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REGULATING BANKERS' PAY

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REGULATING BANKERS' PAY

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Abstract

This paper seeks to make three contributions to understanding how banks' executive pay has produced incentives for excessive risk-taking and how such pay should be reformed. First, although there is now wide recognition that pay packages focused excessively on short-term results, we analyze a separate and critical distortion that has received little attention. Equity-based awards, coupled with the capital structure of banks, tie executives' compensation to a highly levered bet on the value of banks' assets. Because bank executives expect to share in any gains that might flow to common shareholders, but are insulated from losses that the realization of risks could impose on preferred shareholders, bondholders, depositors, and taxpayers, executives have incentives to give insufficient weight to the downside of risky strategies.

Second, we show that corporate governance reforms aimed at aligning the design of executive pay arrangements with the interests of banks' common shareholders—such as advisory shareholder votes on compensation arrangements, use of restricted stock awards, and increased director oversight and independence—cannot eliminate the identified problem. In fact, the interests of common shareholders could be served by more risk-taking than is socially desirable. Accordingly, while such measures could eliminate risk-taking that is excessive even from shareholders' point of view, they cannot be expected to prevent risk-taking that serves shareholders but is socially excessive.

Third, we develop a case for using regulation of banks' executive pay as an important element of financial regulation. We provide a normative foundation for such pay regulation, analyze how regulators should monitor and regulate bankers' pay, and show how pay regulation can complement and reinforce the traditional forms of financial regulation.

Keywords: Executive compensation, banks, financial regulation, financial firms, financial crisis, TARP, restricted shares, options, moral hazard, risk-taking, prudential regulation, say on pay, compensation committees.

JEL Classification: G28, K23

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INTRODUCTION

Excessive risk-taking in the financial sector has played an important role in the major financial crisis of 2008–09. There is widespread concern that executive compensation arrangements could have encouraged excessive risk-taking, and that fixing these arrangements will be important in preventing such excesses in the future. But what exactly has been wrong with bank executives’ pay, how should it be fixed, and is there a reason for government intervention? These questions are the focus of this paper.

We make three contributions. First, we identify key features of executive compensation arrangements that have provided bank executives with excessive risk-taking incentives, but that have thus far received little attention. It is now well recognized that, by enabling executives to cash large amounts of equity-based and bonus compensation before the long-term consequences of decisions are realized, pay arrangements have provided executives with incentives to focus excessively on short-term results and give insufficient weight to the consequences that risk-taking would have for long-term shareholder value.¹ This problem, which was first highlighted several years ago in a book and accompanying articles co-authored by one of us,² has become widely accepted in the aftermath of the financial crisis.³ In this paper, however, we identify a distinct and separate problem: bank executives’ pay has been tied to highly levered bets on the value of banks’ assets, giving executives little incentive to take into account the losses that risk-taking could impose on preferred shareholders, bondholders, depositors, and taxpayers. This feature of current and past pay arrangements would lead to excessive risk-taking even in a world

¹ See, e.g., Press Release, U.S. Dep’t of the Treasury, Statement by Treasury Secretary Tim Geithner on Compensation (June 10, 2009), <http://www.ustreas.gov/press/releases/tg163.htm> (stating that “compensation should be structured to account for the time horizon of risks”).

² See, e.g., LUCIAN BEBCHUK & JESSE FRIED, PAY WITHOUT PERFORMANCE (2004); id., *Executive Compensation as an Agency Problem*, 17 J. ECON. PERSP. 71 (2003); id., *Pay Without Performance: Overview of the Issues*, 17 J. APPLIED CORP. FIN. 8 (2005); Lucian Arye Bebchuk et al., *Managerial Power and Rent Extraction in the Design of Executive Compensation*, 69 U. CHI. L. REV. 751 (2002).

³ See, e.g., Lloyd Blankfein, *Do not destroy the essential catalyst of risk*, FINANCIAL TIMES 02/09/2009, p. 7 (arguing that “An individual’s performance should be evaluated over time so as to avoid excessive risk-taking. To ensure this, all equity awards need to be subject to future delivery and/or deferred exercise. Senior executive officers should be required to retain most of the equity they receive at least until they retire, while equity delivery schedules should continue to apply after the individual has left the firm.”). For a detailed analysis of how pay arrangements should be designed to address the short-horizons problem, see Lucian A. Bebchuk & Jesse Fried, *Paying for Long-Term Performance* (Harvard Law & Econ. Discussion Paper No. _____, 2009).

with one time period in which, by definition, problems related to the length of executives' pay horizon do not arise.

Our analysis can guide implementation of recent legislation and regulation that seeks to avoid excessive incentives for risk-taking. For those companies receiving government aid, the Troubled Asset Relief Program (TARP) bill,⁴ subsequent U.S. legislation,⁵ and regulations implementing such legislation⁶ require the elimination of compensation structures that give executives incentives to take unnecessary and excessive risks. The Treasury's plan for financial regulatory reform calls on federal regulators to issue standards for all financial firms to avoid excessive risks,⁷ and a bill recently passed by the House requires regulators to adopt such standards.⁸ At the international level, the Basel II framework has been recently amended to require banking regulators to monitor compensation structures with a view towards aligning them with good risk management, and, in their recent September 2009 meeting, the G-20 leaders "committed to act together to . . . implement strong international compensation standards aimed at ending practices that lead to excessive risk-taking."⁹ To operationalize such mandates, however, a good understanding of the factors that provide incentives for excessive risk-taking is necessary. By elucidating an important source of excessive risk-taking incentives, our analysis contributes to implementing such laws and regulations.

⁴ Emergency Economic Stabilization Act of 2008, Pub. L. No. 110-343, § 111(b), 122 Stat. 3765, 3776–77 (codified as amended at 12 U.S.C. § 5221 (Supp. 2009)).

⁵ See American Recovery and Reinvestment Act of 2009, Pub. L. No. 111-5, § 7001, 123 Stat. 115, 516–20 (2009) (codified as amended at 12 U.S.C. § 5221).

⁶ See, e.g., Press Release, U.S. Dep't of the Treasury, Treasury Announces New Restrictions on Executive Compensation (Feb. 4, 2009), *available at* <http://www.ustreas.gov/press/releases/tg15.htm>.

⁷ See DEP'T OF THE TREASURY, FINANCIAL REGULATORY REFORM—A NEW FOUNDATION: REBUILDING FINANCIAL SUPERVISION AND REGULATION 11 (2009), *available at* http://www.financialstability.gov/docs/regs/FinalReport_web.pdf; see also Press Release, U.S. Dep't of the Treasury, Treasury Secretary Tim Geithner Written Testimony House Financial Services Committee Hearing (Mar. 26, 2009), *available at* <http://www.treas.gov/press/releases/tg71.htm> (arguing that "regulators must issue standards for executive compensation practices across all financial firms . . . [that] encourage prudent risk-taking . . . and should not otherwise create incentives that overwhelm risk management frameworks").

⁸ See Corporate and Financial Institution Compensation Fairness Act of 2009, H.R. 3269, 111th Cong. (as passed by House, July 31, 2009).

⁹ See BASEL COMM. ON BANKING SUPERVISION, ENHANCEMENTS TO THE BASEL II FRAMEWORK 25–27 (2009); Leaders' Statement: The Pittsburgh Summit, *available at* <http://www.pittsburghsummit.gov/mediacenter/129639.htm>, preamble, para. 17.

Our second contribution is to show the limits of corporate governance reforms for eliminating excessive risk-taking incentives. Concerns about excessive risk-taking in banks have led legislators and regulators, both in the United States and abroad, to adopt or propose various corporate governance measures aimed at improving pay-setting processes and better aligning pay arrangements with the interest of shareholders.¹⁰ Although such measures can discourage some inefficient risk-taking that is undesirable from shareholders' perspectives, they cannot be relied on to eliminate the incentives for excessive risk-taking that we identify and analyze. The common shareholders in financial firms do not have an incentive to take into account the losses that risks can impose on preferred shareholders, bondholders, depositors, taxpayers underwriting governmental guarantees of deposits, and the economy.

Our third contribution is to develop a normative foundation and a framework of analysis for making regulation of executive pay in banks an important element of financial regulation. Governments around the world are now seriously considering such pay regulation. Since the circulation of the discussion paper version of this article in June 2009,¹¹ the Financial Services Authority of the U.K. has adopted such regulations,¹² the U.S. House of Representatives voted in favor of a bill (now to be taken up by the Senate) requiring such regulations,¹³ and other countries are considering such regulations.¹⁴ We put forward a normative case for such regulations and provide a conceptual framework for developing them. We discuss what such regulations should include and how they can best complement and reinforce the traditional forms of financial regulation.

¹⁰ See *infra* notes 65-78 and accompanying text.

¹¹ Lucian A. Bebchuk & Holger Spamann, *Regulating Bankers' Pay*, HARVARD LAW & ECONOMICS DISCUSSION PAPER No. 641 (June 2009).

¹² See Senior Management Arrangements, Systems and Controls (Remuneration Code) Instrument 2009.

¹³ See Corporate and Financial Institution Compensation Fairness Act of 2009, H.R. 3269, 111th Cong. (as passed by House, July 31, 2009). In the House committee hearing on compensation structures and systemic risk preceding the passage of this bill, one of us argued, on the basis of our discussion paper (*supra* note 11), in favor of including such provisions. See *Compensation Structure and Systemic Risk: Hearing Before the H. Comm. on Fin. Serv.*, 111th Cong. (2009) (written testimony submitted by Lucian A. Bebchuk, Professor, Harvard Law School), available at http://www.house.gov/apps/list/hearing/financialsvcs_dem/bebchuk.pdf.

¹⁴ See, e.g., SWISS FIN. MAR. SUPERVISORY AUTH. FINMA, REMUNERATION SYSTEMS: MINIMUM STANDARDS FOR REMUNERATION SYSTEMS OF FINANCIAL INSTITUTIONS (2009) (draft circular), available at <http://www.finma.ch/e/regulierung/anhoerungen/Documents/rs-verguetungssysteme-20090709-e.pdf>.

Part I begins by analyzing the incentives of banks' top executives in the run-up to the financial crisis of 2008–09. The analysis of banks' financing structures and compensation arrangements shows that the payoffs of bank executives were tied to a highly levered¹⁵ bet on the value of banks' assets. Whereas gains from risky ventures are generally captured by the holders of shares and options, losses can fall partly on preferred shareholders, bondholders, depositors, and taxpayers. Hence, shareholders, and executives aligned with them through stock and option pay, have incentives to engage in risky ventures beyond what is efficient because they do not internalize the adverse effects that risk-taking has on other stakeholders in the bank. This problem is particularly acute in banks, for two reasons. First, bank creditors do not have strong incentives to protect themselves because they are at least partly protected—explicitly or implicitly—by the government. Second, banks are inherently levered institutions because they transform deposits into loans. Moreover, most large banks have added two additional layers of leverage through bank holding companies and stock option rewards for executives.

Our basic argument can be seen in a simple example. A bank has \$100 of assets financed by \$90 of deposits and \$10 of capital, of which \$4 are debt and \$6 are equity; the bank's equity is in turn held by a bank holding company, which is financed by \$2 of debt and \$4 of equity and has no other assets; and the bank manager is compensated with some shares in the bank holding company. On the downside, limited liability protects the manager from the consequences of any losses beyond \$4. By contrast, the benefits to the manager from gains on the upside are unlimited. If the manager does not own stock in the holding company but rather options on its stock, the incentives are even more skewed. For example, if the exercise price of the option is equal to the current stock price, the manager still fully participates in the upside but is largely insulated from losses.

Below, we develop this analysis in detail, and illustrate the issue with numbers from Citigroup and Bank of America. Furthermore, we explain why our conclusion that bank CEOs had incentives to take excessive risks is fully consistent with the observation that many of them

¹⁵ Partially financing assets (here, the bank's loan portfolio) with debt (here, deposits and bonds) provides "leverage" for the own funds invested (equity) because it amplifies the financial impact of changes in the assets' value; equity absorbs all the gains and losses on the assets even though it contributed only a fraction of the funds. In addition, with limited liability, "leverage" amplifies the asymmetry in the payoffs for equity. That is, while the possible upside is unlimited, limited liability caps the possible downside at the amount of the initial equity investment.

have suffered large losses during the financial crisis. We also show in Part I that the crisis has not eliminated the divergence between the interests of executives and those of bondholders, depositors, and taxpayers, and that the crisis might have even increased this divergence in some banks by reducing the value of executives' shares and options.

Against this background, we assess in Part II the potential of corporate governance measures—such as those adopted or considered by legislators and regulators in the U.S. and abroad in response to the financial crisis of 2008–09—to address the problem of excessive risk-taking in banks. Such measures include advisory shareholder votes on compensation (“say-on-pay”), approval of executive compensation packages by committees of independent directors, and encouraging the use of shares subject to minimum holding periods (“restricted stock”) as the main or sole form of incentive compensation.¹⁶ These measures attempt to tighten the alignment of executives' and common shareholders' interests. Our analysis indicates that such governance reforms cannot be expected to address the problem we identify. Common shareholders do not internalize the potential losses that excessive risks entail for bondholders, depositors, or taxpayers. Consequently, common shareholders could benefit from taking some risks that are socially excessive. As a result, measures aimed at tightening the link between the design of pay arrangements and shareholder interests cannot be expected to eliminate incentives to take excessive risks.

In Part III, we develop the case for regulating executive pay in banks. We argue that executive pay can be an important tool for financial regulation, and we analyze how regulation of pay should be designed and how it should complement the traditional regulation of banks.

Although legislators and regulators are now moving toward regulation of executive pay in banks, their motivation seems to be at least partly based on corporate governance concerns that pay arrangements are designed to advance executives', and not shareholders', interests. We argue, however, that regulation of executive pay would be warranted even if banks had no governance problems; such regulation is called for by the same reasons that underlie the traditional regulation of banks.

Because shareholders do not internalize the losses that risk-taking could impose on bondholders, depositors, and taxpayers, banks have long been subject to a substantial body of regulations that limit their choices with respect to investments, lending, and capital reserves. But

¹⁶ See *infra* notes 65-78.

given the complexities of modern finance and the limited information and resources of regulators, such prudential regulation is necessarily imperfect. Moreover, as long as executives' incentives are tied to those of shareholders, executives might have an incentive to increase risks beyond what is intended by the regulators, who often might be one step behind banks' executives.

In addition to directly regulating banks' investment, lending, and capital choices, regulators could place constraints on the compensation structures that shape how bank executives choose from the menu of actions allowed by this direct regulation. Such pay regulation should focus on the structure of compensation—not the amount—with the aim of avoiding incentives for excessive risk-taking. Regulators should attempt to make executive incentives work for, rather than against, the goals of financial regulation.

In particular, to the extent that executive pay is tied to the value of specified securities, banks could be required or encouraged to tie it to a broader basket of securities, not only common shares. Rather than tying executive pay to a specified percentage of the value of the common shares of the bank holding company, compensation could be tied to a specified percentage of the aggregate value of the common shares, the preferred shares, and the bonds issued by either the bank holding company or the bank. Similarly, to the extent that executives receive bonus compensation based on accounting measures, such bonuses could be based not on metrics that exclusively reflect the interests of common shareholders, such as earnings per share, but rather on broader metrics that also reflect the interests of preferred shareholders, bondholders, and the government as guarantor of deposits. Such changes in compensation structures would induce executives to take into account the effects of their decisions on preferred shareholders, bondholders, depositors, and taxpayers, and consequently would curtail incentives to take excessive risks.

Regulating bankers' pay could nicely supplement and reinforce the traditional, direct regulation of banks' activities. Indeed, if pay arrangements are designed to discourage excessive risk-taking, direct regulation of activities could be less tight than it should otherwise be. Conversely, as long as banks' executive pay arrangements are unconstrained, regulators should be more strict in their monitoring and direct regulation of banks' activities. At a minimum, bank regulators should closely monitor banks' compensation structures and take them into account

when assessing the risks posed by any given bank and deciding how much capital the bank requires and how strictly to regulate the bank's activities directly.

As is the case with any analysis of incentives, our own cannot show whether and to what extent any given executives were driven by the monetary incentives they faced. Individuals do not always act in ways that fully maximize their monetary payoffs. But, like other work by policy analysts and financial economists, we assume that incentives matter. This is why executives are given packages that seek to provide them with payoffs connected to performance in the first place. To the extent that the incentives generated by pay arrangements matter, our analysis seeks to identify the arrangements that produce perverse incentives and those that produce desirable ones.

Our analysis complements others that focus on dealing with the aftermath of the financial crisis. One line of work focuses on how to restore banks' ability to carry out their important role in the economy — by cleaning up banks' balance sheets, shoring up banks' capital positions, or other means.¹⁷ While our paper does not directly address these issues, it shows how bankers' current pay arrangements fail to provide them with incentives to make optimal decisions and how these arrangements should be adjusted to do so. Another line of work focuses on improving the traditional prudential regulation of banks' capital and activities.¹⁸ By contrast, our analysis focuses on an additional tool—the regulation of executive compensation—that could usefully complement the traditional prudential regulation.

Throughout, we focus on the compensation of banks' top executives. Compensation structures at lower levels of banks' hierarchy are certainly important for risk-taking at those levels, and, for this reason, they have been receiving substantial attention from the media and regulators. But, lower-level compensation schedules are set by higher levels of management. Hence, setting appropriate incentives for the highest level of management will likely have ripple effects throughout the entire banking organization without replacing decentralized private decision making with government regulation. Top executives' incentives are a key to the

¹⁷ See, e.g., Lucian A. Bebchuk, *Buying Troubled Assets*, 26 YALE J. ON REG. 343 (2009); John Coates & David Scharfstein, *Lowering the Cost of Bank Recapitalization*, 26 YALE J. ON REG. 373 (2009).

¹⁸ See, e.g., GROUP OF THIRTY, *FINANCIAL REFORM—A FRAMEWORK FOR FINANCIAL STABILITY* (2008); Michael Solender, *How the Obama Administration Should Regulate the Financial Sector*, 26 YALE J. ON REG. 471 (2009); Oliver Hart & Luigi Zingales, *A New Capital Regulation for Large Financial Regulations* 3–5 (Centre for Economic Policy Research Discussion Paper, Paper No. DP7298, 2009), available at http://www.economics.harvard.edu/faculty/hart/papers_hart.

behavior of banks as a whole. We believe that the regulation of financial firms should make significant use of this key.

I. EXECUTIVES' INCENTIVES

Here we describe in more detail the financial structure of modern banking organizations and the compensation structures in such organizations that provided bank executives with incentives for excessive risk-taking in the build-up to the present crisis. By taking excessive risks, we refer to taking actions that may either increase or decrease the value of the bank's assets, but whose expected effect on the bank's value is negative. Taking such negative-expected-value "bets" may nevertheless be attractive from the perspective of a private actor if the actor expects to capture a share of possible gains while bearing a smaller share of possible losses. We suggest that this was the case for bank managers in the build-up to the financial crisis of 2008–09 because compensation arrangements shielded these executives from a large fraction of possible losses. To be sure, the asymmetric payoffs that we analyze did not provide managers with incentives to take actions that would produce a loss with absolute certainty within the relevant period. Rather, we argue that they had incentives to take risks that had both an upside and a downside and that were socially excessive, yet privately optimal.

We begin in section A by briefly laying out the well-known problem of moral hazard in banks: Bank shareholders have an incentive to increase the volatility of bank assets, while government-protected bank creditors have no incentive to prevent such volatility. In section B, we describe features of the organizational and financial structure of modern banking organizations that tie the interests of bank executives to highly levered bets on the value of bank assets. In section C, we explain how the use of options in executive pay arrangements added an additional layer of leverage, further exacerbating the moral hazard problem. In section D, we illustrate the analysis of this part through the financial incentives made available to the CEOs of Citibank and Bank of America.

Section E comments on why bondholders of banks and bank holding companies cannot be relied on to prevent pay arrangements that provide incentives for excessive risk-taking. Section F explains why our analysis of managers' private incentives to take excessive risks is fully consistent with the observation that some bank managers lost substantial amounts of private

wealth in the current crisis. Finally, section G discusses how the distortion that we identify plays out in times of financial crisis.

A. Moral Hazard in Banks

There is a fundamental, and now well understood, moral hazard problem in banks.¹⁹ Those who provide equity capital have an excessive incentive to take risk. They will capture the full upside, but some of the downside will be borne by the government as insurer of deposits if the bank goes bankrupt.

It will be helpful to use in this, and the subsequent section, a stylized example. In our analysis of the basic example and all subsequent modifications, we will assume for simplicity that there are only two periods—the present, when managers make decisions, and the future, when gains or losses are realized and the manager gets paid. With multiple periods, the analysis would become more complex, but our general conclusions would not change.

Consider a bank that has \$100 in assets, funded by capital of \$10 and \$90 of deposits, which are senior to capital (that is, they get paid first). In this case, the shareholders will have an excessive incentive to take risk. To see this, consider a strategy that would produce a fifty-fifty

¹⁹ Moral hazard in banks is a special, particularly severe case of moral hazard of equity in general. On the general problem of moral hazard, see Michael C. Jensen & William H. Meckling, *Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure*, 3 J. FIN. ECON. 305, 334–37 (1976).

As we discuss at the end of this section, the moral hazard is particularly severe in banks because, by their very function, banks have extraordinarily dispersed creditors, namely small depositors, who have neither the incentive nor the competence to evaluate banks' risk-taking behavior, or more generally their solvency. See MATHIAS DEWATRIPONT & JEAN TIROLE, *THE PRUDENTIAL REGULATION OF BANKS* 6 (1994). Depositors certainly have no incentive to protect themselves when they are protected by deposit insurance. See generally Gary Gorton & Andrew Winton, *Financial Intermediation*, in 1A HANDBOOK OF THE ECONOMICS OF FINANCE 432, 520–29 (George M. Constantinides et al. eds., 2003) (providing references to the abundant literature, including empirical literature, documenting the incidence of moral hazard at the bank level in the presence of deposit insurance).

Cross-country evidence also supports the importance of deposit insurance for moral hazard. See JAMES R. BARTH ET AL., *RETHINKING BANK REGULATION—TILL ANGELS GOVERN* 213–24 (2006) (finding, in a sample of over 150 countries, that deposit insurance increases the likelihood of banking crises); Asli Demirgüç-Kunt & Enrica Detragiache, *Does Deposit Insurance Increase Banking System Stability? An Empirical Investigation*, 49 J. MONETARY ECON. 1373 (2002) (same for sixty-one countries); Asli Demirgüç-Kunt & Harry Huizinga, *Market Discipline and Deposit Insurance*, 51 J. MONETARY ECON. 375 (2004) (finding in a sample of thirty countries that deposit insurance leads to greater risk-taking).

chance of increasing or decreasing the value of the bank's assets. In particular, suppose that the bank has to decide whether to pursue a risky strategy with a 50% chance of reducing the value of the assets by \$20 and a 50 percent chance of increasing it by X. If X is less than \$20, the risky strategy will have a negative expected value. However, taking the risky strategy would be in the interest of the shareholders for some values of X below \$20.

The reason for this is that, in the event the risky strategy would produce a loss of \$20, the shareholders will not bear this loss fully. Rather, they will lose only \$10, their capital invested in the bank, with the remaining \$10 loss borne by depositors, the government as guarantor of depositors, or both. By contrast, in the event that the risky strategy is successful, the shareholders will capture the full benefit of the increase X in the value of the assets. As a result, taking the risky strategy will have a positive expected value for the shareholders as long as X is more than \$10. Thus, there is a range of values that X might take—between \$10 and \$20—within which the risky strategy will have a negative expected value but will still be in the economic interest of the shareholders.

Another way of seeing the problem is by noting that, from the perspective of the shareholders' economic interests, there is no difference between a decline in the value of assets of \$10 and *any* larger decline that wipes out all or most of the value of the assets; in both cases, the shareholders will lose their capital. As a result, shareholders will have an incentive to discount large losses.

To see shareholders' indifference between different losses beyond the value of equity, consider a bank that can keep things as they are or choose either one of two risky strategies A and B. Suppose that A provides a 90 percent chance of a gain of \$2 and a 10 percent chance of a loss of \$10, while B provides a 90 percent chance of a gain of \$3 and a 10 percent chance of a loss of \$50. In this case, taking A has a positive expected value and taking B has a negative expected value. But, the economic interest of the shareholders will favor B over A, as the shareholders will lose the same amount if either A or B fails, and they will make more if B succeeds than if A succeeds.

Taking excessive risks cannot be deterred by the prospect that depositors will avoid banks that do so.²⁰ To begin, depositors whose deposits are guaranteed by the government have no incentives to investigate the banks' strategy before depositing their funds or to withdraw these

²⁰ See, e.g., DEWATRIPONT & TIROLE, *supra* note 19; Gorton & Winton *supra* note 19.

funds when they learn that the bank has embarked, or is about to embark, on a risky project, because they are protected by the government. And even if they were not protected by insurance, the vast majority of small depositors would have neither the incentives nor the resources to monitor the bank's behavior.

Given that depositors cannot be expected to prevent excessive risk-taking by banks, and that such risk-taking might lead to bank failure that would have an adverse effect on the government as insurer of deposits and on the economy, governments regulate and monitor banks' capital and activities.²¹ Given the limits to regulators' information, however, such prudential regulation can constrain, but cannot be counted on to eliminate all excessive risk-taking by banks. We discuss the reasons for this in section 0III.A.

B. Capital and Compensation Structures

So far we have discussed the generic moral hazard problem inherent to all banks, especially when operating under a regime of deposit insurance. We now turn to several special features of modern banking organizations that tend to aggravate the basic moral hazard problem discussed in the preceding section: (1) the capital of the bank is partly financed by debt instruments and (2) the common equity of modern banks is held by bank holding companies that have an additional layer of debt financing.

1. Debt at the Operating Bank Level

Banks have long been allowed to raise some of their required capital in forms other than common shares. Under both the original (Basel I) and the revised (Basel II) capital standards agreed upon by the Basel Committee on Banking Supervision, up to one-third of the required

²¹ See DEWATRIPONT & TIROLE, *supra* note 19, at 29–45; TOMMASO PADOA-SCHIOPPA, REGULATING FINANCE—BALANCING FREEDOM AND RISK 7 (2004); Dirk Heremans, *Regulation of Banking and Financial Markets*, in 3 ENCYCLOPEDIA OF LAW AND ECONOMICS 950, 954–56 (Boudewijn Bouckaert & Gerrit de Geest eds., 2000). On other possible reasons for capital regulation, see RICHARD J. HERRING & ROBERT E. LITAN, FINANCIAL REGULATION IN THE GLOBAL ECONOMY 49–64 (1995); Robert Charles Clark, *The Soundness of Financial Intermediaries*, 86 YALE L.J. 1, 10–26 (1976) (emphasizing the protection of small depositors as the main motivation for prudential regulation).

capital can consist of subordinated long-term debt.²² In 2006, the largest U.S. bank holding companies maintained around 20 percent of their capital in the form of such debt: 18 percent at Citigroup, 20 percent at Bank of America, and 23 percent at J.P. Morgan.²³

Suppose that the \$10 of bank capital in our example is financed in the following way: \$2 comes from note holders as debt and \$8 comes from common shareholders. The executives in charge hold common shares. In this case, the executives are insulated from the effects of any increase in the level of losses beyond \$8. Any loss beyond \$8 will wipe out the value of common shares in the bank, and increases in the loss beyond that level would not affect the value of the common shares. In contrast, any gain in the value of the assets will be fully captured by the common shares of the bank.

Another way to see the problem is to notice that the standard structures we observe in banks have exacerbated the problem of discounting losses. In our example, executives will have an incentive not only to discount losses to assets that exceed \$10, as was the case in the discussion of the preceding section, but also losses that are in the \$8 to \$10 range.

2. Debt at the Bank Holding Company Level

An additional distortion arises from the presence of an additional layer of debt financing at the level of the bank holding company. The biggest banks in the United States (as well as in some other major countries) are not stand-alone entities, but subsidiaries of financial conglomerates, known as bank holding companies in the United States. Citibank, for example, is a subsidiary of Citigroup, which combines traditional consumer and commercial banking with investment banking, wealth management, and alternative investments such as private equity, hedge funds, and structured products.²⁴ Major strategic decisions are taken at the holding

²² See BASEL COMM. ON BANKING SUPERVISION, INTERNATIONAL CONVERGENCE OF CAPITAL MEASUREMENT AND CAPITAL STANDARDS 16, 244 (2006). On these capital standards generally, see, for example, MICHAEL P. MALLOY, PRINCIPLES OF BANK REGULATION 261–76 (2d ed. 2003).

²³ See BANK OF AMERICA CORP., 2006 ANNUAL REPORT 61 tbl.11 (2007); CITIGROUP INC., 2006 FINANCIALS & FORM 10-K 86 (2007); JPMORGAN CHASE & CO., 2006 ANNUAL REPORT 130 (2007).

²⁴ See CITIGROUP INC., *supra* note 23, at 2. In 2006, Citigroup earned 34 percent of its gross revenue from sources other than interest on loans, or 56 percent of net revenues (i.e., revenues net of interest expense). *Id.* at 104.

company level, and the incentive pay of the top executives is tied to the share price of the holding company.

This structure is important for understanding incentives for risk-taking because bank holding companies also issue debt. To be sure, because capital adequacy requirements extend to bank holding companies on a consolidated or group basis, they place limits on how much debt can be issued at the bank holding company level.²⁵ If they did not, there would be no limit on how much the common shareholders of the bank holding company could lever up their capital.²⁶ Still, the existence of debt and risky assets at the holding level, alongside the holding's investment in the bank, will alter the holding's incentives to manage the bank.

By definition, the bank holding company holds assets that are not in traditional banking, such as the hedge fund and investment banking subsidiaries of Citigroup mentioned above. Even though these assets may be subsidiaries, substantial amounts of debt financing are located at the holding level.²⁷ If the non-bank assets of the holding company produce a loss, the value of

²⁵ For U.S. law, see PAULINE B. HELLER & MELANIE FEIN, FEDERAL BANK HOLDING COMPANY LAW §5.07 (looseleaf, 2009). For the Basel rules and beyond, see Howell E. Jackson, *Consolidated Capital Regulation for Financial Conglomerates*, in CAPITAL ADEQUACY BEYOND BASEL: BANKING, SECURITIES, AND INSURANCE 123 (Hal S. Scott ed., 2005) [hereinafter Jackson, *Consolidated Capital Regulation*]. Prior to Basel II, some countries pursued a different approach to the regulation of holding companies. See Howell Edmunds Jackson, *Regulation of Financial Holding Companies*, in 3 THE NEW PALGRAVE DICTIONARY OF ECONOMICS AND THE LAW 232, 234 (Peter Newman ed., 1998) [hereinafter Jackson, *Regulation of Financial Holding Companies*].

²⁶ See Jackson, *Regulation of Financial Holding Companies*, *supra* note 25, at 233–34 (noting that this would not matter if the solvency regulation of the bank itself worked perfectly). In our numerical example, suppose that the 8 percent equity in the bank were held by a holding company, which was in turn financed by 50 percent equity and 50 percent debt (and, for simplicity, has no further assets). In this case, the first \$4 paid by the bank to the holding company would accrue to the creditors of the holding company. If the assets of the bank fell below \$96, the shareholders of the holding company would be wiped out, and further losses would be of no concern to them. Shareholders, in other words, would discount any losses that exceed \$4. To prevent this, banking regulation prohibits such additional leveraging at the holding level. This being said, bank holding companies were allowed to lever up more than banks because up to 15 percent (for “internationally active banking organizations”) of their tier 1 capital could be contributed through “qualifying trust preferred securities,” which, from the bank’s point of view, is essentially long term debt (default only occurs if the bank misses interest payments for at least five years). See 12 C.F.R. pt. 225 app. A.II.A.1.b.ii(3) (2009).

²⁷ See BANK OF AMERICA CORP., *supra* note 23, at 148 (reporting \$148 billion of debt at the holding level); CITIGROUP INC., *supra* note 23, at 12, 139–40 (reporting \$116 billion of long term loans at the holding company level, exclusive of \$10 billion of junior subordinated notes relating to trust preferred securities, as well as at least \$42 billion of short term debt through Citigroup Funding Inc., which is guaranteed by the holding company).

equity in the holding company will be reduced, in effect leveraging the holding and hence increasing the incentives for risk-taking.²⁸

To see this, consider again our numerical example of a bank with \$100 in assets financed by \$90 in deposits, \$2 in other debt, and \$8 in equity. Now suppose that the equity is owned by a holding company and that the holding company also owns another business with \$100 in assets. Thus, altogether, the holding company has \$108 in assets. Further suppose that the holding company is financed with \$92 in debt and \$16 of equity. Let us call the additional business a fund and suppose that the fund is moderately risky—with equal probability, the fund will either lose or gain \$10.

What happens when the fund produces the loss of \$10? The holding's assets will then be reduced to \$98, including the bank shares worth \$8. The holding's creditors will be paid in full, and the holding's common shareholders will receive \$6. If the fund produces a gain instead of a loss, the holding's common shareholders will receive \$26. On average, they will receive \$16.

The holding's common shareholders, including the executives, will do better, however, if the bank itself adopts a risky strategy. Suppose, for example, that the bank could adopt a value-neutral strategy that produces an \$8 loss or gain with equal probability, and suppose that the success of this bank strategy is independent of the success of the fund. Then, half of the time that the fund turns a loss, so will the bank, in which case the book value of the bank's equity will be zero, the bank shares will be worthless, and the creditors of the holding company will receive only \$90, short \$2 of full repayment. Because the bank strategy was value neutral, the question is where did the money go? It accrues, probabilistically, to the holding's common shareholders when both the bank and the fund are successful. On average, they will receive \$16.50.

The flipside of this is that executives seeking to maximize the value of common shares in the bank holding company would accept a risky strategy for the bank even if the possible gain

²⁸ See Jackson, *Regulation of Financial Holding Companies*, *supra* note 25, at 234–35. In an empirical study, Howell Jackson found, in a sample of 175 thrifts in Arizona, California, and Nevada between 1986 and 1991, that those owned by holding companies were less likely to fail and, when they did, imposed less cost on the deposit insurer. Howell E. Jackson, *The Superior Performance of Savings and Loan Associations with Substantial Holding Companies*, 22 J. LEGAL STUD. 405, 416–19 (1993). But, he also found that the stand-alone thrifts were considerably smaller and younger than the integrated thrifts. *Id.* at 415. In any event, if there were beneficial effects of thrift holding companies present in Jackson's sample in the 1980s, they may not be present with the bank holding companies we are concerned with here because they are larger, and hence, themselves subject to the “too large to fail” moral hazard.

were less than \$8. In the example, they would accept the risky strategy for a possible upside of at least \$7. This is what is important from the point of view of bank creditors because it means that, of available risky strategies, more will be attractive to common shareholders than if the bank were a stand-alone business (as before, common shareholders will not bear any losses beyond \$8 at the bank level).

There are two interesting aspects to this example. First, the capital ratio of the overall structure on a consolidated basis—\$200 in assets and \$16 of equity—is equivalent to the capital ratio of the bank, namely 8 percent. Second, the bank's assets are separate from those of the fund, and hence, protected from any losses that the fund might incur.²⁹ And yet, the existence of the fund is not irrelevant for the bank's creditors because it influences the risk preferences of those who control the bank's strategy, namely the holding's management.

The severity of the problem depends on the riskiness of the fund and the correlation of possible risky bank strategies with returns at the fund. Consider the following example, which may be an admittedly extreme, stylized version of what happened when big financial conglomerates got into the hedge fund business. Assume that the possible fund losses or gains are \$16, a still rather modest 16 percent of fund assets. Also assume that the bank has access to a strategy that is perfectly positively correlated with fund returns—if the fund loses \$16, the bank loses Y; if the fund gains \$16, the bank gains X. One might think of bank and fund strategies that are strongly correlated with market returns. Since a loss of \$16 by the fund wipes out the initial equity, the holding's common shareholders are indifferent about Y—from their financial point of view, once the fund has lost \$16, it makes no difference whether the bank loses nothing or \$100. On the other hand, the common shareholders of the bank holding company will receive any additional gain X when the fund has turned a profit. In this case, executives seeking to maximize the value of the bank holding company's common shares will be willing to accept any gain X in

²⁹ Even if the fund lost all its assets, creditors of the holding company could not touch any of the assets of the bank before the bank's own creditors, most importantly the depositors, were paid in full. On this essential role of corporate law for the partitioning of assets, see Henry Hansmann & Reinier Kraakman, *The Essential Role of Organizational Law*, 110 YALE L.J. 387 (2000).

the good state for any loss Y in the bad state. In other words, they will be willing to literally bet the bank for a penny.³⁰

To conclude this section, we acknowledge that banking regulators impose limits on the non-bank activities of bank holding companies and on the risks they can take.³¹ As for the regulation of the banks themselves, however, it is inevitably imperfect and, as a factual matter, non-bank activities of bank holding companies are riskier than their banking activities.³² This observation is consistent with the factor pushing toward risk-taking identified in this section. Determining how important this factor was in the buildup to the current crisis will require further empirical work.³³

C. *Stock Options*

We have seen that the organization and financing structures of modern banks have increased the incentives for executives whose interests are tied to the value of common shares of bank holding companies to take excessive risks—that is, to take gambles that have a negative present

³⁰ An interesting corollary is that executives seeking to maximize the value of the bank holding company's common shares have an incentive *not* to diversify the sources of income the company derives from its bank subsidiaries on the one hand, and its other financial subsidiaries on the other.

³¹ See, e.g., HELLER & FEIN, *supra* note 25, ch. 4.

³² Empirically, non-interest, or fee based, income of financial holding companies is much more volatile than income from interest. See Robert DeYoung & Karin P. Roland, *Product Mix and Earnings Volatility at Commercial Banks: Evidence from a Degree of Total Leverage Model*, 10 J. FIN. INTERMEDIATION 54, 68–70 (2001) (finding in data for 472 U.S. commercial banks from 1988 to 1995 that diversifying from deposits and loans into non-interest revenue activities, particularly trading, strongly increases revenue volatility); cf. Kevin J. Stiroh & Adrienne Rumble, *The Dark Side of Diversification: The Case of U.S. Financial Holding Companies*, 30 J. BANKING & FIN. 2131, 2158 (2006) (finding in data of over 1800 U.S. financial holding companies from 1997 to 2002 that any gains from diversification into non-interest revenue generation “are more than offset by” the costs of increased exposure to volatile activities).

³³ Researchers affiliated with the FDIC and the Federal Reserve have argued that bank holding companies are a source of strength for their banks because the FDIC has authority to force bank holding companies to cross-guarantee the bank's obligations. See Adam B. Ashcraft, *Are Bank Holding Companies a Source of Strength to Their Banking Subsidiaries?*, 40 J. MONEY, CREDIT & BANKING 273, 287–94 (2008); Christine M. Bradley & Kenneth D. Jones, *Loss Sharing Rules for Bank Holding Companies: An Assessment of the Federal Reserve's Source-of-Strength Policy and the FDIC's Cross Guarantee Authority*, 17 FIN. MARKETS, INSTITUTIONS & INSTRUMENTS 249, 269–70 (2008). This argument only operates, however, as long as the bank holding companies themselves are solvent. Our argument relates to the opposite situation when they are not and the *ex ante* incentives set by this possibility. The current crisis may correspond to our scenario.

value, but that, due to the insulation of common shareholders from downside risks, carry a positive expected value to these shareholders. The problem results from the fact that the capital structures partially insulate shareholders from the effect of declines in the value of bank assets at either the bank level or the bank holding company level.

It might be suggested that bank executives holding common shares in the bank holding company would have an incentive to be more conservative than would be in the interest of other common shareholders. To begin with, to the extent that the ownership of common shares in the bank holding company represents a substantial fraction of an executive's wealth, such a large stake might lead the executive to be more risk averse than shareholders who are more diversified. In addition, a failure of the bank might impose significant personal costs on the bank's managers that would not be borne by other common shareholders.³⁴ Empirical studies have documented that CEOs who are insulated from shareholder pressure and do not receive high-powered pay are less prone to engage in risk-taking.³⁵

Option pay, however, pushes executives in the opposite direction. As we will show in section D., prior to the financial crisis of 2008–09, the CEOs of modern U.S. bank holding

³⁴ Among other things, executives will bear costs to the extent that they have firm-specific human capital and that their professional standing would be adversely affected by such failure. In addition, banks may have deferred compensation programs and supplemental retirement accounts for their executives, and executives' rights under these programs might be adversely affected by a bank failure. For evidence on the extensive use of such programs and accounts, see, for example, Lucian A. Bebchuk & Robert J. Jackson Jr., *Executive Pensions*, 30 J. CORP. L. 823 (2005); Rangarajan K. Sundaram & David L. Yermack, *Pay Me Later: Inside Debt and Its Role in Managerial Compensation*, 62 J. FIN. 1551 (2007). As Bebchuk & Jackson explain, however, arrangements and practices indicate that executives' benefits under these arrangements may not suffer even in the event of a bank failure. Bebchuk & Jackson, *supra*, at 831.

³⁵ See Carl R. Chen et al., *Does Stock Option-Based Executive Compensation Induce Risk-Taking? An Analysis of the Banking Industry*, 30 J. BANKING & FINANCE 915 (2006) (documenting an increase of option-based compensation in U.S. banks over the period 1992–2000 and an associated increase in risk-taking); Gorton & Winton, *supra* note 19, at 527-29 (reviewing other studies with similar findings); Luc Laeven & Ross Levine, *Bank Governance, Regulation and Risk Taking*, 93 J. FIN. ECON. 259 (2009) (documenting that banks around the world take more risk when shareholders have more power over management); Shams Pathan, *Strong Boards, CEO Power and Bank Risk-Taking*, J. BANKING & FIN. (forthcoming 2009) (documenting in a sample of U.S. banks in the period 1997–2004 that stronger boards are associated with more risk); Elijah Brewer III et al., *Deregulation and the Relationship Between Bank CEO Compensation and Risk-Taking* (Fed. Reserve Bank of Chi., Working Paper No. 2003–32, 2003) (documenting the increase of equity-based compensation in the U.S. banking sector after deregulation in the 1990s and an associated increase in risk-taking). For a discussion of similar empirical findings relating specifically to the financial crisis of 2008–09, see section F, *infra*.

companies received a substantial share of their compensation not in common shares, but in options on such shares. With options, executives have *even more* incentives for risk-taking than the common shareholders of bank holding companies. This is because options are, to some extent, insulated from losses suffered by these common shareholders due to asset value declines. This can further exacerbate the moral hazard problem and the incentive to take excessive risks.

The reason why the executive's calculus will not be the same as that of the common shareholders of the bank holding company is that he or she will fully capture stock price gains, but will not fully bear stock price declines, as common shareholders would. A stock option gives the holder the right to acquire a share at some future date for a pre-specified price, the "strike price." This right will be valuable if the then-current stock price is above the strike price; it will be worthless otherwise. Consequently, the holder of an option only cares about share price fluctuations above the strike price. It makes no difference to the option holder if the share price ends up being equal to the strike price or far below.

We will again illustrate the implications of this for bank executives' risk incentives with an example. To simplify the exposition, let us abstract here from the additional distortions introduced by the holding structures discussed in the previous subsection. Consider again our earlier example of a stand-alone bank with \$100 in assets financed by \$90 of deposits, \$2 of other debt, and \$8 of equity. As before, the bank is considering whether to take a risky strategy that would create a 50 percent chance of a \$20 decline in asset value and a 50 percent chance of an increase in asset value of X . This time, however, suppose that the executive does not hold common shares in the bank, but rather, options on such shares with a strike price corresponding to the current market value of the shares. Such options will pay off if the market valuation of equity rises, but will be worthless otherwise. Let us examine how the use of such options will affect the value of X above which the executive's interest will favor choosing the risky strategy.

We need to distinguish two scenarios. In the first, the market does not recognize the possibility that the executive will take the risky strategy and the potential loss from asset declines is not yet factored into the stock price of the common shares. The market, therefore, currently values the bank's equity at \$8, and we are assuming that the strike price corresponds to this value.³⁶ In this case, the distortion in favor of excessive risk-taking is especially severe because taking the risky strategy will have a positive expected effect on the executive's payoffs for any

³⁶ For example, if the bank had 100 shares outstanding, the strike price would be eight cents.

positive value of X . Without the risky strategy, the executive's options are worthless. With the risky strategy, the options will still be worthless if the strategy fails, but they will be worth something if the strategy succeeds.

In the scenario considered above, the executive cannot gain from not taking the risky strategy because doing so would never increase the stock price (as the price has not yet factored in the possible decline in stock value due to the risky strategy). If the market takes into account the possibility that the executive will take a negative-expected-value risky strategy, the analysis becomes more complicated. In that case, not taking the risky strategy might produce some increase in the value of common shares, thereby producing a gain for the option holder, because we have assumed that the options are granted at the initial market value of the shares. But it can be shown that the use of options still exacerbates the distortion in favor of risk-taking relative to the situation in which the executive has common shares in the bank holding company. For as long as the common shares have positive value when options are granted, the structure of the option holder's payoffs will be different from that of the common shareholders—the option holder will be insulated from some of the effect on common shareholders that an asset value decline could bring. In fact, it can be shown that under the standard economic assumptions of rational behavior, the option holder will always choose the risky option as long as X is greater than \$2.67, even if this choice is fully anticipated by the market.³⁷

³⁷ If the market anticipates that the executive will choose the risky option with certainty, the value of common stock will be $\frac{1}{2} \cdot 0 + \frac{1}{2} \cdot (\$8 + X) = \$4 + X/2$. If the executive unexpectedly chooses the safe option, the value of common stock will increase to \$8, a certain gain of $\$4 - X/2$. If the executive chooses the risky option, the value of the common stock will either fall to zero or, if the gamble succeeds, increase to $\$8 + X$, a gain of $\$4 + X/2$. Hence, the expected gain from the risky strategy is $\frac{1}{2} \cdot 0 + \frac{1}{2} \cdot (\$4 + X/2) = \$2 + X/4$. This is greater than the certain gain from the safe strategy, as long as X is greater than $\$(8/3)$. Consequently, for X greater than \$2.67, the executive can be expected to choose the risky option, and the market's expectation will be borne out. We have already discussed in the main text that the executive's incentive to gamble is even higher if the market does not anticipate it. So, we conclude that for X greater than \$2.67, the only equilibrium is for the executive to always gamble and the market to fully anticipate this.

For values of X below \$2.67, the manager will sometimes choose the safe strategy and other times the risky strategy. Because the executive will always gamble if the market does not anticipate gambling, it cannot be an equilibrium for the executive not to gamble if X is less than \$2.67. On the other hand, if the market anticipated that the executive will gamble for sure, the share price would be sufficiently depressed to make it profitable for the executive to raise the share price by following the safe strategy, rather than gambling—in other words, the expectation of the market would not be borne out in equilibrium. It

Essentially, the problem can be viewed as follows. When the executive has an option on a share of the bank, the executive's position is equivalent to the combination of (1) a share, (2) a debt in an amount equal to the strike price of the option, and (3) limited liability (in other words, the creditor can only go after the value of the share, not the executive's other assets).³⁸ This is an additional layer of leverage added on top of the deposits and loans, and importantly, each layer of leverage strengthens the incentive to take risks.

D. Citigroup and Bank of America

It is useful to illustrate the claims made in the analysis above by looking at the two biggest U.S. banks in terms of assets to see what financial incentives for risk-taking they gave to their top executives. For simplicity, we will look at their situations at the end of 2006.

At that time, Citigroup and Bank of America were both heavily leveraged, although not exceptionally so. Their leverage ratios—the ratio of tier 1 capital (mainly equity) to *total* assets³⁹—were 5.2 percent and 6.4 percent, respectively; by comparison, J.P. Morgan's leverage ratio was 6.2 percent.⁴⁰ Both Citigroup and Bank of America met the Federal Reserve Board's requirements for "well-capitalized institutions": they achieved a ratio of total capital to *risk-weighted* assets of at least 10 percent and a ratio of tier 1 capital to *risk-weighted* assets of at least 6 percent.⁴¹

At the end of 2006, Citigroup's CEO Chuck Prince held 1.6 million Citigroup shares, and over 1.1 million options at exercise prices between \$32 and \$54 (all but 225,000 options had an exercise price of at least \$42).⁴² The closing price of Citigroup's stock on December 29, 2006

follows that for values of X between \$0 and \$2.67, the only equilibrium is a mixed one in which the manager gambles with some probability, which the market anticipates.

³⁸ The analysis of stocks as options (or the other way around) using arbitrage arguments is due to Fischer Black & Myron Scholes, *The Pricing of Options and Corporate Liabilities*, 81 J. POL. ECON. 637 (1973).

³⁹ The legal minimum ratio is 3%, provided the bank holding company also meets other risk-based capital measures. See 12 C.F.R. pt. 225 App. D.II.a (2009).

⁴⁰ See BANK OF AMERICA CORP., *supra* note 23, at 93; CITIGROUP INC., *supra* note 23, at 86; JPMORGAN CHASE & CO., *supra* note 23, at 130.

⁴¹ See the sources cited in the previous footnote, and *cf.* 12 C.F.R. § 225.2(r)(1) (2009) (defining "well-capitalized").

⁴² See CITIGROUP INC., 2007 PROXY STATEMENT 16, 51 (2007) (reporting stock ownership as of February 28, 2007 and reporting outstanding options and their exercise prices).

was \$55.70.⁴³ Bank of America's CEO Ken Lewis held 2.9 million shares in his company as well as 1.925 million options at exercise prices between \$40 and \$47.⁴⁴ The closing price of Bank of America's stock on December 29, 2006 was \$53.39.⁴⁵

Both executives were heavily invested in their companies' stock. As explained above, this alone created powerful incentives to discount the possible downside of a strategy relative to its upside.

Their options, however, encouraged even more risk-taking. Most of them had exercise prices at around 20 percent below the current stock price. This means that any loss to the company's equity beyond 20 percent would not have had any impact on the value of the options, which would then be zero.⁴⁶ By contrast, any increase in the value of equity would have been fully reflected in the value of the options.

Overall, the above discussion indicates that the payoffs facing the CEOs of Citigroup and Bank of America at the end of 2006 were quite asymmetric. Their monetary gain from a given large increase in the value of their firm's assets was greater than their monetary loss from an equally large decline in the value of these assets. In these circumstances, there was a wide range of negative-expected-value bets that would have had a positive-expected-value effect on the CEOs' monetary position. In short, the equity-based compensation given to these executives provided them with strong incentives to take excessive risks.

E. Why Bondholders Cannot be Relied on to Regulate Pay

The foregoing analysis of bank executives' incentives to take excessive risks raises the question of why bondholders of banks and bank holding companies do not prevent banks from using executive pay arrangements that produce such incentives. In theory, bondholders could

⁴³See Citigroup Inc., Historical Price Lookup, <http://phx.corporate-ir.net/phoenix.zhtml?c=97076&p=irol-historicalpricelookup&t=HistQuote&search.x=35&search.y=10> (last visited Aug. 17, 2009).

⁴⁴See BANK OF AMERICA CORP., 2007 PROXY STATEMENT 17–18, 35 (2007) (reporting stock ownership, including 1 million shares corresponding to possible option exercises, and outstanding options).

⁴⁵See Bank of America Corp., Historical Price Lookup, <http://phx.corporate-ir.net/phoenix.zhtml?c=71595&p=irol-stocklookup> (last visited Aug. 18, 2009).

⁴⁶We remain in the framework of our one-period model so that a drop in equity value is final. In a more fully specified model, stock prices might recover, and hence, options would retain some positive value if their exercise price is above the current stock price. One can think of the one-period model as a simple way to describe the stock price development until the expiration date of the options.

insist on covenants that would preclude such pay arrangements or, in the absence of such covenants and the presence of such pay arrangements, they could insist on an interest rate premium so large that it would deter banks from using such pay arrangements. Unlike depositors, many bondholders have incentives, and can be expected, to monitor the banks to which they lend.

However, bondholders cannot be relied upon to prevent pay arrangements that induce excessive risk-taking because they do not bear fully the costs of such arrangements. In the event that excessive risk-taking will produce a bank failure, a substantial part of the costs will be borne by the government as guarantor of deposits. The bondholders would not bear this major cost of excessive risk-taking, and conversely, would not capture the benefits that limiting excessive risk-taking would confer on depositors and the government.

Furthermore, the bondholders' expected costs from excessive risk-taking, and their incentives to limit such costs, are further reduced by the prospect that, in the event of bank failure, bondholders may benefit directly or indirectly from a government bailout even though they are not formally insured by the government. As financial institutions have grown larger over the last two decades, partly as a result of deregulation, it has become even more difficult for the government to commit to not bailing them out.⁴⁷ For example, in the recent crisis, the government has injected substantial capital into many banks in the form of preferred shares that are junior to the claims of bondholders, insured some banks against a decline in the value of some of their mortgage-backed and other now-illiquid securities ("toxic assets"), and initiated a program to provide government subsidies to funds that will purchase toxic assets from banks—all actions that benefitted bondholders and provided them with partial protection against the consequences of the banks' losses.

The prospect of such government interventions dampens the incentives of bondholders to seek and offer interest rate concessions in return for limits on excessive risk-taking incentives in executive pay arrangements. The effect of "too big to fail" interventions is similar to the moral

⁴⁷ On the consolidation of the banking industry through the 1990s, see GARY A. DYMSKI, *THE BANK MERGER WAVE: THE ECONOMIC CAUSES AND SOCIAL CONSEQUENCES OF FINANCIAL CONSOLIDATION* 34–49 (1999). On the reinforcement of the "too big to fail" moral hazard by this development, see GARY H. STERN & RON J. FELDMAN, *TOO BIG TO FAIL: THE HAZARD OF BANK BAILOUTS* 60–66 (2004).

hazard engendered by deposit insurance discussed in the previous section.⁴⁸ When bondholders are insulated from some of the effects of bank losses by such interventions, they cannot be relied upon to curb excessive risk-taking.

F. Consistency with the Wiping out of Executives' Wealth

In the preceding sections, we have explained how excessive risk-taking was in the rational self-interest of bank managers given the structure of their monetary incentives. By contrast, some commentators maintain that bankers' incentives "cannot be blamed for the credit crisis or for the performance of banks during that crisis."⁴⁹ These commentators claim that bank CEOs themselves incurred large losses on their holdings of bank shares and options during the crisis and that, in fact, banks whose CEOs were more heavily invested in their banks' shares and options, and hence, whose interests were more closely aligned with shareholders', had on average worse returns.⁵⁰ But these claims, even if true, do not support the conclusion that bankers' incentives did not matter.

Let us begin with the first claim that the large losses suffered by bank CEOs meant that they had the optimal incentives to avoid risks. Bank executives who owned shares and options of their companies suffered losses, in some cases very large losses, when the share price of their companies collapsed. Yet this does not mean that, *ex ante*, these executives had optimal incentives to prevent their banks from taking excessive risks. To be sure, if the losses had been the only possible outcome of the strategy chosen, bank executives would have had every reason

⁴⁸ See STERN & FELDMAN, *supra* note 46, at 9–85 (discussing the theory and empirical evidence of moral hazard engendered by "too big to fail"); Gorton & Winton, *supra* note 19, at 487, 524 (discussing the empirical evidence on the risk-taking incentives engendered by "too big to fail"); David G. Mayes, *An Overview of the Issues*, in WHO PAYS FOR BANK INSOLVENCY? 27, 29 (David G. Mayes & Aarno Liuksila eds., 2004).

⁴⁹ Rüdiger Fahlenbrach & René M. Stulz, *Bank CEO Incentives and the Credit Crisis* 18 (Charles A. Dice Ctr. for Research in Fin. Econ., Working Paper No. 2009-13, 2009), available at <http://ssrn.com/abstract=1439859>.

⁵⁰ *Id.*; see also Floyd Norris, *It May Be Outrageous, but Wall Street Pay Didn't Cause This Crisis*, N.Y. TIMES, July 31, 2009, at B1; Andrea Beltratti & René M. Stulz, *Why Did Some Banks Perform Better During the Credit Crisis? A Cross-Country Study of the Impact of Governance and Regulation* (Nat'l Bureau of Econ. Research, Working Paper No. 15180, 2009), available at <http://www.nber.org/papers/w15180> (empirically arguing that banks with more shareholder-friendly boards performed worse during the financial crisis of 2008–09).

not to choose it. But *ex ante*, the losses that later occurred were only one of a number of possibilities. Bank managers could recognize the possibility of such losses, yet rationally decide that they were outweighed by the possibility of continued profitability of the risky lines of business. Even if it had been certain that a particular business model would collapse eventually, it would not have followed that exiting that business immediately was the optimal thing to do—one could rationally hope to keep making profits for a while longer and still exit before the collapse. The possibility of losses is a normal feature of rational business decisions, and our discussion above has acknowledged such possibilities throughout. The mere fact that a risky strategy turned out to produce losses *ex post* does not mean that it was not rational to follow the strategy *ex ante*.

Let us illustrate the point with a purposefully extreme example. Imagine an individual who is given the opportunity to bet all her wealth on one or more spins of a standard roulette wheel. A rational, risk-averse individual who does not obtain any utility from the act of gambling itself would decline this opportunity: any chance of winning would be counterbalanced by an equally large chance of losing, and a risk averse individual would find such a gamble unattractive.⁵¹ Now imagine a fictitious roulette game with asymmetric payoffs. In particular, imagine that bets on black yield four times the betted amount if successful. *This* bet on black could be attractive even to a rational and (moderately) risk-averse individual. We do not need to resolve here what number of rounds we should expect the individual to play as long as the individual keeps winning, but we would not be surprised to see the individual play one or more rounds. If the individual happened to lose all of her wealth playing this game, we would expect the individual to regret, *ex post*, having made the bet, but we would hardly conclude from the loss of the individual's wealth that this rules out, or is in any way inconsistent with, her choosing rationally to make the bet and her being drawn to it by the asymmetric payoffs.

Therefore, the observation of *ex post* losses from “toxic assets” and other risky investments does not mean that such investments were not, *ex ante*, in the rational self-interest of the bank managers (and shareholders), and that the managers would not made such investments if they had accurately assessed the risks involved. In fact, it is in the nature of the moral hazard problem of banks that the moral hazard becomes visible mainly in situations in which, *ex post*, the

⁵¹ In fact, on a standard roulette wheel, the odds are always slightly less than fair. For example, a bet on red pays twice if successful but the chance of winning is only 18/37, slightly less than one-half.

strategy chosen turned out badly for all parties involved, including the parties responsible for the taking of excessive risks. Moral hazard during the savings and loan crisis of the 1980s came to light when the thrifts involved became insolvent and their shareholders were wiped out. *Ex post*, the risky strategies chosen did not pay off for the shareholders of these thrifts. *Ex ante*, however, the risky strategies were privately optimal for shareholders (although harmful from a social point of view).

Let us now turn to the second claim made in support of the view that executives' incentives have not significantly contributed to the financial crisis of 2008–09: that banks whose executives' incentives were more closely aligned with shareholders' were associated with worse returns during the crisis.⁵² We do not attempt in this paper to assess this empirical evidence, and therefore, do not take a view on whether such an association exists. For the purposes of our analysis, what is critical to observe is that the existence of such an association would not suggest that the distortion on which we focus has not had a substantial effect on executives' risky choices. As we explained in detail above, holdings of shares and options that align executives' interests with shareholders' can produce significant incentives for excessive risk-taking.⁵³ Hence, a finding that banks whose executives' interests were tied more strongly to the value of shares and options took more risks, and consequently suffered greater losses at a time when risky strategies fared badly, is not inconsistent with our analysis.

G. Has the Financial Crisis Eliminated the Problem?

Before proceeding, we would like to comment on the effects of the financial crisis on executives' incentives. It is natural to ask whether the crisis, which has brought so many changes, has also eliminated or reduced the distortions that we have analyzed. The crisis has, of course, considerably changed the economic and regulatory environment in which banks operate, which by itself could affect their future decisions. It is important to recognize, however, that the crisis did not eliminate the identified distortions of bank executives' incentives. If anything, the

⁵² Fahlenbrach & Stulz, *supra* note 49.

⁵³ *See id.* (arguing that “[a] possible explanation for our results is that CEOs with better incentives to maximize shareholder wealth took risks that other CEOs did not. *Ex ante*, these risks looked profitable for shareholders. *Ex post*, these risks had unexpected poor outcomes.”). The finding of Beltratti & Stulz, *supra* note 50, also supports this argument.

distortions resulting from the insulation of executives from losses suffered by preferred shareholders, bondholders, depositors, and taxpayers might have become more significant because the crisis reduced banks' equity, and hence, increased banks' leverage.

The financial and economic crisis of 2008–09 eroded the value of banks' assets, and hence, the capital of banks, with a disproportionate effect on the value of shares in the bank holding companies. For example, the shares of Citigroup lost 94 percent of their value between March 20, 2007 and March 20, 2009.⁵⁴ In that same period, the shares of Bank of America lost 82 percent of their value.⁵⁵ The extent of these losses reflects the high sensitivity of levered equity to asset value changes, which we highlighted repeatedly in our analysis. The value of the banks' assets and of the bonds issued by both banks declined to a much lesser extent.⁵⁶

Since the peak of the crisis in the winter of 2008–09, many banks have raised additional equity capital, some of them with the help of, and under pressure by, the government, and financial markets have partially recovered. The “stress tests” that the U.S. government conducted in the spring of 2009 concluded that the main U.S. banks are adequately capitalized, or require only modest amounts of additional capital, to be able to absorb losses that are expected through the end of 2010.⁵⁷ Nevertheless, the market capitalization of most banks remains well below the levels before the crisis, with the XLF ETF, an exchange-traded index fund covering the financial

⁵⁴ The closing share price of Citigroup on March 20 was \$50.64 in 2007, \$22.50 in 2008, and \$2.62 in 2009. *See* Citigroup Inc., *supra* note 43.

⁵⁵ The closing share price of Bank of America on March 20 was \$50.76 in 2007, \$41.86 in 2008, and \$6.19 in 2009. *See* Bank of America Corp., *supra* note 45.

⁵⁶ *See* Dena Aubin, *Bailout Hopes So Far Limit Citigroup Bonds' Downside*, REUTERS, Jan. 14, 2009, <http://www.reuters.com/article/reutersEdge/idUSN1428588720090114?sp=true> (reporting that Citigroup's bonds lost only 3 to 5 percent in value on 1/14/2009, the same day that Citigroup's shares dropped 22 percent, and that market participants assumed the debt to be paid, if only because of a government bailout). As of March 24, 2009, Citigroup's bonds were trading at discounts of at most 10 percent on their face value (source: Bloomberg bond quotes).

⁵⁷ *See* BD. OF GOVERNORS OF THE FED. RESERVE SYS., THE SUPERVISORY CAPITAL ASSESSMENT PROGRAM: OVERVIEW OF RESULTS (2009), *available at* <http://www.federalreserve.gov/newsevents/bcreg2009507a1.pdf>. It should be noted, however, that some observers questioned whether the criteria applied by regulators to examine the adequacy of banks' capitalization were sufficiently comprehensive and rigorous. *See* CONG. OVERSIGHT PANEL, JUNE OVERSIGHT REPORT: STRESS TESTING AND SHORING UP BANK CAPITAL 4, 33–35 (2009), *available at* <http://www.cop.senate.gov/documents/cop-060909-report.pdf>; Lucian A. Bebchuk, *Toxic Tests*, PROJECT SYNDICATE, June 2009, <http://www.project-syndicate.org/commentary/bebchuk2>.

sector, declining 65% from December 29, 2006 through July 31, 2009.⁵⁸ This partially reflects the fact that the balance sheets of many banks are likely to be not as strong as before the crisis.

To the extent that the value of bank equity remains at reduced levels, it increases the divergence between the interests of executives and the interests of bondholders, depositors, and the government as a guarantor of deposits. As before, the reason is that executives hold common shares in the bank holding company and options on such shares; they are not invested in, and hence, not equally financially motivated to take into account the value of, the debt of their banks. The increased divergence can lead to substantial distortions in decision making, which we describe in the following two sections.

In subsection G.1, we show that the banks' losses, to the extent that they have not been made up by re-capitalizations, have exacerbated the incentives for excessive risk-taking that we described in the previous sections. In subsection G.2, we turn to another effect that, in the winter of 2008–09, and in some banks perhaps still today, seems to outweigh the first one, but which is just as socially undesirable. In the current circumstances, executives may have excessive incentives to avoid raising capital and to return capital to the government, as well as excessive incentives to avoid actions, such as making additional loans or selling toxic assets at discount to face value, that could require the bank to raise additional capital (or prevent it from being able to return capital to the government).

The two distortions we discuss in this section are manifestations of the same underlying problem. Both arise because managers compensated with common shares and options of the bank holding company will seek to maximize value for current common shareholders, rather than the value of the bank assets as a whole. With the erosion of the value of common shares in the bank holding company brought about by the financial crisis, this problem might be more acute than ever.

⁵⁸ See Google Finance, Historical Prices for XLF (Financial Select Sector SPOR(ETF)), <http://www.google.com/finance/historical?cid=700196&startdate=Dec1%2C2006&enddate=Sep1%2C2009&start=690&num=30> (last visited Sept. 1, 2009) (comparing the price at close of business of both days).

1. Excessive Risk-Taking

Let us first consider how the erosion of banks' equity capital affects the problem of excessive risk incentives. Consider the bank in our running example (\$100 assets; \$90 deposits, \$2 bonds, \$8 equity). Suppose that the value of the assets decreases from \$100 to \$96. This decrease reduces the book value of the common shares of the bank holding company from \$8 to \$4. In turn, this reduction decreases the maximum amount that the holding company's common shareholders can lose from taking a risky strategy relative to the situation analyzed earlier. Whereas before the common shareholders would bear the first \$8 of losses, the changes mean that they will now bear losses only up to \$4. This will of course increase their incentive to take excessive risks. They simply have less to lose from making bets. As a result, the range of negative-expected-value bets that would still be in their interest expands.

The effect of a given decline in the value of bank capital on executives' incentives is magnified when the executives hold options. In our example above, imagine that, instead of common shares, managers held options on such shares with a strike price corresponding to an equity value of \$2. As before, imagine that the book value of equity dropped to \$4. If the value of equity drops by another \$2 or more, the options will not pay out anything. Hence, option holders would not internalize any further losses beyond \$2. By contrast, we just saw that common shareholders would internalize further losses up to \$4.

In fact, a decline in the value of common shares caused by bank losses is likely to lead to executives holding a stock of options with strike prices above current stock price ("out-of-the-money options"). This is now a common phenomenon because, at the time of the award, option strike prices were generally set equal or close to the then-current stock price, yet in the crisis, the stock price of bank holding companies has fallen precipitously. For example, the stock options that Bank of America granted its top executives in the years before the crisis have exercise prices between \$42.70 and \$53.85.⁵⁹ As we mentioned above, however, the stock price of Bank of America has dropped dramatically over the last two years, and was, as of September 25, 2009, only \$16.60.⁶⁰ Hence, these options are now deeply out-of-the-money.

⁵⁹ See BANK OF AMERICA CORP., 2009 PROXY STATEMENT 27 (2009), available at http://media.corporate-ir.net/media_files/irol/71/71595/reports/2009_Proxy.pdf (reporting exercise prices of options granted between February 2005 and February 2008).

⁶⁰ See Bank of America Corp., *supra* note 45.

The financial incentives provided by such out-of-the-money options favor very aggressive risks. On the downside, an out-of-the-money option will not pay off at all if the stock price does not increase. Hence, the holder of such an option will be indifferent between a stable stock price and further losses of any magnitude. On the upside, only very large stock price gains will yield a positive payoff for the option holder. In the case of Bank of America, the stock price would have to increase by a factor of over two-and-one half before even the option with the lowest strike price yields a positive payoff. Consequently, the presence of these options gives executives an incentive to favor strategies with large improbable gains over strategies with small probable gains, for small gains would not be able to pull up the stock price above the exercise price of the stock options they have.

2. *Excessive Reluctance to Raise and Deploy Capital*

We now turn to discuss another way in which, particularly at the peak of the crisis in the winter of 2008–09, the divergence between executives' interests and the aggregate interests of those with a stake in the bank may manifest itself. In section G.1, we discussed executives' incentives to accept excessively risky transactions. In this section, we show that executives may also have excessive incentives to avoid raising additional capital, which may inefficiently reduce the availability of credit in the economy.

With their capital depleted through losses, business considerations or banking regulation might force banks to raise new equity if they extend new loans. But the common shareholders of bank holding companies, and executives aligned with their interests, have excessive incentives to avoid raising capital due to what is known in the financial literature as the debt overhang problem.⁶¹ The benefits of infusing new common equity would partly flow to a bank's bondholders and depositors (as well as the government as guarantor of depositors) by providing them with an extra cushion should the bank perform poorly and the existing equity be wiped out. At the same time, the costs of infusing new equity will be borne fully by the existing common shareholders through a dilution of their stake. In other words, raising new common equity capital would confer a positive externality on bondholders and depositors at the expense of current common shareholders. As a result, bank executives will be excessively reluctant to raise new

⁶¹ See generally Stewart C. Myers, *Determinants of Corporate Borrowing*, 5 J. FIN. ECON. 147 (1977).

equity even when doing so might enable them to extend loans that are expected to be profitable (and socially desirable).

Excessive incentives to avoid raising new equity capital also imply excessive eagerness to return to the government capital received under the TARP program in the winter of 2008–09. As of August, 2009, Goldman Sachs, JPMorgan Chase, and a number of other banks have returned funds originally received from the government in December 2008.⁶² Most commentators have argued that these banks were motivated by a desire to avoid the restrictions on executive compensation imposed by the TARP and stimulus bills on recipients of TARP funds.⁶³ We do not disagree with that argument. We also believe, however, that pay arrangements tying executive payoffs to the value of common shares provided executives with excessive incentives to return those funds.

Moreover, the existence of excessive incentives to avoid raising new equity capital, and to return TARP funding, also implies that executives have incentives to make choices that would reduce the likelihood of being forced by regulators to raise new equity capital, or not to be allowed to return TARP funding. For example, executives may excessively avoid deploying cash reserves for new lending. Bank executives might prefer to use these cash reserves as a cushion against possible losses on existing loans and other investments that they may soon incur during these difficult economic times, or that they have already incurred, but so far have not recognized on their balance sheets. In this scenario, even though they technically have sufficient capital to lend now, banks might turn down positive-expected-value lending opportunities in order to protect current common shareholders from dilution in the future.

At first sight, this reluctance to lend might appear to be in tension with the argument that executives' pay structures have provided them, and continue to provide them, with excessive incentives to take risks. It is important to realize, however, that the reluctance to lend does not arise from an aversion to risk per se, but from a desire to avoid being forced to raise new equity capital. Which of the two effects predominates will depend on the entire distribution of possible transactions facing the bank in the foreseeable future. On the one hand, bank executives would have financial incentives to accept a large gamble that would yield large gains for common shareholders if it succeeds and wipe out the bank if it fails, even if the gamble's expected present

⁶² See <http://dealbook.blogs.nytimes.com/2009/06/17/jpmorgan-repays-treasury-as-tarp-exits-continue/>.

⁶³ See *supra* notes 4–6.

value is negative. On the other hand, bank executives would have financial incentives to reject a small gamble, regardless of its expected present value, if the possible upside is not large enough to outweigh the risk of dilution if the gamble fails. The weight attached to the risk of dilution would in turn depend on bank executives' expectation of *other* possibilities to increase the value of equity in the future.

In both cases, bank executives' incentives to choose socially inefficient actions arise from the same fundamental distortion. This distortion is the asymmetry between upside and downside payoffs on which we have been focusing throughout. As we have explained, the common shareholders, and executives aligned with their interests, can expect to capture fully upside gains, but to be limited in their exposure to large downside losses. One way this distortion can manifest itself is excessive risk-taking, which we have discussed in most of this Article. Another way is excessive reluctance to raise new equity capital or to return TARP funds to the government, and excessive incentives to take steps, including sometimes husbanding capital that should be given out in loans that would reduce the likelihood of having to raise such additional capital. The current common shareholders and executives aligned with them have an excessive incentive to avoid raising new capital because they would bear the full cost on the upside—having to share gains with new common shareholders—but would not reap the full benefit on the downside, additional funds being available to creditors in the event of large further losses.

II. THE LIMITS OF CORPORATE GOVERNANCE REFORMS

When compensation arrangements are flawed, it is common to look for agency conflicts between insiders and shareholders as the source of the problem and to corporate governance reforms as the solution. Some of the incentives for excessive risk-taking may be undesirable from the perspective of shareholders. For example, when pay arrangements reward executives for short-term gains, executives may have incentives to seek short-term gains even when doing so may adversely affect the expected long-term value of shareholder interests by creating an excessive risk of an implosion down the road. Thus, it is not surprising that concerns about incentives for risk-taking in banks have led legislators and regulators to adopt or seriously to consider measures aimed at improving internal governance arrangements and preventing deviation of such arrangements from shareholder interests. We discuss below three corporate

governance measures put forward by legislators and regulators in the United States and elsewhere: (1) encouraging the use of restricted stock; (2) providing “say-on-pay” shareholder votes; and (3) bolstering the role and independence of directors.

As we will explain, however, none of these governance reforms addresses the problems identified and analyzed in this paper; in fact, such reforms may exacerbate those problems. The reforms address a divergence of interest between management and shareholders. Outside the financial sector, this is indeed the main concern in the field of executive compensation, and government intervention should focus on ensuring the adequacy of internal governance arrangements and the protection of shareholder rights, leaving choices of substantive pay arrangements to shareholders and directors elected by them.⁶⁴ In the financial sector, however, the problems that we identified above result precisely from the fact that shareholders have an interest in taking more risks than is socially desirable – and that the interests of shareholders may be served by providing executives with incentives to take such risks.

Consequently, conventional corporate governance measures aiming to align management with shareholders are not an appropriate solution to the problems on which we focus and may in some cases even make matters worse. To be sure, governance reforms may have some beneficial effects even in the financial sector: such reforms can bring about an elimination of risk-taking incentives that are excessive even from the perspective of shareholders. But governance reforms cannot be relied on to eliminate excessive risk-taking, because they cannot be expected to eliminate incentives to take risks that would be excessive from a social perspective but not from shareholders’ perspective.

A. Mandating the Use of Restricted Stock?

The stimulus bill requires that incentive compensation for top officers and employees of TARP recipients must be exclusively in long-term restricted common stock.⁶⁵ Can the use of restricted common stock be relied on to eliminate incentives for excessive risk taking? Not at all.

⁶⁴ See generally BEBCHUK & FRIED, *supra* note 2 (discussing why governance reforms are the best way for dealing with executive compensation flaws in general).

⁶⁵ See 12 U.S.C. § 5221(b)(3)(D)(i) (2009) (codifying the EESA and incorporating amendments pursuant to the American Recovery and Reinvestment Act of 2009). Treasury guidelines issued under the original EESA in February 2009 had imposed slightly less stringent rules; in particular, they allowed most TARP recipients to opt out of this requirement. See Press Release, *supra* note 6.

To be sure, restricted common stock does not involve the extra problems resulting from the use of options discussed above. And to the extent that selling the shares or otherwise offloading the economic interest in their value is restricted,⁶⁶ this might address the problems discussed by other works concerning the short-horizon distortions arising from the freedom to cash equity-based compensation before long-term results are realized.⁶⁷ But the analysis in this paper has shown that, even assuming there is only one period at the end of which results are realized, the use of restricted common stock in bank holding companies provides incentives to take excessive risks.

Even when the market capitalization of bank holding companies is substantial, tying executive payoffs to the value of the common shares of the holding companies links the payoffs of executives to a limited part of the capital invested in the operating banks. In the running example used in the Article, the executives' position in the bank's assets was levered by 92 percent when putting together the claims of depositors and debt-holders at the levels of the bank and the bank holding company. To the extent that the crisis has significantly reduced the book value of the common shares in a bank holding company, restricted stock could tie executive payoffs to an even more highly levered bet on the value of the assets of the bank, and thus, give executives highly distorted incentives.

One way of seeing the flaw in using restricted common shares in bank holding companies as the exclusive instrument of incentive pay is by considering the case of banks in which the government holds preferred shares it has received in return for its TARP funding. Because the common shareholders have claims that are junior to those of preferred shareholders, the common shareholders would benefit from taking more risks than would be in the interest of preferred shareholders. Thus, a government mandate to use restricted common shares could induce executives to deviate from the course of action that would best protect the interests of the government as preferred shareholder. More generally, the use of restricted common stock provides executives with incentives to take risks that are desirable from the perspective of

⁶⁶ The statute requires that the long-term restricted stock not fully vest during the time that the company owes TARP money to the government. *See* 12 U.S.C. § 5221(b)(3)(D)(i)(I) (2009). Similarly, the Treasury guidelines require that restricted stock awards to senior executives of companies receiving "exceptional assistance" vest only after the government has been paid back in full with interest. *See* Press Release, *supra* note 6.

⁶⁷ *See supra* notes 2–3 and accompanying text.

shareholders, but excessive once potential losses to preferred shareholders, bondholders, depositors, and taxpayers are taken into account.

B. Say-on-Pay?

The stimulus bill also requires all TARP recipients to submit their executive compensation arrangements to advisory “say-on-pay” votes by common shareholders.⁶⁸ A bill recently passed by the House of Representatives would extend this requirement to all publicly traded firms.⁶⁹

In our view, say-on-pay votes can provide some benefits to common shareholders in publicly traded companies, and one of us testified in Congress in favor of introducing such votes.⁷⁰ Say-on-pay votes might make directors somewhat more attentive to common shareholder views on pay arrangements and might deter some egregious compensation arrangements. But even though advisory shareholder votes may produce some benefits for shareholders, they cannot be expected to address the problems on which we focus. In the case of banks, making directors more attentive to common shareholder views, and thereby making pay arrangements somewhat more aligned with common shareholder interests, cannot be relied on to eliminate incentives to take excessive risks.⁷¹

As we have stressed throughout, a major source of incentives to take excessive risks arises from the fact that bank executives’ pay structures expose them to the upside that taking risks produces for common shareholders, but not to the downside that doing so creates for preferred shareholders, bondholders, depositors, and taxpayers. Making executive pay more responsive to the preferences of common shareholders cannot be expected to produce incentives to take into account the interests of preferred shareholders, bondholders, and depositors.

⁶⁸ See 12 U.S.C. § 5221(e) (2009). The Treasury guidelines already contained a similar requirement for recipients of exceptional TARP assistance. See Press Release, *supra* note 6.

⁶⁹ See Corporate and Financial Institution Compensation Fairness Act of 2009, H.R. 3269, 111th Cong. § 2 (as passed by House, July 31, 2009).

⁷⁰ See *Empowering Shareholders on Executive Compensation: Hearing Before the H. Comm. on Financial Servs.*, 110th Cong. (2007) (written statement of Lucian A. Bebchuk et al., Professor, Harvard Law School), available at http://www.law.harvard.edu/faculty/bebchuk/pdfs/2007_HFSC.pdf.

⁷¹ Cf. Jeffrey N. Gordon, “Say on Pay”: *Cautionary Notes on the U.K. Experience and the Case for Shareholder Opt-In*, 46 HARV. J. ON LEGIS. 323, 365 (forthcoming 2009) (arguing that shareholders will not take into account, and hence will not eliminate, the systemic risk resulting from their compensation decisions).

Indeed, as we have seen, the common shareholders of the bank holding companies, especially under current circumstances, will benefit from taking excessive risks and have an interest in encouraging executives to take such risks. Empirical studies have documented that bank executives take more risks when they have more powerful incentives to increase share value.⁷² Thus, simply because shareholders of bank holding companies voted in favor of a pay structure, and those pay structures might consequently be set with the prospect of such a vote, does not indicate that pay structures will avoid incentives that encourage excessive risk-taking.

C. Strengthening Directors' Role and Independence?

Legislators and regulators have also put forward measures for bolstering the role and independence of directors in setting executive pay arrangements. Recent enhancements to the Basel II framework for banking supervision require the involvement of expert, independent directors in the design and operation of banks' compensation policies.⁷³ Prompted by the crisis, the U.S. administration urged steps to bolster the independence of compensation committees,⁷⁴ and the House of Representatives responded by passing legislation requiring compensation committees of publicly traded companies to be independent and to have the necessary resources and support to carry out their role.⁷⁵

Like the introduction of say-on-pay votes, bolstering the independence of compensation committees would provide positive though modest benefits for shareholders. The administration's press release recommending such measures cites empirical studies indicating that independent compensation committees are associated with a lower incidence of option backdating and that independent audit committees are associated with less earnings management.⁷⁶ On the other hand, the effectiveness of independent directors in benefitting

⁷² See *supra* note 35.

⁷³ See BASEL COMM. ON BANKING SUPERVISION, *supra* note 9, at 26. Non-binding recommendations to this effect were already contained in BASEL COMM. ON BANKING SUPERVISION, ENHANCING CORPORATE GOVERNANCE FOR BANKING ORGANISATIONS 14–15 (2006).

⁷⁴ See Press Release, *supra* note 1.

⁷⁵ See Corporate and Financial Institution Compensation Fairness Act of 2009, H.R. 3269, 111th Cong. § 3 (as passed by House, July 31, 2009).

⁷⁶ See Press Release, U.S. Dep't of Treasury, Fact Sheet: Administration's Regulatory Reform Agenda Moves Forward: New Independence for Compensation Committees (July 16, 2009), *available at* <http://www.treas.gov/press/releases/tg218.htm> (citing Lucian Bebchuk et al., *Lucky CEOs and Lucky*

shareholder interests may be limited because independence rules out some bad motives but it does not provide directors with strong affirmative incentives to focus on shareholder interests.⁷⁷

More importantly for our purposes, however, even if strengthened director oversight and independence contribute to aligning pay structures with shareholder interests, they cannot be expected to eliminate the excessive risk-taking incentives on which we focus. Such measures do nothing to inject the interests of stakeholders other than shareholders into the compensation setting process. Even in the ideal model, independent directors are elected by and represent shareholders who, as we have repeatedly emphasized, have incentives to take higher risks than would be socially optimal.⁷⁸ Consequently, independent compensation committees cannot be expected to provide executives with risk-taking incentives that are socially optimal.

III. TOWARD REGULATING BANKERS' PAY

In Parts I and II, we laid out the problems inherent in current executive pay arrangements in banks. Deposit insurance and “too big to fail” policies create the standard moral hazard problem—an incentive for common shareholders of the bank to gamble with the bank’s assets at the expense of the government. Significantly, the common shareholders include the bank’s management because executive positions are paid with common shares. In fact, the standard structure of modern banks and of bankers’ pay provides management with incentives to engage in excessive risk-taking even beyond what is suggested by the standard moral hazard problem. Moreover, the decline in the value of banks’ assets in the current crisis could well have made the moral hazard problem even worse. And, legislative and regulatory reforms that seek to address corporate governance problems and prevent deviations of pay arrangements from shareholder interests cannot deal effectively with these skewed incentives for risk-taking.

Directors J. FIN. (forthcoming) and April Klein, *Audit Committees, Board of Director Characteristics, and Earnings Management* (N.Y. Univ., Law & Economics Research Paper, Paper No. 06-42, 2006).

⁷⁷ For a detailed argument along these lines, see BEBCHUK & FRIED, *supra* note 2, ch. 16.

⁷⁸ Some believe that as long as shareholder influence is not excessive, boards will and should pursue the interests of stakeholders as a whole, rather than just shareholders. *See, e.g.*, Margaret M. Blair & Lynn A. Stout, *A Team Production Theory of Corporate Law*, 85 VA. L. REV. 247, 320–23 (1999). It is not at all clear, however, why boards would have an incentive to do so. *See, e.g.*, Lucian A. Bebchuk, *The Case for Increasing Shareholder Power*, 118 HARV. L. REV. 833, 909–912 (2005).

In this Part, we present and develop the case for regulating bankers' pay as part of banking regulation.⁷⁹ In section A, we consider the traditional approach to banking regulation, which attempts to address the moral hazard problem by restricting the menu of choices available to banks. We highlight the limitations of this approach and show that it can be usefully complemented by regulating the incentives of those making the choices from the menu. In section B, we discuss in more detail the forms that such regulation of incentives should take. At a minimum, bank regulators should monitor the incentives of the banks' top management team. In addition, we argue that it might be desirable for regulators to encourage, or even require, the use of certain pay structures, as well as to prohibit, or at least discourage, certain others. Finally, in section C, we emphasize the complementary nature of regulation of bankers' pay and the traditional approach of directly regulating banks' actions. Optimal regulation should combine both approaches.

As noted already in the introduction, legislators and regulators, both in the United States and around the world, are now moving toward adopting direct regulations of bankers' pay, with recent moves in this direction by, among others, the U.S. House of Representatives, the Financial Services Authority of the United Kingdom, and the Basel Committee on Banking Supervision.⁸⁰ In our view, these efforts will benefit from recognizing that the central basis for such regulation is the very same moral hazard problem between common shareholders and taxpayers that provides a basis for the standard prudential regulation of banks.

Presently, attempts and proposals to regulate bankers' pay seem to be partly motivated by concerns that corporate governance problems in banks may lead to the adoption of pay arrangements that do not serve the interests of common shareholders. When designing the bill authorizing regulation of bankers' pay, members of the House Financial Services Committee paid close attention to corporate governance problems, and the authorization is part of a bill that focuses on corporate governance reforms.⁸¹ The Basel Committee on Banking Supervision's recent "Enhancements to the Basel II Framework" stresses the importance of banks' internal

⁷⁹ Prior proposals to include executive compensation within the ambit of banking regulation include Kose John et al., *A Theory of Bank Regulation and Management Compensation*, 13 REV. FIN. STUD. 95, 96 (2000).

⁸⁰ See *supra* notes 8–9, 12 and accompanying text.

⁸¹ See Corporate and Financial Institution Compensation Fairness Act of 2009, H.R. 3269, 111th Cong. §§ 2–3 (as passed by House, July 31, 2009).

governance processes, including adequate involvement of shareholders and their boards in determining the pay of senior executives.⁸² Similarly, when introducing its new Remuneration Code, the British Financial Services Authority stressed “the vital importance of the role of shareholders in monitoring and controlling remuneration risks.”⁸³ The reports of both the Basel committee and the British Financial Services Authority fail to recognize and adequately take into account that boards fully dedicated and attentive to common shareholder interests cannot be counted on to eliminate incentives for excessive risk-taking – in the same way that, absent regulation, such boards cannot be counted on to avoid excessive risks in deciding how much capital to maintain and how to invest the bank’s assets.

In our view, even if executive pay arrangements were perfectly aligned with common shareholder interests, there would still be a strong basis for monitoring and regulating executive pay in banks. Consider a bank that is fully owned by a single shareholder that sets compensation arrangements to maximize long-term share value. Despite the absence of any agency problems in this bank, recognizing that the shareholder’s decisions might be affected by moral hazard, we would not want to exempt this bank from the traditional prudential regulation that prevents it from making lending, investment, and capital reserves decisions that would create excessive risks from a societal perspective. We argue that, despite the absence of any governance concerns, such a bank should similarly be subject to regulations of their compensation structures. Thus, for banks in general, improvements in corporate governance and reduction in agency problems do not eliminate the value of pay regulation in the same way that they do not obviate the need for the traditional prudential regulation.

⁸² See BASEL COMM.ON BANKING SUPERVISION, *supra* note 9, at 26–27. The last principle requires banks to provide “comprehensive and timely information about their compensation practices to facilitate constructive engagement by all stakeholders,” but adds that this “includ[es] *in particular shareholders.*” *Id.* at 27 (emphasis added); see also FIN. STABILITY FORUM, FSF PRINCIPLES FOR SOUND COMPENSATION PRACTICES (2009), available at http://www.financialstabilityboard.org/publications/r_0904b.pdf (expanding on these principles and relied upon by the Basel Committee in proposing its enhancements).

⁸³ FIN. SERVS. AUTH., REFORMING REMUNERATION PRACTICES IN FINANCIAL SERVICES ¶ 1.24 (2009), available at http://www.fsa.gov.uk/Pages/Library/Policy/Policy/2009/09_15.shtml.

A. Going Beyond Prudential Regulation

There is a substantial body of regulation—both in the United States and in other countries around the world—that attempts to deal with the moral hazard problem of banks.⁸⁴ This large body of regulation addresses bank behavior directly. It prevents banks from taking certain actions, such as making certain investments or loans that are deemed too risky given the banks’ capital and portfolio, and it requires them to take certain other actions, such as maintaining certain amounts of capital. Banking regulators monitor banks’ activities and capital reserves to enforce these criteria. In other words, this body of regulations attempts to limit the choices available to banks in order to preclude socially inefficient choices. The sweeping “Framework for Regulatory Reform” recently announced by the Treasury remains firmly within that paradigm.⁸⁵

Although the traditional approach of limiting banks’ choices can improve matters, it is fraught with well-known difficulties and consequently cannot be relied on to eliminate moral hazard problems. The regulation needs to rule out socially inefficient choices, but should not restrain socially efficient ones.⁸⁶ Discriminating between the two is hard. In particular, determining the riskiness of a bank’s asset pool and the corresponding appropriate level of capital requires not only an extremely sophisticated understanding of risk modeling, but also intimate knowledge of the bank’s portfolio of contracts, securities, and other assets. As outsiders, regulators are bound to be at an information disadvantage vis-à-vis bank executives.⁸⁷ In

⁸⁴ On the international level, the current relevant regulation is contained in the revised Basel accord (Basel II). See BASEL COMM. ON BANKING SUPERVISION, *supra* note 22; see also MALLOY, *supra* note 22 (providing an historical overview, explanations of the main features, and possible extensions of the Basel accord); LAURENT BALTHAZAR, FROM BASEL 1 TO BASEL 3: THE INTEGRATION OF STATE-OF-THE-ART RISK MODELING IN BANKING REGULATION (2006) (same). For the United States regulation on bank holding companies, see Bank Holding Companies and Change in Bank Control (Regulation Y), 12 C.F.R. § 225 (2009).

⁸⁵ Press Release, U.S. Dep’t of the Treasury, Press Release of March 26, 2009, Treasury Outlines Framework for Regulatory Reform (Mar. 26 2009), *available at* <http://www.treasury.gov/press/releases/tg72.htm>; see also Press Release, *supra* note 7 (mentioning managing “systemic risk,” “protecting consumers and investors,” “eliminating gaps in [the] regulatory structure,” and “fostering international coordination,” but not executive compensation, as crucial tools of regulatory reform).

⁸⁶ See, e.g., PADOA-SCHIOPPA, *supra* note 21, at 2–3 .

⁸⁷ See, e.g., Charles W. Calomiris, *Financial Innovation, Regulation, and Reform*, 29 CATO J. 65, 65–66, 71–72 (describing the bank practice of keeping risks off balance sheets and gaming risk regulation by

practice, regulators often lag behind the banks in their capacity to process the information that they receive.⁸⁸ These difficulties have increased with the growth of financial institutions, such as the rise of national banks and their integration into financial conglomerates through bank holding companies.⁸⁹ Importantly, the incentives are such that banks can be expected to seek ways to get around regulations and take risks beyond the level sought by regulators.⁹⁰

In principle, regulatory agencies and commentators understand the nature of this “game” between banks and their regulators and the resulting imperfections of traditional regulation very well. But they have paid insufficient attention to the crucial role of executive compensation in this game. Compensation structures shape the incentives of those actually making the decisions on behalf of banks, namely bank executives. Pay structures that provides executives with powerful incentives to take risks, as current executive pay structures do, incentivizes managers to work against the goals of prudential regulation.

At a minimum, banking regulators should monitor the strength of these incentives to take risks as part of the regulators’ overall risk monitoring. Moreover, regulators should consider regulating executive compensation in banks to eliminate incentives to take risks that are inconsistent with the goals of prudential regulation. In this way, banking regulation might be able to harness bank executives’ information and expertise and thereby make executives work for, not against, the goals of banking regulation.

encouraging inflated debt ratings by credit rating agencies); Henry T.C. Hu, *Misunderstood Derivatives: The Causes of Informational Failure and the Promise of Regulatory Incrementalism*, 102 YALE L.J. 1457, 1463 (1993) [hereinafter Hu, *Misunderstood Derivatives*] (“Observers agree that regulators know less than the bankers, and that they know too little.”); Henry T.C. Hu, *Swaps, the Modern Process of Financial Innovation and the Vulnerability of a Regulatory Paradigm*, 138 U. PA. L. REV. 333, 392–412 (1989) [hereinafter Hu, *Swaps*] (noting that financial innovations often cross existing regulatory classifications, and that such innovations present obstacles for less sophisticated regulators who face significant “information lags”).

⁸⁸ See, e.g., James R. Barth et al., *Reassessing the Rationale and Practice of Bank Regulation and Supervision after Basel II*, in 5 CURRENT DEVELOPMENTS IN MONETARY AND FINANCIAL LAW 225, 227 (2008) (noting that “[m]ost supervisory agencies will never have sufficient human capital or budgets to implement Basel II successfully”); Hu, *Swaps*, *supra* note 87, at 395–96.

⁸⁹ See, e.g., BD. OF GOVERNORS OF THE FED. RESERVE SYS., STAFF STUDY 172—USING SUBORDINATED DEBT AS AN INSTRUMENT OF MARKET DISCIPLINE 1 (1999); see also Philip A. Wellons, *Enforcement of Risk-Based Capital Rules*, in CAPITAL ADEQUACY BEYOND BASEL, *supra* note 25, at 284 (reporting “very low levels of enforcement of capital requirements in the United States between 1993 and 2001, particularly for larger firms,” but noting that “this may result from the fact that such firms are adequately capitalized”).

⁹⁰ See generally Calomiris, *supra* note 87.

We discuss how regulators should monitor and restrict bankers' pay in some detail in the following section. Here we want to emphasize how regulating bankers' pay differs conceptually from the traditional forms of banking regulation. While traditional banking regulation regulates and monitors the menu of choices available to bank executives, pay regulation would focus on the incentives shaping how bank executives make choices from this menu. As will be discussed further in section C below, both approaches can complement each other and work together to reduce the incidence of excessive risk-taking.

Even though the traditional focus of bank regulators and banking scholars has been on the moral hazard problem between shareholders and the government, the crucial decision-makers in many banks are executives whose incentives are substantially influenced by pay arrangements. The importance of executives' incentives is confirmed by the evidence that banks whose managers have weaker incentives to serve shareholder interests take less risk.⁹¹ Given the importance of these incentives, monitoring and regulating them can provide regulators with an additional and important instrument.

B. Monitoring and Regulating Bankers' Pay

We now discuss in more detail how banking regulators should take into account executive pay arrangements. At a minimum, banking regulators should monitor existing pay arrangements to identify those that would reward executives for excessive risk-taking. We discuss this strategy in subsection 1. We discuss the possibility of regulating pay arrangements directly in subsection 2.

1. Monitoring Incentives

To begin, in the same way that regulators already monitor banks' balance sheets and portfolios, regulators should also monitor and assess executives' pay packages, including option and stock holdings from years past. Such monitoring and assessment is important for evaluating the risks posed by the bank. We have seen that pay arrangements can provide powerful

⁹¹ See *supra* note 35. More generally, much of corporate governance research is concerned with the problem that managers will *not* implement shareholders' wishes, a problem first clearly articulated in Jensen & Meckling, *supra* note 19, at 312–30 (calling this the “agency cost of outside equity”).

incentives for excessive risk-taking. Hence, regulators need to understand these arrangements, and they should ring the alarm bell when encountering arrangements that encourage excessive risks.⁹² In the future, monitoring executives' incentive structures should be a part of regulators' standard procedure.

Our earlier analysis of the leveraged moral hazard problem suggests aspects of pay structures that regulators would do well to monitor. We have seen that the problem results from executives' insulation from downside risk, which depends on the amount of debt at various levels of the banking organization, the amount of shares and options held by or promised to the executive, and the strike price of options, if any. Regulators already possess information on the level of debt and can easily obtain information on shares and options held by executives. From this information, regulators can calculate the sensitivity of executive pay to value increases and decreases of the assets of the bank and the bank holding company.

If the executive's pay sensitivity is too asymmetric—that is, if the executive is too protected from downside risk—regulators should upwardly adjust their assessment of the risks posed by the bank. Such upward adjustment of risks may lead regulators to take the steps that they would take when making such an upward adjustment for other reasons (for example, an increase in the perceived risk of a bank's loan pool). Regulators could, for example, demand additional reassurance from the bank in the form of additional capital or otherwise. Regulators already wield significant powers to intervene when they detect a danger to the safety and soundness of a banking institution. They should also look to executive pay arrangements in determining whether and to what extent such a danger exists.

2. *Regulating Incentives*

We now turn to the possibility of directly regulating executive pay arrangements, or at least encouraging or discouraging certain arrangements. Such regulation should seek to limit the

⁹² Some commentators have proposed adjusting FDIC premia in relation to the bank's executive compensation formula, and argue that this approach can achieve the socially optimal level of risk-taking. See John et al., *supra* note 79, at 98. The commentators emphasize that their proposal would require “*no direct or mandatory regulation of management compensation*,” *id.* at 122 (emphasis in original). To implement this approach, however, the FDIC would have to have knowledge of the distribution of possible returns for possible loans of the bank (in other words, repayment rates) (*id.* at 113), which the FDIC is unlikely to be able to acquire.

extent to which bank executives face asymmetric payoffs when considering options that have both an upside and a downside. Putting forward a comprehensive and detailed blueprint for such regulation is beyond the scope of this paper. What we would like to do, however, is to outline directions that such regulation should take, and thereby, provide a basis for subsequent discussions of the subject.

It is most straightforward to describe the direction we suggest when executives' payoffs are linked to the value of specified securities. At present, executives' payoffs are linked only to equity, or even a levered bet on equity to the extent they are granted options rather than straight equity. To encourage more prudent decision making, bank executives' equity-based compensation could be replaced with compensation based on the value of a broader basket of securities representing a larger part of the corporate pie. To begin, now that the government has become a major investor in many banks in which it holds preferred stock, it naturally has an interest in having executives' payoffs also linked to the value of preferred stock. For example, instead of tying executives' compensation to the value of a specified percentage of the common shares, executives' compensation could be tied to the value of a specified percentage of the value of the common shares and the preferred shares.

More generally, executives' payoffs could be tied to an even broader basket of securities than common shares and preferred shares. In particular, executives' payoffs could be tied to a set percentage of the aggregate value of common shares, preferred shares, and all outstanding bonds. Because such a compensation structure would expose executives to a broader fraction of the negative consequences of risks taken, it will reduce their incentives to take excessive risks.

Indeed, even the above structure would not lead bank executives to internalize and take into account fully the adverse consequences that risk-taking might have for the interests of the government as guarantor of deposits. To do so, it would be necessary to broaden further the set of positions to which aggregate value executive payoffs are tied, and it would be worth considering how this can be done best. One could consider, for example, schemes in which executive payoffs are tied not to a given percentage of the aggregate value of the bank's common shares, preferred shares, and bonds at a specified point in time, but rather to this aggregate value minus any payments made by the government to the bank's depositors, as well as other payments made by the government in support of the bank, during the period ending at the specified time. Alternatively, one could consider tying executive payoffs to the aggregate value of the bank's

common shares, preferred shares, and bonds at the specified time minus the expected value of future government payments as proxied by the product of (i) the implied probability of default inferred from the price of credit default swaps at the specified time, and (ii) the value of the bank's deposits at that time. Until an effective way for taking into account the consequences that risk-taking might have for the interests of the government as guarantor of deposits is identified, however, tying executive pay to the aggregate value of common shares, preferred shares, and bonds will already produce a significant improvement in incentives compared with existing arrangements.

Similarly, to the extent that executives receive bonus compensation that is tied to specified accounting measures, it could instead be tied to broader measures. For example, the bonus compensation of some bank executives has been based on accounting measures that are of interest primarily to common shareholders, such as return on equity or earning per common share. Our analysis of the distortions arising from such exclusive alignment with shareholder interests suggests that it would be worthwhile to consider basing bonus compensation on broader measures such as earnings before any payments made to bondholders.

One might wonder how our argument relates to the widespread view, which we share, that, in general, executive pay arrangements should be designed with a focus on aligning the interests of executives with those of shareholders.⁹³ In our view, banks present a special case because, given the systemic costs of bank failure and the government's guarantee of bank deposits, a body of regulation is in place to limit stockholders from making business decisions that would serve their interests but produce excessive risks and impose an externality. Because regulating executive pay can improve the effectiveness of banking regulation in achieving its widely accepted goals, it could be appropriate to constrain banks' freedom to set pay structures while not imposing such constraints outside the banking sector.⁹⁴

⁹³ One of us has written extensively on how executive compensation should be best designed to align executives' and shareholders' interests. *See supra* notes 2–3, 34.

⁹⁴ While shareholders of firms outside the banking sector (or directors elected by such shareholders) should not be constrained by regulators in setting the structure of executive pay arrangements, firms seeking to reduce their borrowing costs should be free, of course, to agree to covenants that require them to tie executive pay to the value of the firm's debt securities. For theoretical analyses of whether and when such covenants could be efficient, see David Hirshleifer & Anjan Thakor, *Managerial Conservatism, Project Choice, and Debt*, 5 REV. FIN. STUD. 437 (1992); Teresa John & Kose John, *Top-*

We expect that any regulation of executive pay would be viewed by some as excessive interference. Optimal setting of executive pay arrangements requires substantial information, it might be argued, and such decisions should therefore be left to private decisions by the banks themselves. For banks, however, interference in business decisions is already commonplace under existing regulation and is viewed as justified by the fundamental moral hazard problem between shareholders and the government. Banking regulators already regulate decisions with respect to banks' capital and investments that are probably as, or even more, information sensitive as decisions concerning executive pay. Furthermore, regulation of compensation structures could well take the form of setting some limits and principles while still leaving banks with significant discretion. In addition, regulating bankers' pay structures might allow regulators to be less tough in other areas of banking regulation. Overall, well-designed regulations of bankers' pay would not be an excessive intrusion into decision-making by private business firms.

Finally, we recognize that shareholders have means of influencing executives other than explicit pay packages. For example, even when executive pay in banks is regulated, shareholders vote on the election of the directors who appoint and fire bank executives, and this voting power may by itself lead executives to give some weight to shareholders' preferences. However, that executives may have other sources of incentives to take excessive risks to benefit common shareholders hardly implies that it would be undesirable to place limits on the extent to which pay arrangements provide executives with such incentives; such limits would at least move us in the right direction.

C. Combining Old and New Tools

In section A, we briefly reviewed the traditional approach to banking regulation, which monitors and restricts the menu of choices available to banks. In section B, we argued for supplementing it with regulation of the compensation structures that provide incentives to bank executives who choose from this menu. Here, we conclude this Part by offering additional comments on the complementary relationship between the two approaches.

Management Compensation and Capital Structure, 48 J. FIN. 949 (1993); Alex Edmans, *Inside Debt* (Wharton Sch., Univ. of Pa., Working Paper, 2008), available at <http://ssrn.com/abstract=758508>.

As we have seen, both approaches are imperfect. The traditional approach leaves banks and their executives with incentives to find ways to circumvent the regulations without breaking them, while regulators struggle to understand what exactly the banks are doing and how to evaluate the ensuing risks. And we recognize that monitoring and regulating pay structures can be expected to be imperfect as well.

Therefore, it might be optimal in many cases to utilize and combine elements of both approaches. Regulators could focus both on the menu of choices available to banks and on the incentives influencing the choices from that menu. The two approaches may reinforce each other and work together to protect the safety and soundness of banks. At the same time, adding pay regulation to the traditional approach does not necessarily mean that banking regulation should or will become more stringent overall. Adding a new tool allows less frequent or less constraining use of other tools.

As explained in section B.1 above, if banks remain completely unconstrained in their choices of compensation structures, monitoring pay structures pay should play an important role in determining the appropriate capital and other regulatory requirements specific to each institution,. This does not mean that capital or other traditional regulation should become tougher across the board; rather, information about pay structures should be used to produce a better fit between regulatory requirements and the risks posed by individual banks.

Conversely, when bank regulators ensure or at least verify that compensation structures do not provide strong incentives to take risks, banks can be given more discretion to make choices. We do not believe that regulating executives' incentives alone would be sufficient to ensure the soundness of financial institutions and would not obviate the need for substantial direct regulation of banks' actions. But, we do believe that, with experience, banking regulators may sometimes be able to reduce traditional regulation of the menu of actions when bank executives' incentives are more in line with the regulation's goals. More importantly, combining traditional direct regulation of banks' actions and activities with regulation of bank executives' pay structures may well improve the overall effectiveness of banking regulation. It would thus contribute to securing the safety and soundness of the banking sector.

IV. CONCLUSION

This paper has identified some key factors that have provided bank executives with excessive incentives to take risks. It has also shown that these factors are still present and that corporate governance reforms aimed at tightening the link between compensation structures and shareholder interests cannot eliminate them. Furthermore, it has identified the changes in compensation structures that can address the identified source of excessive incentives for risk-taking.

Looking beyond the current crisis, the paper has put forward a normative foundation and a conceptual framework for regulating bank executives' pay. Monitoring and regulating bank executives' compensation—along the lines we have put forward—can constitute a valuable component of financial regulation and can complement nicely the monitoring and regulation of banks' investment, lending, and capital decisions. We hope that our analysis will contribute to ensuring that bank executives do not have incentives to take excessive risks.