J. ECON. 74, 76 (1979). This is standard in principal-agent models and is referred to as "monotone likelihood ratio property." See Bengt Holmström & Jean Tirole, Financial Intermediation, Loanable Funds, and The Real Sector, 112 QUART. J. ECON. 663, 673 (1997).

\(^5\)See Holmström, supra note 44, at 76 (explaining that exerting effort is a "productive input with direct disutility for the agent").

\(^6\)Indeed, the net expected value of Project 2, \((.85)\$140 - .8\) - $100 = $18.2, is higher
claims. Yet in the absence of an incentive scheme, the manager will always prefer Project 1 over Project 2, in order to avoid the $0.8 she bears for undertaking the latter project.

The inclusion of an equity-based component in the manager’s compensation plan can serve to remedy this inefficiency, inducing her to choose Project 2 over Project 1. Consider the hypothetical. Consistent with actual compensation practices, let us assume that the compensation plan paid by Alpha to the manager takes the form \(\{F, \Delta\}\). \(F\) is the fixed component of the manager’s pay, which is independent from firm performance. \(\Delta\) is the equity stake that goes to the manager in case of successful performance—that is, the manager gets \(\Delta\) Expected Value (Project Revenues – Debt) if the project succeeds.\(^7\) Under this compensation plan, the manager’s expected payoff from Project 1 (the suboptimal effort project) is equal to \(F + (.75) \Delta \left[140 - \text{Debt}\right]\). Her expected payoff from Project 2 (the efficient project) is equal to \(F + (.85) \Delta \left[140 - \text{Debt}\right] - .8\). In order to identify the specific values of \(F\) and \(\Delta\) that can induce the manager to prefer Project 2 over Project 1, then, one must solve the following conditions:

\[
\begin{align*}
\text{(IC)} & \quad F + (.85) \Delta \left[140 - \text{Debt}\right] - .8 \geq F + (.75) \Delta \left[140 - \text{Debt}\right]; \\
\text{(IR)} & \quad F + (.85) \Delta \left[140 - \text{Debt}\right] - .8 \geq 0.
\end{align*}
\]

Condition (IC) is the incentive compatibility constraint,\(^8\) which requires that the manager be better off under Project 2 than Project 1. Condition (IR) is the individual rationality constraint,\(^9\) which requires that the benefits the manager derives from Project 2 exceed the value of her reservation utility.\(^10\) The solution of these conditions is consistent with conventional wisdom that only the contingent part of the manager’s compensation contract \((\Delta)\) can improve incentives. To show this, we begin by observing that, given the shield of limited liability, the manager’s incentives cannot be shaped by establishing contingent negative payoffs for the realization of a bad state of the world (i.e., the project’s failure).\(^11\) From

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\(^7\)In the hypothetical, the firm’s performance is equivalent to the project’s performance since the firm is assumed to be the project it pursues.

\(^8\)The incentive compatibility constraint is a property of optimal agency contracts that is satisfied when the contract induces the agent to choose actions which maximize the total utility of principal and agent. See BERNARD SALANIÉ, THE ECONOMICS OF CONTRACT 122 (2nd ed. 2005).

\(^9\)The individual rationality constraint (or participation constraint) is a property of optimal agency contracts, which is satisfied when the contract leaves all participants at least as well off as they would have been if they had not participated. See id.

\(^10\)Recall that, for simplicity, the manager’s reservation utility has been normalized to zero in the hypothetical. See supra note 43.

\(^11\)Given the shield of limited liability, the manager’s payoff can never be less than zero. See
inspection of condition (IC), then, it is apparent that here, $F$ is irrelevant to the manager’s decision, and cannot induce her to choose Project 2. Because $F$ appears on both sides of (IC), we can cancel this term out and, therefore, set it equal to zero. Accordingly, we solve (IC) and (IR) for $\Delta$. Finally, we find that the compensation contract that promotes the undertaking of Project 2 is an equity-based contract of the form \( \{F^* = 0, \Delta^* = \$8 / (\$140 - \text{Debt})\}. \)

**B. The Problem of Risk**

Consider now the following expansion of the hypothetical. Imagine that two additional investment opportunities materialize in Period 1: Project 3 (the excessive-risk project), which has a 50% probability of generating revenues of $200 and the same probability of ending up worthless,\textsuperscript{53} and Project 4 (the conservative project), which generates $100 in revenue with 100% probability.\textsuperscript{54} Note that from a social welfare perspective, the undertaking of either Project 3 or Project 4 is inefficient, since these projects have a net expected value of zero.\textsuperscript{55} Nevertheless, Alpha’s investors may benefit from these projects. As long as Alpha’s level of debt is sufficiently high,\textsuperscript{56} the shareholders are served by the undertaking of Project 3. Under the liability limits of the corporate form, the debtholders bear most of the higher risk of failure of this project, while the shareholders expect to fully capture its profits in the case of success. In contrast, the debtholders benefit from the undertaking of Project 4, since this project implies no risk of default.

Project 3 and Project 4 offer a stylized representation of the problems of excessive risk-taking and underinvestment.\textsuperscript{57} These problems are two

\textsuperscript{52}The incentive compensation contract rewards the manager with an expected utility of $6 for undertaking Project 2. Indeed, \((.85)A^* [\$140 - \text{Debt}] - \$8 = \$6\).

\textsuperscript{53}Project 3 (the excessive risk project) can be thought of as, for example, an R&D (research and development) investment. This type of investment usually has a higher probability of failure, but also yields higher payoffs in the case of success.

\textsuperscript{54}Project 4 (the conservative project) can be thought of as, for example, the manager investing all the firm’s liquid assets in treasury bonds.

\textsuperscript{55}The net expected value of Project 3 is equal to \((.5)\$200 - \$100 = \$0\). The net expected value of Project 4 is equal to \((1)\$100 - \$100 = \$0\). It is worth observing that although here the problem of overinvestment and underinvestment are assumed to be equally inefficient, in actuality, one problem will tend to dominate the other. See infra text accompanying notes 138-42.

\textsuperscript{56}See infra note 68 and accompanying text.

\textsuperscript{57}In this article, the term underinvestment identifies situations where managers have "incentives to change the operating characteristics of the firm (i.e., reduce the variance of the outcome distribution) to transfer wealth from the stockholders to the debt holders." Jensen & Meckling, supra note 24, at 353. See also supra note 14 (defining the term excessive risk-taking).
sides of the same coin: inefficient risk-taking, which is an additional form of managerial moral hazard. Because managers have exclusive control over corporate affairs, they choose both the amount of effort to put into a project and the amount of risk they are willing to assume. Like suboptimal effort, inefficient risk-taking—both in the form of excessive risk-taking and underinvestment—may lead to reductions in aggregate welfare, as the hypothetical demonstrates. However, executive compensation scholarship has so far failed to comprehensively take into account all sources of managerial moral hazard in its analysis of efficient compensation design. The effort problem has historically been the focus of this scholarship, with equity-based compensation emphasized as its solution. Discussion of the problem of risk has been limited to underinvestment and has mainly been used to provide an additional justification for the use of equity incentives.\(^5\)

As the ensuing discussion will explain, however, inefficient risk-taking might jeopardize the efficiency of fixed compensation plans and equity-based compensation plans alike.

1. Fixed compensation

As noted earlier, conventional wisdom asserts that fixed compensation cannot solve the problem of effort. The expansion of the analysis to include the problem of underinvestment allows us to introduce an additional argument put forth by financial theorists in support of the claim that equity-based compensation is more efficient than fixed compensation.\(^6\) To see this argument, we need to relax the standard assumption made in the above hypothetical that the manager is risk neutral.\(^7\) In the real world, two features of the manager’s relationship with the firm may necessitate the relaxation of this assumption. First, managers make specific investments, which they are unlikely to recoup if the firm fails.\(^8\) Second, failure can impose significant

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\(^5\)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 of corporate finance researchers "has generally been on the problem of excessive conservatism on the part of risk-averse executives") (emphasis added).


\(^7\)Under the hypothetical’s assumption of risk neutrality, a fixed payment schedule would make the manager indifferent to the choice among Project 1, 3, and 4, because none of these projects bear a disutility of effort. Put differently, under a fixed payment schedule, a risk-neutral manager will choose any project but Project 2.

\(^8\)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
losses on managers in terms of reputational capital. As a result, managers might be "more conservative than shareholders would prefer them to be in selecting projects . . . ." In other words, the manager of Alpha could prefer Project 4 over any other project, transferring wealth from shareholders to creditors and him. The use of fixed compensation cannot address this problem; in theory, it can even exacerbate it. Like creditors, managers compensated on a fixed basis might prefer projects like Project 4, because such projects minimize the risk of failure and therefore, preserve the value of their fixed claims.

2. Equity-Based Compensation

As noted earlier, executive compensation scholarship has mainly focused on the problem of effort, therefore, emphasizing pay-for-performance as the optimal form of compensation. American courts and regulators have also largely embraced this view. Our simple hypothetical,


Reputation and other noneconomic factors, such as fairness, corporate culture, self-esteem, and so forth, can play an important role in shaping manager incentives. However, consistent with the approach of economists to the issues under discussion, this article is concerned with the study of "the residual [i.e., monetary] incentives to act in the firm's interests over and beyond what [managers] would contribute in the absence of rewards and monitoring." See TIROLE, supra note 27, at 20.

62 Walker, supra note 58, at 446.
63 See, e.g., Bainbridge, supra note 36, at 1621.
64 It is worth observing, however, that, largely beginning with Enron and the other corporate collapses of the early 2000s, the pay-for-performance system has endured mounting criticism. Several scholars have blamed the explosion in financial scandals on the greed induced by the large use of stock-options, which led to a diffuse practice of stock-price inflation through earning manipulation. See, e.g., John C. Coffee, Jr., What Caused Enron? A Capsule Social and Economic History of the 1990s, 89 CORNELL L. REV. 269, 276-77 (2004) (stating that during the 1990s executives became obsessed over short-term price maximization). A more radical criticism of "the official theory of executive compensation" has come from Lucian Bebchuk and Jesse Fried. They have famously contended that high-powered pay is the result of the managers' ability to extract additional remuneration value (i.e., rents) rather than the product of efficient negotiation. In their book, however, Bebchuk and Fried only marginally hint to the problem of risk. See BEBCHUK & FRIED, supra note 20, at 184.
65 The premise that incentive compensation effectively serves shareholder interests has been at the basis of the traditional reluctance of courts to intervene in compensation matters. See BEBCHUK & FRIED, supra note 20, at 18. But see Thomas & Wells, supra note 20, at 4-5 (rejecting the claim that courts systematically refuse to scrutinize executive pay); see also Rehnert, supra note 32, at 1148 (advocating a more active role of courts in reviewing executive pay). On the same premise, regulatory bodies have enacted rules favoring the use of performance-pay schemes over fixed salaries, such as the 1993 amendment of the Internal Revenue Code, which established a more favorable tax treatment for performance-based compensation. See I.R.C. § 162(m) (2010); see also infra Part III.B.3.
however, shows the limits of equity-based compensation when the problem of risk is added to the compensation puzzle. As previously shown, a compensation plan of the form \( \{ F^* = 0, \Delta^* = 8 / (140 - \text{Debt}) \} \) aligns the interests of the manager and the shareholders of Alpha, promoting more effort. Yet, when we include Project 3, the excessive-risk project, giving the manager a personal stake in the equity may lead her to make an inefficient choice. As long as \( \text{Debt} \geq 20 \), in fact, the manager will always choose Project 3 at the expense of Alpha’s shareholders and society as a whole. Given the respective probabilities of success of the various projects, in expectation Project 3 is the most valuable project for the manager because: (i) in case of failure, the investors always bear all the losses, and (ii) in case of success, payoffs from this project are higher than payoffs from the other projects.

However, there might be circumstances where the shareholders of Alpha are served, rather than jeopardized, by the undertaking of Project 3. Indeed, as long as \( \text{Debt} \geq 54.28 \), Project 3 will be the most profitable project for the shareholders. Given their limited liability shield, the shareholders expect to capture the full upside of this project, while the debtholders will absorb most of its losses. Financial theorists refer to this problem as overinvestment or asset substitution. As made evident by the

\[ \text{Debt > 20, is obtained by solving the condition: } (.5)A^* (200 - \text{Debt}) \geq (85)A^* (140 - \text{Debt}) - 8 \text{ for Debt. This condition imposes that the manager be better off under Project 3 than under Project 2. According to this article's definitions, this is an example of excessive risk-taking from the shareholder viewpoint. See supra note 14.} \]

\[ \text{Debt > 54.28, is obtained by solving the condition: } (.5)(1 - \Delta^*) (200 - \text{Debt}) \geq (85)(1 - \Delta^*) (140 - \text{Debt}) \text{ for Debt. This condition imposes that the shareholders be better off under Project 3 than under Project 2.} \]

\[ \text{For } 20 \leq \text{Debt} \leq 54.28, \text{ the "debt cushion" is not large enough to absorb losses from Project 3. The manager, however, still prefers this project because under it she saves the cost of effort borne under Project 2. In other words, saving the cost of effort adds additional leverage to the manager's payoff schedule. In actuality, similar situations are likely to occur when equity-based compensation is provided to managers in the form of options on the company shares rather than simple stock. Because option rights are valuable only if the stock price at the exercise date is above the strike price, managers whose compensation is option-based will have nothing to lose and everything to gain from the undertaking of high-risk projects. If the project fails, managers will simply let their options expire unused, while equity holders will bear losses up to the value of their investment in the corporation. See, e.g., Carl R. Chen et al., Does Stock Option-Based Executive Compensation Induce Risk Taking? An Analysis of the Banking Industry, 30 J. BANK. & FIN. 915, 918 (2006) (providing data from a sample of commercial banks during the period 1992–2000 that confirm the existence of a relation between stock options-based compensation and (excessive) risk-taking).} \]

\[ \text{See Jensen & Meckling, supra note 24, at 334-37 (providing a formalized analysis of the asset substitution problem); see also Clifford W. Smith, Jr. & Jerold B. Warner, On Financial Contracting: An Analysis of Bond Covenants, 7 J. FIN. ECON. 117, 118-19 (1979) (describing the overinvestment problem and other sources of conflict between stockholders and bondholders).} \]
hypothetical, overinvestment is a form of socially excessive risk-taking that is privately optimal for shareholders of corporations with outstanding debt and managers whose financial rewards are tied to equity value. The prima facie effect of overinvestment is distributive. Rational creditors anticipate the existence of shareholders’ distorted risk incentives, as advanced by managers whose compensation is equity-based, and, therefore, demand higher interest rates. Firms can offer creditors restrictive covenants to contain increases in the cost of debt capital, but such covenants tend to impose high opportunity costs. By limiting manager discretion in the development of the firm’s investment policy, these covenants may, indeed, result in the forfeit of profitable investment opportunities.\footnote{Because fully state-contingent contracts are impossible to write, creditors mostly seek to constrain overinvestment by including \textit{rigid provisions} in their contracts—i.e., restrictive covenants. These provisions condition payoffs on a limited set of relevant actions and, at the same time, limit managers’ freedom to undertake actions that are different from those included in the set. As a result, rigid covenants restrict managerial discretion over business affairs. This, in turn, may deprive managers of the flexibility needed to exploit future profitable opportunities and impose significant opportunity costs on the corporation. See Simone M. Sepe, \textit{Corporate Agency Problems and Dequity Contracts}, 36 J. CORP. L. 113 (2010) (discussing the overinvestment incentives produced by the use of equity-based compensation and arguing that hybrid financial instruments might provide efficient solutions to this problem). Restrictive covenants present an additional issue: they are effective "only if the creditors monitor the debtor for violations, as opportunism will otherwise be evident only after the debtor has fallen insolvent, at which point an enforcement action will be ineffective because the debtor will be judgment-proof." Richard Squire, \textit{Shareholder Opportunism in a World of Risky Debt}, 123 HARV. L. REV. 1151, 1162 (2010). Monitoring costs, however, might exceed expected benefits, especially when the problem is deterring overinvestment. Unlike other actions that transfer value from creditors to shareholders (such as, for example, claim dilution or dividend distribution), overinvestment cannot be detected through the imposition of readily verifiable financial parameters. Moreover, the remedy normally provided for deterring overinvestment—the debtor’s posting of security or grant of guarantees—may be ineffective in protecting creditors’ interests when risk-increasing activities can be carried out even though the debtor’s physical assets remain largely the same. For example, the posting of a security interest is of little help when the risk-increasing activity consists of entering into a riskier market. Thus, rather than monitor, creditors will simply demand higher interest rates. Sepe, supra note 70, at 566-567.\footnote{In credit markets, only debtors can observe the quality of the claims they sell. By contrast, creditors can observe just the distribution of the quality of the claims that have been issued. Economists label this problem "adverse selection." The seminal work is George A. Akerlof, \textit{The}}

Although excessive risk has become a "popular" issue in executive compensation after the explosion of the recent financial crisis, I have been warning against the perversive incentives equity compensation may produce for creditors and other fixed claimants since before the crisis. See Simone M. Sepe, \textit{Directors’ Duty to Creditors and the Debt Contract, in Conference - Twilight in the Zone of Insolvency: Fiduciary Duty and Creditors of Troubled Companies}, University of Maryland School of Law Fourth Annual Business Law Conference, November 4, 2005 (reprinted in 1 J. BUS. & TECH. L. 553, 565 (2007)).
debtors' average risk of overinvestment.\textsuperscript{73} This leads to an increase in the cost of debt for all debtors, irrespective of whether they actually engage in overinvestment, and other social costs.\textsuperscript{74}

C. A Shift in Focus?

1. The Shareholder-Centered Approach

In the wake of the global credit crisis, the problem of excessive risk-taking has emerged as the new crucial issue of executive compensation.\textsuperscript{75} The standard approach among academics, as well as regulators, is that pay arrangements rewarding managers for short-term gains may produce incentives to take excessive risk at the expense of long-term shareholder value (hereafter, the shareholder-centered approach).\textsuperscript{76} Consequently, most of the recent academic contributions on executive compensation have focused on how to improve long-term incentives for managers and how to more closely align manager and shareholder interests.\textsuperscript{77}


\textsuperscript{73} See generally, SALANIÈ, supra note 48, at 102-06. For empirical evidence, see Artur Morgado & Julio Pindado, The Underinvestment and Overinvestment Hypotheses: an Analysis Using Panel Data, 9 EUR. FIN. MGMT. 163, 166-67 (2003).

\textsuperscript{74} Under the pooling mechanism of debt pricing, good firms subsidize bad firms because their pledgeable income is discounted by the risk of overinvestment. At the extremes, this might drive good firms out of the market. On the other hand, firms pursuing an above-average level of overinvestment would profit from this mechanism. Being more likely to default on debt obligations, these firms are less affected by a rise in interest rates and have all the incentives to stay in the market. See Sepe, supra note 70, at 572-73 (analyzing social costs of the pooling mechanism of debt pricing); see also Squire, supra note 71, at 1162-63 (arguing that higher interest rates are an inefficient response to the problem of debtors' opportunism).

\textsuperscript{75} Cari Tuna & Joann S. Lublin, Risk vs. Executive Reward --- Obama Seeks Better Controls, but Experts Split Over the Impact, WALL. ST. J., June 15, 2009, at B.6 ("Risk is the hottest emerging issue for compensation committees in 2009.").


\textsuperscript{77} See, e.g., Bebchuk & Fried, supra note 76, at 1916 (suggesting measures to ensure that
The shareholder-centered approach to the problem of risk, however, falls short of providing an integrated analysis of the two sources of moral hazard affecting efficient compensation design. The approach’s focus on excessive risk-taking from the shareholders’ point of view excludes from the analysis the risk externalities that equity-based compensation may produce for fixed claimants. As shown by the hypothetical at Part I.B.2, when the level of debt is sufficiently high ($\text{Debt} & \geq 54.28$) to absorb losses from high-risk projects (i.e., Project 3), shareholders as well as managers benefit from taking more risk than is socially efficient.78 In that case, equity compensation might lead to overinvestment, producing externalities for debtholders (and other fixed claimants) rather than shareholders.79 Failing to take into account overinvestment incentives, the measures proposed under the shareholder-centered approach can provide only partial solutions to the problem of inefficient compensation structures. Measures designed to more closely align manager and shareholder interests might deter risk-taking that is excessive from the shareholder viewpoint. Unfortunately, they cannot redress managers’ overinvestment incentives, since shareholders themselves profit from this form of excessive risk-taking and have, therefore, no incentive to deter managers from it.80 Especially in high-leverage corporations, these measures could even exacerbate the problem of overinvestment, giving executives further reasons to deviate from sound corporate practices in the interest of shareholders and their own.

78See supra notes 68-69 and accompanying text.

79Discussing a different form of shareholders’ expropriation of creditor wealth—correlation-seeking hazard—Richard Squire has recently observed that "at least at the biggest bailout recipients, the evidence suggests that the more serious problem was conflict between the interests of creditors on the one hand, and the interest of shareholders, as advanced by managers, on the other." Squire, supra note 71, at 1155.

2. The Creditor-Centered Approach

A few scholars have acknowledged the existence of the perverse overinvestment incentives that might follow from the use of equity-based compensation. Yet this article argues that their approach (hereafter, the creditor-oriented approach) may be wanting, for three reasons. First, these scholars focus exclusively on the banking sector, arguing that the organization and financial structure of banks make concerns about excessive risk-taking particularly severe. Banks have an inherently large debt component since they typically operate on borrowed money, converting deposits into loans. Moreover, depositors—the largest group of bank creditors—have poor incentive to monitor risk because they are insured by the government. While this article agrees that these features increase the risk of overinvestment in banks, it contends that this problem may be severe in non-banking firms too. Many publicly held corporations besides banks operate largely on debt, such as corporations in the auto & truck, property management, and natural gas utility industries. Hence, overinvestment is a possible threat for creditors of debtors in these industries.

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82 Bebchuk & Spamentals, supra note 80, at 251-52; Tung, supra note 81, at 1, 6-7.

83 Bebchuk & Spamentals, supra note 80, at 257; Tung, supra note 81, at 8-11.

84 While the debt percentage in bank capital structures is typically around 90 percent, the hypothetical at Part I.B.2. has shown that a lower level of debt (i.e., around 54 percent) may suffice for the overinvestment incentives of the common shareholders to arise.

85 Additional non-banking sectors where the level of leverage is high (i.e., more than 59 percent of the firm’s capital structure) include: advertising, electric utility (central), homebuilding, maritime, newspaper, office equipment/supplies, packaging & container, power, publishing, and trucking. Aswath Damodaran, Debt Fundamentals by Sector, DAMODARAN ONLINE, (January 2010), http://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/DBTFUND.html (where the ratio of debt to equity is calculated as Debt/Asset Book Value ratio). Note, however, that the amount of the firm’s contingent liabilities can be easily manipulated by the managers. See Mark Jickling, The Enron Collapse: An Overview of Financial Issues, CRS REPORT FOR CONGRESS, (Feb. 4, 2002), http://fpc.state.gov/documents/organization/8038.pdf (explaining that avoiding accounting manipulations of contingent liabilities is an important issue to avoid Enron-like financial collapses in the future). This implies that the actual level of leverage at firms in these sectors could be significantly higher than the reported values.

86 As also acknowledged by Bebchuk and Spamentals, there is an additional reason why ordinary creditors might have poor monitoring incentives: the expectation that the government will
which, as we have seen, has consequences on both the distribution and allocation of wealth. Accordingly, the analysis of the potential overinvestment incentives arising from equity-based compensation should cover both banking and non-banking firms.

The second problem lies in the proposals for compensation reform that are put forth by these scholars. The general idea is to tie bankers' compensation to "a broader basket of securities," including both equity and debt securities.\textsuperscript{2} The logic behind this idea is quite simple: tying manager compensation to asset value would always give managers the best incentive to undertake optimal projects. However, this is not a feasible solution, because managers can manipulate the only available measure of asset value, i.e., book value.\textsuperscript{8} To overcome this barrier, these scholars suggest designing bankers' pay arrangements to link compensation to the value of liabilities plus equity,\textsuperscript{9} which must balance asset value.\textsuperscript{9} In principle, doing so should synthetically replicate compensation structures that link pay to asset value, while eliminating the risk of executives manipulating performance benchmarks.\textsuperscript{9} In practice, however, implementing such a compensation

\textsuperscript{2}See Bebchuk & Spamman, supra note 80, at 253, 283-84 (suggesting 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"). Frederick Tung, instead, suggests compensating bankers with their banks' subordinated debt besides equity. Tung, supra note 81, at 2, 24, 28-33. In putting forth his proposal, Tung relies on the recent economic literature investigating the use of inside debt in executive compensation. For a criticism of this literature, see infra text accompanying notes 144-49.

\textsuperscript{3}Enron, Worldcom and the other corporate collapses of the early 2000s dramatically demonstrated the potential results of earnings manipulation. See supra note 65.

\textsuperscript{4}This idea is not entirely new. Jensen and Meckling were the first to suggest that designing the manager's payoff schedule to combine debt and equity claims in the same ratio as they appear in the firm's capital structure can serve to reduce the agency costs of debt (i.e., risk). See Jensen & Meckling, supra note 24, at 352.

\textsuperscript{5}The principle that at any point in time the dollar total of corporate assets must balance that of liabilities plus equity is the cornerstone of modern accounting. Richard A. Brealey, Steward C. Myers, & Franklin Allen, PRINCIPLES OF CORPORATE FINANCE 707 (2011). Indeed, a firm can be described as a collection of assets and the corresponding claims of owners and creditors against those assets.

\textsuperscript{6}The underlying intuition is that the value of equity and liabilities cannot be easily manipulated since these financing means are traded on the market. This, however, is true only for equity, which is exactly the reason why performance-based compensation is typically premised only on stock market value. See supra note 34.
structure might be a daunting challenge. To effectively control risk-taking incentives, the security basket allocated to executives should include a portion of all bank liabilities (plus equity). Yet not all bank liabilities are traded or liquid. Private debt is a major component of banks' debt obligations. In addition, bonds issued by banks tend to have a significantly lower trading volume than bank equity. Further, there are off-balance-sheet bank liabilities—such as contingent debt obligations created by derivatives (i.e., credit default swaps)—whose very existence may be difficult to determine. Hence, the proposals for compensation reform articulated under the creditor-oriented approach may present feasibility issues. In addition, because debt trading prices tend to be significantly influenced by exogenous factors (i.e., factors that are outside the managers' control), tying manager compensation to debt may provide a noisy signal about managers' risk-taking. Although, in theory, debt trading prices are sensitive to managers' risk-taking, the existence of these exogenous factors may result in plummets in debt trading prices that are unrelated to the riskiness of the firm's projects.

The third problem with the creditor-oriented approach to executive compensation is methodological. Under this approach, the analysis is developed on the basis of a spot-contract model—i.e., assuming that the firm-manager relationship is a one-shot transaction. For simplicity, the

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92 See Bhagat & Romano, supra note 33, at 370 n.35.
94 See Squire, supra note 71, at 1175-81 (discussing the complexities underlying the evaluation of contingent liabilities and the perverse incentives that may arise out of the use of this financing means).
95 As demonstrated by the 2007-2008 crisis, debt trading prices are influenced by liquidity shocks, which are, indeed, an exogenous factor. See supra note 15. For a theoretical discussion of the problem, see Bengt Holmström & Jean Tirole, Inside and Outside Liquidity (August 30, 2010), available at http://econ-www.mit.edu/files/5942.
96 Frederick Tung criticizes the proposal of Bebchuk and Spamann, arguing that paying bankers with the subordinate debt of their banks may be more effective in deterring overinvestment incentives than paying them through debt of the bank holding company. See Tung, supra note 81, at 34-35. In particular, he suggests that debt at the subsidiary level would provide a better signal regarding managers' risk-taking. See id. at 35. While this article shares the arguments put forth in support of this consideration, it contends that even the trading prices of debt at subsidiary level tends to be largely influenced by exogenous factors. Consequently, the signal provided by these prices might likewise be noisy.
97 Bebchuk & Spamann explicitly describe their stylized representation of executive compensation in these terms. They justify this representation of manager pay arrangements as being instrumental in showing that equity incentives may induce excessive risk-taking "even in a world with one time period in which, by definition, problems related to the length of executives' pay horizon do not arise." Bebchuk & Spamann, supra note 80, at 249. Although this article shares this
above hypothetical was also developed under this assumption. However, while this representation of the firm-manager relationship can be appropriate for introducing compensation problems, at this stage of the analysis it is worthwhile to observe that this relationship is actually ongoing. Investments develop along a multi-period horizon. Likewise, managers typically hold their control position for multiple periods and multiple projects. Accordingly, executive compensation contracts are better described as being relational in nature. The following discussion will show that relational-contract analysis can offer crucial insights into how to solve the executive compensation puzzle.

II. THE RELATIONAL-CONTRACT APPROACH TO EXECUTIVE COMPENSATION

The previous part has shown that an incentive puzzle plagues efficient compensation design. Equity-based compensation plans designed to solve the problem of managerial effort may lead to excessive risk-taking not only from the shareholders’ point of view, but also from that of fixed corporate claimants (i.e., overinvestment). This leads to increases in the cost of debt capital and allocative inefficiencies. The use of fixed compensation also induces risk externalities, since it may lead to underinvestment. In addition, conventional wisdom asserts that fixed compensation cannot induce effort.

This part lays out a solution to this puzzle, showing that the value that managers place on continuing their relationship with the firm can be

criticism, it does not agree with the additional claim made by Bebchuk and Spamann that "[w]ith multiple periods, the analysis would become more complex, but . . . general conclusions would not change." Id. at 256. Tung, instead, does not explicitly endorse a spot-contract model of executive compensation. However, the economic theory of inside debt he discusses in support of his claims is based on such a model. See Tung, supra note 81, at 2 n.8, 2-3; see infra notes 148-49 and accompanying text.

98 See generally PATRICK BOLTON & MATHIAS DEWATRIPONT, CONTRACT THEORY 419 (2005).
99 The actual multi-period nature of manager employment contracts is, in fact, the source of the conflict between the short-term interest of managers and the long-term interest of shareholders, which is at the core of most contemporary discussions about executive compensation. See supra notes 76-77 and accompanying text.
100 See George Baker et al., Relational Contracts and the Theory of the Firm, 117 QUART. J. ECON. 39, 39 (2002) ("Firms are riddled with relation contracts[] . . . . Even ostensibly formal processes such as compensation . . . cannot be understood without consideration of their associated informal agreements.").
101 Despite the general lack of investigation of this feature of manager contracts in the law and economics literature, Jensen and Meckling observe that “the expectations of sales of outside equity and debt will change the costs and benefits facing the manager in making decisions which benefit himself at the (short-run) expense of the current bondholders and stockholders.” See Jensen & Meckling, supra note 24, at 351.
exploited to design compensation agreements that induce effort while fully internalizing risk externalities.

A. The Repeated Game Between Managers and Firms

Repeated-game theory is the tool used by economists to analyze relational contracts. In a repeated game, a given spot game is reiterated over time. Since players in a repeated game know that they will play against each other again, each will take into consideration the effects of her current actions on the future actions of the other player. This leads to cooperation between the players, as long as two conditions are in place. First, each player must place value upon continuing the game. Second, players must agree upon a credible punishment for deviation from the cooperative strategy.

The basic idea set forth in the ensuing discussion is that compensation contracts can be designed to satisfy the conditions that make cooperation the optimal strategy to play in the repeated game between managers and firms—solving at once the problems of both effort and risk (in any of its


103 See DREW FUDENBERG & JEAN TROLE, GAME THEORY 110 (1991) (showing that in repeated games, players “condition their actions on the way their opponents played in previous periods.”).

104 Although repeated games may be played by multiple parties, considering a game with only two players does not affect general results.

105 Cooperation in this article is used in its economic meaning to refer to the avoidance of opportunistic behaviors. Cf. Baird Douglas, Self-Interest and Cooperation in Long-Term Contracts, 19 J. LEGAL STUD. 583, 584 (1990) (“Parties who enter contracts desire coordinated, and hence cooperative, actions on the part of their contracting opposites. Therefore, the principal measure of the success of our contract law is whether it in fact induces cooperation.”).

106 This is the "folk theorem" for repeated games: if the players are sufficiently patient and the game is repeated for a sufficient number of times, a better outcome than the non-cooperative Nash equilibrium of the one-period game is possible. See Ariel Rubinstein, Equilibrium in Supergames with the Overtaking Criterion, 21 J. ECON. THEORY 1, 1 (1979).

forms: i.e., excessive risk-taking from the shareholders’ viewpoint and overinvestment).

The following modification of our hypothetical illustrates a contractual strategy that may achieve this result. To capture the relational nature of managerial pay arrangements, we alter the original time sequence of the hypothetical to assume that the project chosen by the manager of Alpha develops in two periods, rather than just one. Although this time sequence still simplifies corporate dynamics, adding one additional investment period is sufficient to offer a stylized representation of multi-period investment projects. The series of actions and events of this dynamic setting proceeds in the following way. In Period 0, Alpha receives financing for a value of $100, which is provided by both equity and debt. In Period 1, three things happen: (i) investment projects materialize, (ii) the manager is hired, and (iii) the manager chooses a project from the available set. In Period 2, some interim information on the state of the world becomes available. If the state is bad, the project is ended. If the state is good, net returns from the project are distributed to Alpha’s investors and an amount equal to the original investment ($100) is reinvested in the same technology. If the project is successful, final proceeds from the venture are distributed to investors in Period 3. The assumptions on which the hypothetical is based are unchanged.108

Allowing for some interim information on the state of the world (project) to become available in Period 2 is realistic in light of the actual staged development of corporate investments. Information on bad interim states can take various forms. Specifically, it can be thought of as information on the failure of a given industrial policy or technological investment, poor firm performance in relation to competitors in the same industry (i.e., benchmark or yardstick competition), downgrading of corporate debt, or, in the extreme, firm insolvency. More generally, any information related to material adverse events affecting the firm’s existence can reveal a bad intermediate state. In addition, it is current corporate practice for interim returns from the project to be distributed; debt interest payments and dividend distributions regularly occur at interim periods. Further, it is important to note that in the hypothetical we assume that the manager cannot implement a different type of project in the second period (i.e., change technology),109 although dynamic models usually allow for multiple choices at each period. This simplification does not affect qualitative results. Given the purpose of this article and the general audience

108 See supra notes 40, 43.
109 See supra note 41.
to which it is addressed, introducing multiple choices would only make the analysis more complex than it needs to be.\textsuperscript{110}

Under this dynamic framework, the manager’s payoff schedule is designed so that (i) she is paid in each period, and (ii) after the payment of Period 1 compensation, no additional payment is due by the firm if the project is terminated following the occurrence of a bad state. Designing the manager’s payoff schedule in this way imposes the necessary conditions to induce the manager to cooperate. First, paying the manager at each period ensures that she places sufficient value on continuing her relationship with the firm. Indeed, the overall expected utility of the manager from this payoff schedule is equal to the sum of her expected utilities from Period 1 and Period 2. Therefore, the manager’s payment in Period 2 is the continuation payoff. Second, setting the continuation payoff to zero if a bad state occurs ensures that a credible threat exists if the manager should deviate from the cooperative strategy. Although Alpha cannot observe actual deviations from the cooperative strategy, if a bad interim state occurs it is more likely that the manager misbehaved.\textsuperscript{111} Therefore, the threat of withdrawing the continuation payoff upon occurrence of a bad state will induce the manager to act cooperatively. For practical purposes, this feature of the manager’s contract may take several different forms. Termination of employment is the most natural form. In less drastic cases, however, it may make sense to limit retaliation for the manager’s misbehavior to a downward reassessment of her pay arrangement.\textsuperscript{112}

Under this dynamic hypothetical, the set of projects available in Period 1 are as follows: Project 1 (the suboptimal effort project) is a project that, in each period, has a 75\% probability of generating $140 in revenue and a 25\% probability of ending up worthless. The net expected value of Project 1 is thus equal to $8.75.\textsuperscript{113} Project 2 (the efficient project) is a project that, in each period, has an 85\% probability of generating $140 in revenue

\textsuperscript{110}If the model allowed for multiple choices at each period there would be 16 possible project combinations, given that 4 different investment technologies are available.

\textsuperscript{111}In the hypothetical, the principal can observe only the bad state (the project’s failure). When a good state occurs, the principal cannot infer whether the manager behaved or misbehaved because the distribution of actual payoffs is continuous and depends on factors which are purely exogenous. See Holmström, supra note 44, at 75. For example, when investors observe $140, they are not able to say whether the manager undertook Project 1, 2, or 3. Why the investors cannot discriminate between Project 1 and 2 is obvious, given that these projects yield the same returns in the case of success (i.e., $140). However, because of the random distribution of the payoffs from the projects, $140 could also be the outcome produced under Project 3, notwithstanding this project is expected to yield a return of $200.

\textsuperscript{112}See Levin, supra note 102, at 836-37.

\textsuperscript{113}Indeed, $(.75)\times$140 – $100 + (.75) \times [(.75)\times$140 – $100] = $8.75
and a 15% probability of ending up worthless. In each period, however, the manager bears a personal cost of $0.8 for undertaking the project. The net expected value of Project 2 is thus equal to $33.67.\textsuperscript{114} Project 3 (the excessive risk project) is a project that, in each period, has a 50% probability of generating $200 in revenue and a 50% probability of ending up worthless. The net expected value of Project 3 is thus equal to $0.\textsuperscript{115} Project 4 (the conservative project) is a project that, in each period, generates $100 with a probability of 100%. The net expected value of Project 4 is thus clearly equal to $0.\textsuperscript{116}

B. Two-Dimensional Moral Hazard and the Trade-Off of Compensation Incentives

In our search for the pay arrangement that can induce optimal effort and fully internalize risk externalities, we proceed, as above, by assuming that the compensation plan paid to the manager of Alpha takes the form \{F, \Delta\} — where F is the fixed component of manager pay and \Delta is the equity component. The goal, then, is to find the specific values of F and \Delta that can induce the manager to always prefer Project 2 over any other project.

1. Inducing Best Effort

To develop the analysis, let us start, as above, by assuming that the set of available projects is restricted to Project 1 and Project 2. Under this assumption, the problem is limited to inducing optimal effort; which in this case means encouraging the manager to choose Project 2. Accordingly, our \{F, \Delta\} compensation plan will have to satisfy the following constraints:

\[
\begin{align*}
(\text{IC}) & \quad F + (0.85) \Delta [140 - \text{Debt}] - 0.8 + (0.85) [F + (0.85) \Delta [140 - \text{Debt}]] - 0.8 \geq F + (0.75) \Delta [140 - \text{Debt}] + (0.75) [F + (0.75) \Delta [140 - \text{Debt}]]
\end{align*}
\]

\[
\begin{align*}
(\text{IR}) & \quad F + (0.85) \Delta [140 - \text{Debt}] - 0.8 + (0.85) [F + (0.85) \Delta [140 - \text{Debt}]] - 0.8 \geq 0.
\end{align*}
\]

As we observed under the spot-contract setting, these constraints

\textsuperscript{114}Indeed, (0.85)\textdollar{140} - \textdollar{100} - 0.8 + (0.85) [(0.85)\textdollar{140} - \textdollar{100} - 0.8] = 33.67

\textsuperscript{115}Indeed, (0.5)\textdollar{200} - \textdollar{100} + (0.5) [(0.5)\textdollar{200} - \textdollar{100}] = 0

\textsuperscript{116}Indeed, (1)\textdollar{100} - \textdollar{100} + (1) [(1)\textdollar{100} - \textdollar{100}] = 0
respectively require that under Project 2 the manager (i) be better off\textsuperscript{117} and (ii) receive benefits that exceed her reservation utility, which we have normalized to zero.\textsuperscript{118} Under this dynamic setting, however, the solution of the constraints leads to substantially different results. Here, it is not possible to simplify condition (IC) by canceling out \( F \), because in the second period the manager will receive \( F \) with different probabilities depending on which project she has chosen in the first period.\textsuperscript{119}

After some computation, (IC) and (IR) may be reduced to the condition \((.1)F + (.26) \Delta \geq 1.48\), which is verified for infinite contracts of the form \( \{ F \geq 0, \Delta \geq 0 \} \). For simplicity, however, let us consider an extreme case where the manager is paid only through the equity portion \( \{ F = 0, \Delta > 0 \} \) Equity Plan, or, alternately, the fixed portion \( \{ F > 0, \Delta = 0 \} \) Fixed Plan. By solving the condition that satisfies the constraints, we find that the contract inducing the manager to prefer Project 2 over Project 1 takes the form \( \Delta_{EP} = 5.7 / (140 - Debt) \textsuperscript{120} \) under the Equity Plan, and \( F_{FP} = 14.8 \) under the Fixed Plan.\textsuperscript{121} This is a crucial result. Taking the relational-contract approach to executive compensation, we find that, contrary to conventional wisdom, fixed compensation can also serve to induce effort. Two conditions must be satisfied to achieve this result: (i) the manager must be paid per period, and (ii) the expected value of the fixed-based utility the manager derives from Period 2 (the continuation payoff) must be high enough. Under these conditions, the manager will be induced to take more action in order to increase the likelihood that the project is continued and the continuation payoff paid out by the firm. Interestingly, the hypothetical also demonstrates that using a fixed compensation component to induce best effort is more costly for the firm (i.e., the shareholders) than using an equity compensation component.\textsuperscript{122}

2. Optimal Effort and Optimal Risk-Taking

Let us now see what happens when the problem is inducing both optimal effort and optimal risk-taking—as is the case in real life. To this purpose, we will add Project 3 (the excessive risk project) and Project 4 (the

\textsuperscript{117}See supra note 48 and accompanying text.

\textsuperscript{118}See supra note 49 and accompanying text.

\textsuperscript{119}Respectively, (.7)\( F \) under Project 1 and (.85)\( F \) under Project 2.

\textsuperscript{120}\( \Delta_{EP} = 5.7 / (140 - Debt) \) is the value of \( \Delta \) that solves (.26) \( \Delta \geq 1.48 \) under the Equity Plan.

\textsuperscript{121}\( F_{FP} = 14.8 \) is the value of \( F \) that solves (.1)\( F = 1.48 \) under the Fixed Plan.

\textsuperscript{122}Indeed, \( F_{FP} + (.85)F_{FP} > (.85) \Delta_{EP} (140 - Debt) + (.85)^2 \Delta_{EP} (140 - Debt) \) is always verified.
conservative project) to the set of available investments. We will then observe what happens to the manager's preferences under each compensation plan.

Under the Equity Plan, the manager will always prefer Project 3 over any other project as long as $\text{Debt} \geq 60$.\(^{123}\) This result confirms that there is a trade-off in the incentives produced by equity-based compensation. Regardless of whether the setting is spot or dynamic, the use of equity-based compensation induces the manager to exert more effort but also provides incentive for excessive risk-taking.\(^{124}\) To this extent, it is true—as observed by some scholars—that the introduction of multiple periods does not affect qualitative results. Yet quantitative results significantly change under a multi-period model. As we see here, the level of debt required to trigger the manager’s preferences for excessive risk is substantially higher than the threshold obtained under the spot-contract setting ($60 \text{ vs. } 20$).\(^{125}\) This happens because the introduction of a continuation payoff serves to counter the excessive-risk incentives produced by equity-based compensation.\(^{126}\) Because Project 3 decreases the likelihood that the manager will receive the continuation payoff, she will choose this project only if the expected short-term gains from excessive risk-taking are higher than the expected continuation payoff—a condition that requires a much higher level of leverage.\(^{127}\)

Under the Fixed Plan, regardless of the level of debt, the manager will

\[^{123}\text{Indeed, } (.5) \Delta^{EP} [\text{Debt} - 200] + (.5)^2 \Delta^{EP} [\text{Debt} - 200] \geq 7.48 \text{ is verified for } \text{Debt} \geq 60. \text{ Note that } 7.48 \text{ is the amount the manager expects to receive under the Equity Plan when she chooses Project 2. Indeed, } (.85) \Delta^{EP} (140 - \text{Debt}) - .8 + (.85)^2 \Delta^{EP} (140 - \text{Debt}) - (.85) .8 = 7.48. \text{ Also note that for } \text{Debt} \geq 60, \text{ the undertaking of Project 3 could be interpreted either as excessive risk from the shareholders' point of view or overinvestment. Up to a certain amount over 60, the undertaking of Project 3 will be detrimental for the shareholders. From that amount upward, the undertaking of Project 3 will be optimal for both the shareholders and the manager.}\]

\[^{124}\text{See Bruno Biais & Catherine Casamatta, Optimal Leverage and Aggregate Investment, 54 J. Fln. 1291, 1293 (1999) (finding "that there is a tension between the two moral hazard problems" of effort and excessive risk-taking); Hellwig, supra note 8, at 496 ("[t]here is a natural interdependence between two sources of moral hazard [i.e., effort and risk-taking]").}\]

\[^{125}\text{See supra note 67 (identifying the equation that induces the manager to choose Project 4 when } \text{Debt} \geq 20).}\]

\[^{126}\text{Note that under the Equity Plan the continuation payoff is the equity-based compensation paid to the manager in Period 2.}\]

always prefer Project 2 over both Project 1 and Project 3. This implies that when the manager’s expected utility matures along multiple periods, the use of high fixed compensation improves effort as well as deterring excessive risk. However, since under the Fixed Plan the manager receives $2F^{\text{FP}}$ when she undertakes Project 4, she will ultimately prefer this project over any other project. That is, as under the spot-contract setting, here fixed pay components may induce managers to pursue projects that are excessively conservative. Hence, the use of fixed compensation is also characterized by a trade-off of incentives. As was made clear by the multi-period hypothetical, however, the terms of this trade-off are substantially different from those discussed under the spot-contract setting. Here, although (high) fixed compensation may still lead to underinvestment, it also serves to both induce effort and deter excessive risk-taking.

C. Refining Compensation Arrangements

1. A Possible Solution Path

The above discussion has shown that equity-based compensation and fixed compensation both result in a tradeoff of incentives. It follows that in order to induce the manager to prefer Project 2 over any other project, our compensation plan will need to satisfy three conditions. First, the manager must be better off under Project 2 than under Project 1. This condition ensures that the manager will exert the optimal amount of effort. Second, the manager must be better off under Project 2 than under Project 3. This condition ensures that the manager will refrain from excessive risk-taking (either in the form of excessive risk-taking from the shareholders’ viewpoint or overinvestment). Third, the manager must be better off under Project 2

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128The manager prefers Project 2 over Project 1 by construction of $F^{\text{FP}}$ and Project 2 over Project 3 because $(.85)F^{\text{FP}} - .8 - (.85).8 \geq (.5)F^{\text{FP}}$ is always satisfied.

129That is, the manager’s expected utility from Project 4 is higher than her expected utility from any of the other projects.

130Rangarajan K. Sundaram & David L. Yermack, *Pay Me Later: Inside Debt and Its Role in Managerial Compensation*, 62 J. Fin. 1551 (2007) ("[V]ery large CEO holdings of inside debt may lead to an overly conservative management style."); see also Walker, *supra* note 58, at 447 (stating that measures (such as restricted stock) designed to solve the problem of managers’ preference for excessive risk may lead to excessive conservatism).

131This condition is expressed by the following inequality:

\[ F + \Delta (.85)[140 - \text{Debt}] - .8 + (.85)[F + \Delta (.85)[140 - \text{Debt}] - .8] \geq F + \Delta (.75)[140 - \text{Debt}] + (.75)[F + \Delta (.75)[140 - \text{Debt}]] \]

(IC1)

132This condition is expressed by the following inequality:

\[ F + \Delta (.85)[140 - \text{Debt}] - .8 + (.85)[F + \Delta (.85)[140 - \text{Debt}] - .8] \geq F + \Delta (.5)[200 - \text{Debt}] + (.5)[F + \Delta (.5)[200 - \text{Debt}]] \]

(IC2)
than under Project 4. This condition ensures that the manager will refrain from taking actions that are too conservative (i.e., avoid underinvestment).\textsuperscript{133}

The three-step path described below develops a possible solution to the problem.

(i) Let us begin by addressing the first condition, the problem of effort. As shown above, the use of either a fixed pay component or an equity pay component can be efficient to solve this problem. In this case, let us assume that a fixed pay component is used to induce effort.

(ii) The problem in using a fixed pay component to induce effort is that it may produce underinvestment incentives and lead to the violation of the third condition set forth above. Including an equity component in the compensation plan mitigates this risk. The equity component counters the underinvestment incentives produced by the fixed component.\textsuperscript{134}

(iii) The final step is verifying that the equity compensation component does not, in turn, promote excessive risk incentives—i.e., lead to the violation of the second condition laid out above.\textsuperscript{135}

It is worth observing that the described solution path is only one of the potential strategies that can be implemented to find the compensation plan that induces effort without raising risk externalities. Here, the discussion has proceeded by controlling the problem of effort through the use of a fixed compensation component, then deriving the equity portion to mitigate the underinvestment incentives produced by fixed compensation. An alternative

\textsuperscript{133}This condition is expressed by the following inequality:

\[ F + \Delta (.85)[140 - \text{Debt}] - .8 + (.85)(F + \Delta (.85)[140 - \text{Debt}] - .8) \geq 2F + 2\Delta (100 - \text{Debt}) \]

\textsuperscript{134}For simplicity, the discussion discriminates between the steps at point (ii) and (iii). From a logical viewpoint, however, the determination of the "right" equity compensation component requires us to consider the conditions laid out under (ii) and (iii) simultaneously.

\textsuperscript{135}Simple algebraic steps show how the solution path suggested in the text allows us to find the values of \( F \) and \( \Delta \) that simultaneously satisfy conditions (IC1), (IC2), and (IC3) described supra at note 131-33.

(i) Using a fixed pay component to control the problem of effort means finding the value of \( F \) that induces the manager to prefer Project 2 over Project 1. This value can be derived by solving condition (IC1). By holding \( \Delta = 0 \) and solving for \( F \), we obtain that \( F = 14.8 \) is the fixed component Alpha needs to pay the manager to induce more effort.

(ii) Second, in order to use an equity component to control the potential underinvestment externalities created by the fixed compensation component, we must find the value of \( \Delta \) that, given \( F = 14.8 \), induces the manager to prefer Project 2 over Project 4. By substituting \( F = 14.8 \) in (IC3) and solving for \( \Delta \), we obtain that \( \Delta = 3.7 / (20.15 + 0, 4275 \text{Debt}) \) is the equity-based component Alpha needs to pay the manager to deter underinvestment.

(iii) Third, verifying that the equity compensation component we have selected to control the problem of underinvestment does not then lead to overinvestment incentives means checking that condition (IC2) is satisfied under the values of \( F \) and \( \Delta \) obtained under (i) and (ii) above. By substituting these values in (IC2), we obtain that this condition is verified for any level of leverage.
strategy could be using an equity compensation component to induce effort
and then deriving the fixed portion that can control the excessive risk
incentives produced by equity-based compensation.

2. Setting Fixed-Equity Compensation Components

The analysis has shown that by (i) paying the manager per period, and
(ii) selecting an appropriate combination of fixed and equity compensation
components, it is possible to implement efficient pay arrangements; i.e.,
compensation schemes that induce effort while fully internalizing risk
externalities. Given the relational nature of compensation contracts, the use
of either fixed compensation or equity-based compensation is effective in
inducing effort. Additionally, because fixed compensation and equity-based
compensation produce countervailing risk incentives for managers, it is
always possible to find a mixed compensation plan that induces effort while
not exacerbating the problems of excessive risk-taking (in any of its forms)
or underinvestment.136

Some important considerations must go into determining the optimal
mixed compensation plan.137 First, the firm’s capital structure is a crucial
factor in determining the appropriate fixed-equity mix in executive pay.
When moral hazard involves effort choices and risk choices at the same
time—as in the executive compensation context—the relative importance
of these two sources of moral hazard primarily depends on the type of capital
structure.138 In low-leveraged firms (such as corporations in the drug,
medical supplies, and heavy construction industries),139 effort tends to be the
dominant problem, because a low debt level decreases the likelihood of
distorted risk incentives.140 Consequently, the equity portion of executive
compensation should largely exceed the fixed portion, because equity-based

136 When the problem of effort is controlled through the use of equity compensation, the
inclusion of a fixed pay component counters the excessive-risk externalities produced by equity
compensation. When, instead, the problem of effort is controlled through the use of fixed
compensation, the inclusion of an equity pay component counters the underinvestment externalities
that may accompany the use of fixed compensation. See also infra text at notes 138-42.
137 An analytical discussion of the optimal compensation contract, however, is beyond the
scope of this article’s law and economics approach to executive compensation.
138 Hellwig, supra note 8, at 496.
139 Additional industries where the level of leverage is low (i.e., less than 30 percent of the
firm’s capital structure) include: computer software services, e-commerce, entertainment technology,
human resources, and semiconductor equipment supply. Damodaran, supra note 85 (displaying
statistics for industries where the ratio of Debt to Asset Book Value is less than 30 percent of the
firm’s capital structure).
140 See supra note 67 and accompanying text.
compensation induces effort at a lower cost.\footnote{See supra note 122 and accompanying text.} In contrast, in high-leveraged firms (such as banks and corporations in the industries mentioned above),\footnote{See Damodaran, supra note 85 (displaying statistics for industries such as advertising, electric utility (Central), homebuilding, maritime, newspaper, office equipment/ supplies, packaging & container, power, publishing, and trucking, where the ratio of Debt to Asset Book Value is greater than 60 percent of the firm's capital structure).} the problem of excessive risk-taking is likely to be dominant. Hence, in such firms the fixed-equity ratio of executive pay should be tied to the debt-equity ratio of the firm's capital structure, in order to exploit the properties of fixed compensation of both inducing effort and deterring excessive risk-taking.

The second important consideration that may be drawn about the optimal fixed-equity mix in manager pay is that some forms of fixed compensation are more desirable than others. As shown by the hypothetical, the fixed compensation component the manager receives in Period 1 has no incentivizing function.\footnote{As under the spot contract, F has no impact on the manager's incentives in the first investment period. Mathematically, F can be cancelled out in condition IC when only the first investment period is considered.} It is a sunk cost the firm must bear to implement the efficient compensation contract. This suggests that remunerating the manager through a fixed bonus that is paid out only if the project is continued (i.e., a solvency-contingent fixed bonus) might be an effective way to reduce the cost of fixed compensation. In this respect, the relational-contract analysis of executive compensation yields a different result than the emerging economic literature on "inside" debt—i.e., debt that is held by managers (as opposed to "outside" debt, which is held by external investors).\footnote{See Alex Edmans & Qi Liu, Inside Debt, REV. FIN. (forthcoming 2010) (manuscript at 2, 3), available at http://finance.wharton.upenn.edu/~aedmans/ID.pdf (coining the distinction between inside and outside debt).} The inside debt literature moves from recent empirical findings on the increasing use of long-term debt (such as pensions and deferred payments) in compensation practices to similarly suggest that a fixed pay component may be part of an optimal compensation contract.\footnote{See id. at 1 (justifying the use of inside debt as efficient compensation); Sundaram & Yermack, supra note 130, at 1 (providing empirical evidence on the increasing use of pensions and deferred payment in compensation practices); Frederick Tung & Xue Wang, Bank CEOs, Inside Debt Compensation, and the Global Financial Crisis, (Emory Public Law Research Paper No. 10-98, 2010), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1570161 (providing empirical evidence in support of the thesis that "bank CEOs' inside debt holdings reduce risk-taking and agency costs of debt within banks").} However, inside debt theorists argue that long-term debt is more desirable for compensating managers than solvency-contingent bonuses and salaries.\footnote{While inside debt theorists suggest to use long-term debt in the form of pensions and}
Unlike other forms of fixed compensation (so the argument goes) long-term debt is sensitive "to the firm’s value in bankruptcy, and not just the incidence of bankruptcy . . . ."147 Nevertheless, there is a substantial difference between inside debt theory and the relational-contract analysis of executive compensation. The solutions considered under inside debt theory are based on a spot-contract model of executive compensation.148 Accordingly, the theory overlooks the perverse incentives long-term debt may produce both in the short and long run. Tying managers’ financial rewards to debt securities with a long-term maturity will not induce managers to refrain from taking risky bets in the short run, because the expected short-term gains from these bets will tend to exceed the discounted value of managers’ debt holdings. In the long run, instead, managers paid through inside debt may become excessively conservative, since the discounted value of their debt claims will tend to exceed that of their continuation payoff.149

III. POLICY CONSIDERATIONS

The previous part has shown that there are optimal solutions to the two-dimensional moral hazard problem plaguing efficient compensation design. The organizational structure of the publicly held corporation, however, prevents firms from implementing these solutions. Therefore, regulatory intervention is necessary to overcome this impediment.

In keeping with this consideration, this part criticizes the compensation provisions included in the newly enacted Dodd-Frank Act150 and provides an agenda for future reform.

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147 Edmans & Liu, supra note 144, at 3. Indeed, according to Edmans and Liu:
This is the critical difference between inside debt and [fixed] bonuses [that pay off only in solvency]: inside debt yields a positive payoff in bankruptcy, proportional to the liquidation value. Thus it renders the manager sensitive to the firm’s value in bankruptcy, and not just the incidence of bankruptcy . . . . By contrast, bonuses have zero bankruptcy payoffs, regardless of the liquidation value, and so represent binary options rather than debt.

Id.  
148 See id. at n.5-6.


150 See supra note 2.
A. The Limits of Private Contracting

On a theoretical level, there is no need for legal intervention under the relational-contract approach to executive compensation proposed by this article. Under the assumption of the reification of the corporation-principal—which has been used in developing the multi-period hypothetical described above—the principal always has incentive to select the efficient mix of fixed and equity compensation, since this leads to increased firm value (i.e., the aggregate value of equity and debt).

In reality, however, corporations are "owned" by shareholders and run by boards of directors. As a result, compensation decisions might be biased. Note that the problem here is not that of "board capture" by the management—a theory extensively discussed in the literature which claims that executives dominate boards and, essentially, set their own pay. Under the relational-contract approach to executive compensation, managers would not be paid less than they currently are, but they would be paid in a different manner. In fact, under the model for efficient compensation suggested by this article, there are even circumstances where executives could be paid more. As noted above, the implementation of the optimal mixed payment schedule could require firms to include a high fixed component in executive pay. Especially in high-leverage firms, this could be necessary in order to counter the excessive-risk incentives produced by the use of equity-based compensation. The problem of biased compensation decisions originates, instead, from the board’s relationship with the firm’s shareholders. Boards are legally required to advance shareholder interests. Yet efficient compensation schemes might not always serve shareholders. As discussed throughout this article, shareholders benefit from taking more risk than is socially desirable when the level of outstanding debt is sufficiently high to


152See supra note 40.

153The term "board capture" or "managerial power approach" is used to refer to the theory articulated by Lucian Bebchuk and Jesse Fried in PAY WITHOUT PERFORMANCE: THE UNFULFILLED PROMISE OF EXECUTIVE COMPENSATION. See supra note 20; see also Lucian Bebchuk & Jesse Fried, Pay Without Performance: Academic Responses (Oct. 20, 2010), http://www.pay-without-performance.com/academic_responses.htm (including link to several law review articles discussing the board capture theory proposed by Bebchuk and Fried).

154The Supreme Court of Michigan’s now classic case of Dodge v. Ford Motor is the standard reference for this cornerstone principle of corporate law: "A business corporation is organized and carried on primarily for the profit of the stockholders. The powers of the directors are to be employed for that end." Dodge v. Ford Motor Co., 170 N.W. 668, 684 (Mich. 1919).
absorb potential equity losses from risky ventures. Therefore, they may profit from compensation schemes that provide executives with overinvestment incentives. In addition, as noted earlier, inducing effort through fixed, rather than equity, compensation is generally more costly for the firm—i.e., the shareholders. For these reasons, the corporate pay setting process is likely to be "equity-compensation biased." This means that boards are likely to prefer the use of equity compensation components over fixed compensation components, regardless of what the most efficient solution may be.

The limited effective power of shareholders to displace the board and its management is an additional obstacle to efficient compensation that arises within the organizational structure of the large corporation. In theory, this power should work as a "safety valve"\textsuperscript{155} to ensure that shareholders displeased with board and management actions can remove both.\textsuperscript{156} In practice, however, as observed by Lucian Bebchuk, the shareholders' power of removal is largely a myth.\textsuperscript{157} Shareholders lack the credible retaliatory measures that are necessary to implement efficient compensation structures under the relational-contract approach proposed by this article. Indeed, absent a credible retaliatory mechanism in the event of poor performance, the manager of \textit{Alpha} will not be induced to perform, because she is not subject to the threat that the continuation payoff may be withdrawn. Shareholder preferences for excessive risk may also play a role in threatening the credibility of their retaliatory capability. Especially in high-leveraged corporations, shareholders could have poor incentive to exercise their power of removal upon signals of excessive risk-taking, because they are served by this behavior.

In order to remedy these inefficiencies in private contracting, regulatory intervention is required. The ensuing discussion explains why the compensation provisions introduced by the Dodd-Frank Act fail to meet this goal and develops the case for adopting different compensation rules.

\textbf{B. The Missed Opportunity on Compensation Reform}

The Dodd-Frank Act includes a number of new compensation rules, which apply to both the financial industry and publicly traded companies not

\textsuperscript{155}Bebchuk \& Fried, \textit{supra} note 20, at 207.

\textsuperscript{156}See Unocal Corp. v. Mesa Petroleum Co., 493 A.2d 946, 959 (Del. 1985) ("If the stockholders are displeased with the action of their elected representatives, the powers of corporate democracy are at their disposal to turn the board out.").

limited to that industry. Among the most relevant measures adopted by the reform with the objective of introducing better compensation practices are: (1) compensation committee and risk committee rules, (2) say-on-pay and say-on-golden-parachutes provisions, and (3) restrictions concerning compensation structures.  

As the discussion below will explain, none of these measures effectively address the two-dimensional moral hazard problem of effort and risk. By failing to put together all of the pieces of the compensation puzzle, Congress missed the opportunity to efficiently reform executive compensation with the Dodd-Frank Act. Endorsing the dominant academic view that identifies excessive risk-taking at the expense of shareholders as the key problem with executive pay, Congress has focused on the improvement of managers’ long-term incentives and others measures aimed at better aligning manager and shareholder interests. As noted earlier, however, by neglecting to take into account the externalities that executive compensation may produce for fixed claimants, measures of this kind only address some of the incentive problems that may arise in the executive compensation context, and even exacerbate these problems in some circumstances.

This article posits that in order to be effective, regulation should consider all of the moral hazard problems affecting executive pay. Although providing a detailed agenda for reform is beyond the scope of this article, the ensuing discussion outlines measures that would help achieve this goal. The regulatory approach proposed below develops the case for intervention that primarily takes two forms. First, policymakers should implement regulations to reduce equity-compensation biases in the corporate pay-setting process, such as an SEC-mandated standardized procedure for regulating the activity of supervisory committees. Such a procedure would prevent boards from

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158 Other relevant provisions introduced by the Dodd-Frank Act include new disclosure rules and clawbacks. See infra notes 177, 188.

159 This is the approach to executive compensation that this article has labeled "the shareholder-centered approach." See supra Part I.C.1.

160 Indeed, these measures are at the core of both the Dodd-Frank Act and earlier compensation regulations adopted by the Obama administration:

As part of President Obama’s efforts to promote systemic regulatory reform, the standards today mark the beginning of a long-term effort to examine both the degree that executive compensation structures at financial institutions contributed to our current financial crisis and how corporate governance and compensation rules can be reformed to better promote long-term value and growth for shareholders, companies, workers and the economy at large and to prevent such financial crises from occurring again.


161 Economic theory suggests that when an agent serves principals with conflicting interests,
implementing compensation schemes that serve shareholder (and manager) interests at the expense of fixed corporate claimants and society as a whole. As a result, shareholders would always have the right incentive to remove underperforming management. Therefore, the second intervention this article proposes is strengthening shareholder powers to displace managers.

1. The Role of Supervisory Committees

The Dodd-Frank Act provides new rules intended to bolster the independence of the members of compensation committees of publicly listed companies. To this end, it requires that compensation committees be given adequate resources and the exclusive responsibility for hiring and overseeing the work of compensation consultants, legal counsel and other advisers. The regulators believe that focusing on independence of compensation

the delegation of decision-making authority to a third-party intermediary can serve to accommodate divergent preferences the principals might have towards desirable actions of the agent. See B. Douglas Bernheim & Michael D. Whinston, Common Agency, 54 ECONOMETRICA 923, 937 (1986). In a prior paper, I suggested that this model of agency relationships—called "common agency" by economists—is more suitable to describe corporate relationships between managers, shareholders, and creditors than the dominant principal-agent framework. See Sepe, supra note 71, at 17-31 (using common agency theory to reframe corporate conflicts). Indeed, in most largely held corporations, creditors are able to influence management actions. See, e.g., Douglas G. Baird & Robert K. Rasmussen, Private Debt and the Missing Lever of Corporate Governance, 154 U. PA. L. REV. 1209, 1217 (2006). Accordingly, managers can be seen as common agents of shareholders and creditors, who are principals with divergent interests. Now, executive compensation is one of the fields where these divergent interests are more likely to collide. Indeed, under the organizational structure of the modern corporation, the shareholders are in a better position than creditors to influence the management’s actions. This may lead to inefficient compensation decisions and various allocative inefficiencies. Hence, the underlying idea here is to adopt rules that can make the compensation committee a credible intermediary for reconciling shareholder and creditor interests in compensation matters.

Because the standardized procedure recommended by this article for regulating the activity of supervisory committees would eliminate managers’ overinvestment incentives, managerial moral hazard would be reduced to the problems of effort, underinvestment, and excessive-risk taking from the shareholders’ viewpoint. As concerns these three sources of moral hazard, shareholders’ preferences always coincide with the preferences of society as a whole. Consequently, this proposal would make shareholders optimal decision makers to assess termination of employment. See also infra text accompanying notes 178-79.


The Act also directs the SEC to prescribe the criteria for evaluating the independence of an adviser, including the determination of the full range of services provided by the adviser (or her employer) to the issuer, the existence of policies of the adviser (or her employer) that are designed to prevent conflicts of interest, whether there are any business or personal relationships between the adviser and the members of the compensation committee, and whether the adviser holds any stock of the issuer. See id. § 10.C(b)(2).
committees should serve to prevent board-management entrenchment in compensation decisions.\textsuperscript{165} Similarly, the provision of mandatory risk committees, they feel, should lead to increased monitoring of manager risk incentives and, therefore, better designed pay arrangements.\textsuperscript{166}

This article argues, however, that the new supervisory committee rules are unlikely to substantially improve current compensation practices. Bolstering the independence of the members of the compensation committee may produce benefits to avoid that compensation decisions are taken in the interest of managers, rather than shareholders. Independence makes it less likely that boards can be "captured" by CEOs and CFOs.\textsuperscript{167} Unfortunately, the new rules cannot eliminate equity-compensation biases in executive pay decisions, because compensation committees are expected to serve shareholder interests and, therefore, might have poor incentive to select the optimal mixed pay schedule. To remove equity-compensation biases, this article proposes adoption of an SEC-mandated standardized procedure limiting discretion of compensation committees in determining manager pay packages. As suggested by the relational-contract analysis of executive compensation, this procedure should mandatorily require compensation committees to assess the proportion of fixed and equity pay components against the proportion of debt and equity in the firm's capital structure. The type of capital structure is indeed the primary indicator of the firm's level of risk. The most significant implication of such a requirement would be to prevent high-leveraged firms from predominantly using equity incentives to remunerate managers. This regulatory intervention would end the current aggressive use of equity-based compensation that has contributed to the crisis.\textsuperscript{168} It is worth observing, however, that it would not impose quantitative restrictions on the levels of executive pay, but only a proportionality constraint between fixed pay components and equity pay components.

Additional factors that the SEC should mandate compensation committees to take into account in assessing corporate risk and determining


\textsuperscript{166}The Act prescribes that all publicly traded non-bank financial companies supervised by the Federal Reserve and all bank holding companies with assets over $10 billion establish a risk committee and employ at least one risk management expert having experience in managing risk at large, complex firms. See Dodd-Frank Act § 165(h) (to be codified at 12 U.S.C. § 5364).

\textsuperscript{167}These benefits, however, might be modest; indeed, independence does not give directors strong affirmative incentive to focus on shareholder interests. See BEBCHUK & FRIED, supra note 20, at 206-207.

\textsuperscript{168}See supra text accompanying note 19.
executive pay include: (i) the firm's operating industry—which reveals information about the technology of the firm's available project;\textsuperscript{169} (ii) the existence of contingent liabilities, such as credit default swaps and other derivative products, which can offer a clearer picture of the level of the firm's leverage and, therefore, risk;\textsuperscript{170} (iii) some macroeconomic factors, such as, for example, market condition (bull or bear), level of interest rates and possible liquidity shortages, which are exogenous factors that have a substantial impact on efficient compensation design, since they can re-determine the relative importance of the problems of effort and risk;\textsuperscript{171} and (iv) the market structure in which the firm operates (i.e., competitive or oligopolistic), which can provide information about the opportunity to establish benchmarks in the evaluation of compensation arrangements.

Further measures that would help to remove equity-compensation biases include requiring some form of coordination between the compensation committee and the risk committee and obliging committee members to disclose evaluation activity and compensation approval in publicly available reports.

Finally, regulation should also provide for the periodic reassessment of executive compensation, in order to take into account possible changes in the firm's capital structure or any of the above factors that call for adjustments in existing compensation plans.

2. Shareholder Powers

The Dodd-Frank Act requires all publicly traded companies to submit executive compensation arrangements for the non-binding approval of the general shareholders meeting at least once every three years.\textsuperscript{172} Under some special circumstances, the Act also requires advisory shareholder votes on executive retirement packages (i.e., golden parachutes).\textsuperscript{173}

\textsuperscript{169}See supra note 41.

\textsuperscript{170}See supra notes 85, 94.

\textsuperscript{171}For example, if a liquidity shock occurs, the problem of overinvestment is likely to assume primary importance, irrespective of other potential factors of influence. See supra note 95 and accompanying text.

\textsuperscript{172}See Dodd-Frank Wall Street Reform and Consumer Protection Act, Pub. L. No. 11-203, § 951(a)(1), 124 Stat. 1376, 1899 (2010) (codified as amended at 15 U.S.C. § 78n-1). Section 951 also requires a separate vote every six years that allows shareholders to impose a say-on-pay vote more frequently (i.e., annually or bi-annually). See id. § 951(a)(2). The SEC, however, is granted authority to exempt companies from say-on-pay requirements after taking into account, among other considerations, whether these requirements would disproportionately burden smaller companies. See id. § 951(e).

\textsuperscript{173}See id. § 951(b). The "say-on-golden parachute" provision provides that a separate
Defenders of "say-on" provisions suggest that they will help to make directors more responsive to shareholder interests and to deter manifestly excessive compensation. 174 Though these provisions might produce some benefits for shareholders, they fail to fully solve the double moral hazard problem of effort and risk. When it comes to risk, giving shareholders a voice in compensation issues cannot deter managers from engaging in overinvestment strategies, because these strategies are in the shareholders' own interest as long as the firm's level of debt is sufficiently high. 175 In fact, "say-on-pay" shareholder votes could potentially increase the risk of overinvestment, endowing compensation arrangements that produce externalities for fixed corporate claimants with the authority of shareholder approval.

It is worth observing that the introduction of say-on-pay votes reflects a general principle which inspired the Dodd-Frank Act: shareholder empowerment. Acting under the assumption that increased shareholder participation can ameliorate corporate efficiency, 176 the Act introduces a series of changes at the federal level designed to promote shareholder activism in corporate matters. 177 This approach, however, fails to address the resolution must be subject to the vote of shareholders in connection with the vote on some triggering transactions, including mergers, acquisitions, or sales of substantially all the company assets. See Dodd-Frank Act § 951(b). The requirement is waived if the severance package has previously been the subject of a say-on-pay vote. As with say-on-pay provisions, the SEC can exempt smaller companies from the requirement. See id. § 951(e).

174 See, e.g., Empowering Shareholders on Executive Compensation: Hearing on H.R. 1257 Hearing Before the Comm. on Fin. Servs., 110th Cong. 68 (2007) [hereinafter Hearings on H.R. 1257] (statement of Lucian A. Bebchuk, Professor, Harvard Law School), available at http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=100_house_hearings&docid=f:35402.pdf (arguing that say-on-pay provisions would "give greater weight to shareholder views and preferences . . . and would discourage practices and decisions that are strongly opposed by shareholders"). But see id. at 121 (statement of Steven N. Kaplan, Professor University of Chicago Graduate School of Business), available at http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=100_house_hearings&docid=f:35402.pdf (opposing the introduction of say-on-pay provisions on the ground that they are "likely to impose costs while having little, if any, benefit").

175 See supra Part I.C.1.


177 Among the other measures introduced by the Dodd-Frank Act to enhance shareholder corporate rights, there is a series of disclosure provisions requiring companies to disclose the
requirement that theorists of shareholder democracy consider most important: namely, it fails to ensure that shareholders have effective power to displace the board.\footnote{See, e.g., Bebchuk, supra note 157, at 679 ("[V]iable shareholder power to replace directors [is] . . . a valuable instrument for enhancing shareholder value by making boards more accountable and more attentive to shareholder interests.").} This is perfectly consistent with the principle emerging from the relational-contract analysis that the existence of credible retaliatory measures is necessary to implement efficient compensation contracts. Under the proposal put forth by this article, the problem of potential distortions in shareholders’ termination decisions would be addressed through the introduction of the mandatory rules regulating the activity of supervisory committees described above. Because under this proposal shareholders would always have incentive to make the right termination decision, the law should strengthen shareholder powers to replace directors, possibly by making electoral challenges to incumbents more viable, prohibiting staggered boards, and additional measures of this kind.\footnote{For a thorough discussion of these and additional measures, see generally BEBCHUK & FRIED, supra note 20, at 201-216; Bebchuk, supra note 157, at 682-709.}

A final point is worth noting regarding say-on-golden-parachute provisions. There has been a great deal of controversy over their introduction. Some commentators have argued that provisions of this type do too little to "rein in the enormous retirement packages . . . that have come to symbolize corporate excess."\footnote{See Jonathan Macey, 'Say on Pay' and Other Bad Provisions, WALL ST. J., Apr. 14, 2009, at A15. ("Severance payments are a small price to pay to dislodge an underperforming, entrenched executive. Golden parachute restrictions will lead to the kind of managerial entrenchment that has crippled the economy.").} Others have taken the opposite view, arguing that any limitations on golden parachutes are detrimental, since they may hamper firms’ ability "to dislodge an underperforming, entrenched executive." The relational-contract analysis of executive compensation offers a new perspective on this issue. According to that analysis, ensuring that the continuation of the employment relationship is profitable for the manager is the key to implementing efficient compensation contracts.

following in their annual proxy statement: (i) A clear description of the relationship between executive compensation and the firm’s financial performance. See Dodd-Frank Act, § 953(a) (codified as amended at 15 U.S.C. § 78n ). (ii) The ratio of CEO pay to the median pay of all other employees within the organization. See id. § 953(b). (iii) The issuer’s policy regarding executives hedging activities. See id. § 955. (iv) The reasons why the company has chosen to combine or separate the board chair and CEO positions. See id. § 972. The Act’s final version, however, has dropped an additional provision that was included in the House version of the bill to boost shareholder activism: namely, the requirement for all public companies to adopt a majority voting threshold in uncontested board election.
Consequently, this article suggests that golden parachutes are undesirable, because they make termination of the relationship potentially attractive for managers. This jeopardizes firms’ ability to implement compensation schemes where continuation payoffs are used as a reward/punishment for good/bad managerial behavior. For this reason, imposing potential restrictions on the use of golden parachutes is a first step in the right direction, although a more sweeping regulatory intervention would be desirable in the future.

3. Compensation Restrictions

The Dodd-Frank Act establishes that compensation restrictions might be imposed by the SEC, the Federal Reserve, and other federal regulators for "covered financial institutions," including bank holding companies, registered broker-dealers, insured credit unions and investment advisers. This provision, more than any other, reflects the widely-held belief that executives are paid too much, which has largely informed the Act. This regulatory approach represents an attempt to appease public outrage over the levels reached by executive pay, which has been fueled by repeated media attacks in the aftermath of the 2007-2008 financial crisis. Aside from

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182 When the manager’s compensation contract includes a golden parachute provision, the value of the continuation payoff should be increased up to the point where staying in the relationship becomes more profitable for the manager than receiving the severance package. This, however, is likely to make compensation unbearably costly for the firm.

183 Dodd-Frank Wall Street Reform and Consumer Protection Act, Pub. L. No. 11-203, § 956, 124 Stat. 1376, 1905-06 (2010) (codified at 12 U.S.C. § 5641). Under this provision, each covered financial institution is required to disclose the structures of its pay arrangements so that a determination can be made as to whether they provide (i) "excessive compensation, fees, or benefits," or (ii) "could lead to material financial loss(es)" to the institution. Id.


185 See, e.g., Stephen Labaton & Vikas Bajaj, Executive Pay Limits Seek to Alter Corporate Culture, N.Y. TIMES, Feb. 5, 2009 (quoting Senator Christopher J. Dodd: "There is absolutely no reason why hard-working American taxpayers should be financing, directly or indirectly, excessive compensation for corporate executives whose decisions, in many cases, have crippled their firms and
pleasing the general public and the media, however, limiting the dollar amount of executive compensation is unlikely to produce any benefit. As shown by the above discussion—and extensively acknowledged by the literature—the problem of distorted managerial incentives arises out of the form, not the level, of executive compensation.\textsuperscript{186} No economic argument supports the introduction of restrictions on pay levels, and in fact, these measures are likely to be counterproductive. Firms will expend resources in an attempt to find ways to circumvent the limits they impose, while the best executives will be driven out of private companies and into firms not subject to the new rules (such as hedge funds).\textsuperscript{187}

In addition, these rules may prevent firms from implementing incentive schemes that efficiently address the problem of executives' overinvestment incentives. Imposing limits on the level of executive pay may prohibit firms from remunerating managers through high fixed pay components, which may be necessary to counter the distorted risk incentives arising from high leveraged capital structure and equity-based compensation.\textsuperscript{188} Therefore, this article concludes that compensation weakened the broader economy"); Leo Hindery Jr., \textit{Why We Need to Limit Executive Compensation}, BUS. WK., Nov. 4, 2008 (arguing that "[t]he cancer of excessive CEO pay is at the core of America's economic woes and it demands government attention"); Henry Mintzberg, \textit{Business Insight (A Special Report): Compensation --- No More Executive Bonuses!}, WALL ST. J., Nov. 30, 2009, at R.3 (suggesting that bonuses and other forms of incentive compensation should be banned from corporate practice).

\textsuperscript{186}See, \textit{e.g.}, Jensen & Murphy, supra note 33, at 138 ("The relentless focus on \textit{how much} CEOs are paid diverts public attention from the real problem-\textit{how} CEOs are paid."); Bhagat & Romano, supra note 33, at 365 ("The problems thought to have been generated from equity incentive compensation . . . are a function of the \textit{structure}, not the level, of the incentive payments.").

\textsuperscript{187}See, \textit{e.g.}, Bhagat & Romano, supra note 33, at 365 ("\textit{E}mpirical research indicates that companies find a way to circumvent congressional limitations on compensation."); Macey, supra note 181, at A15 ("Demonizing executive pay will also drive the best managers out of private companies and into hedge funds and other boutique investment firms."); Joann S. Lublin et al., \textit{AIG Unit Feels Effects of Pay Limits --- Retirement of ILFC's Plueger After Other Departures Catches Insiders Off Guard}, WALL ST. J., Mar. 29, 2010, at C.3 (reporting that federal pay restrictions had a role in the departure of a top executive from AIG aircraft-leasing unit).

\textsuperscript{188}In a legislation that puts forth similar provisions to those contained in the Sarbanes-Oxley Act of 2002, the Dodd-Frank Act further requires any issuer listed on a national security exchange to adopt clawback policies, under which incentive-based compensation (including stock options) can be recovered if—in the three-year period following the payment of the incentive—there is a financial restatement due to the material noncompliance of the issuer with any financial reporting requirements. Dodd-Frank Wall Street reform and Consumer Protection Act, Pub. L. No. 111-203, § 954, 124 Stat. 1376, 1904 (2010) (codified as amended at 15 U.S.C. § 78j-4); see also Sarbanes-Oxley Act of 2002, Pub. L. 107-204, § 304, 116 Stat. 745, 778 (2002) (codified as amended at 15 U.S.C. § 7243). This article contends that clawback provisions, which follow a logic similar to that of compensation restrictions, are unlikely to promote efficient compensation and might lead to excessive conservatism. The substantial effect of clawback rules is to reduce the scope of managers' limited liability. Accordingly, these rules could induce managers to prefer conservative strategies
restrictions should be removed.

Following a similar line of reasoning, the article suggests Congress should amend Rule 162(m) of the tax code—which limits a corporation’s tax deduction for non-incentive-based compensation to $1 million per year—in order to not give boards further reason to prefer equity-based compensation over fixed compensation. The current unfavorable tax treatment of fixed compensation increases its cost to corporations. This, in turn, makes it more likely that the corporate pay setting process might suffer from an equity-compensation bias. A more efficient tax treatment of executive pay should take into account the type of capital structure employed by the firm and its effect on moral hazard problems. A possible approach is to tie a corporation’s tax deductions for executive pay to the corporation’s level of leverage. When the corporation’s level of debt is low, existing tax rules should remain in place to promote the use of equity-based compensation over fixed compensation. Indeed, the relational-contract analysis of executive compensation has shown that, under this capital structure, paying managers through equity is more convenient for the firm. In contrast, when the firm’s level of debt is high, existing tax rules should be amended to encourage the use of fixed compensation over equity-based compensation. This could be achieved by limiting tax deductions for compensation paid in the form of equity incentives and by increasing tax deductions for fixed compensation.

that minimize the risk of a liability trigger (i.e., the possibility of a financial restatement) even when these strategies are suboptimal.

189 See supra note 66; I.R.C. § 162(m) (2010). Other relevant tax rules include provisions that restrict corporate tax deductions for golden parachutes and impose excise taxes on executives for payment of severance packages in excess of their average compensation over the previous five years. See I.R.C. § 280G(a) (2006); I.R.C. § 4999(a) (2006). The relational-contract approach to executive compensation suggests that these provisions are beneficial since they make golden parachutes more costly for corporations. See supra text accompanying notes 180-82. In practice, however, tax rules on severance payments have had limited success in capping the amounts of these payments, leading instead to a diffused practice of "gross-up provisions" to compensate executives for excise taxes. See Bruce A. Wolk, The Golden Parachute Provisions: Time for Repeal?, 21 VA. TAX. REV. 125, 136, 139-40 (2001). As suggested above, a more sweeping regulatory intervention banning the use of severance payments would be desirable.


191 This has been the effect of rule I.R.C. § 162 (m) in the past. See Walker, supra note 190, at 953-57 (discussing the accounting treatment of equity-based compensation and its implications).

192 See supra text accompanying notes 139-41.

193 To avoid uncertainty, federal tax rules could establish different tax treatments depending on some predetermined debt thresholds. A simple way to proceed would be the following. A low, an intermediate and a high debt threshold should be fixed. Corporations with a level of leverage below the low threshold should be able to deduct the full amount of equity-based compensation from their taxable income, while no tax deduction should be granted for the use of fixed compensation.
This article has shown that executive compensation is hindered by a two-dimensional moral hazard problem. On the one hand, there is the issue of incentivizing the manager to make the optimal amount of effort. On the other, there is the issue of incentivizing the manager to choose the optimal level of risk.

The article has also shown that the relational-contract analysis of executive compensation contracts can provide crucial insights into how to implement efficient compensation schemes. Contrary to conventional wisdom, equity-based compensation is not the only possible way to boost effort. Because continuation of employment matters to managers, high fixed compensation can also induce effort. By exploiting (i) these two methods of controlling effort, and (ii) the countervailing risk incentives produced by fixed-based and equity-based compensation, it is possible to design mixed payment schedules that induce effort while fully internalizing externalities.

The organizational structure of the publicly held corporation, however, prevents firms from implementing these solutions. Therefore, regulatory intervention is necessary to promote adoption of optimal mixed payment schedules to remunerate managers. The article argues that the Dodd-Frank Act fails to meet this goal and puts forward measures that are better tailored to promote efficient compensation structures.

Corporations with a level of leverage between the low and the intermediate debt threshold should be able to deduct from their taxable income both equity-based compensation and fixed compensation at the same percentage. Corporations with a level of leverage above the intermediate debt threshold but below the high debt threshold should be subject to a regime where the tax deduction for the use of fixed compensation is larger than that granted for equity-based compensation. Finally, corporations with a level of debt above the high threshold should be able to deduct from their taxable income only fixed compensation.