Executive Retirement Pay and Incentives

EXECUTIVE RETIREMENT PAY AND INCENTIVES

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Abstract

There are two competing theories of why public company executives receive generous retirement payments. One is that retirement pay is more attractive to executives than regular pay because it is easier to hide from shareholders. The other is that retirement pay aligns executives' interests with those of long-term creditors, since the executive will not receive these payments if the firm goes bankrupt. The latter view depends on the assumption that retirement payments do, in fact, put the executive in a similar contractual position as the company's creditors. Yet no previous work has closely evaluated that assumption.

This Article provides the first systematic study of the contractual structure of executive retirement pay. Using data on these payments for thousands of executives, we show that a significant number link the value of their retirement pay to the company's stock price and receive the bulk of these payments immediately following their departure—features inconsistent with the incentive-alignment view of retirement pay. The evidence also shows that much of the value of this pay is undisclosed. Lawmakers should require companies to disclose the structure and magnitude of retirement pay, and future work should take careful account of contractual details that govern the incentive effects of these payments.

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INTRODUCTION

Top executives at public companies receive a significant amount of their overall compensation in the form of retirement pay. Academics have

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vociferously debated two competing explanations for these arrangements. Some argue that, because retirement pay is easier to hide from public view than other forms of executive compensation, the payments reflect executives' influence over the directors who set their pay, allowing pliant directors to convey significant compensation in a fashion not transparent to investors. Academics on the other side of the debate are more optimistic: promised retirement benefits are, they argue, just like unsecured debt, and thus align the interests of executives with those of the company's long-term creditors. And, especially since the recent financial crisis, anything that dampens the risk-taking incentives of top managers seems like a good idea. But this view depends critically on the assumption that retirement payments do, in fact, place executives in the same position as the company's creditors. No previous study has, however, tested these competing theories by closely examining the contractual structure of executive retirement payments.

This Article provides the first systematic empirical study of the structure of executive retirement pay at public companies. The evidence shows that the incentive effects of executive retirement pay are far more nuanced than previous work has suggested.

First, a large proportion of executive retirement pay is invested in company stock. Indeed, our data suggest that the retirement payments of more than one out of three executives are invested entirely in the company's stock. Such payments, which have previously been thought to provide executives with exposure to the company's debt, are actually functionally equivalent to stock-based pay instead. By treating these payments as debt rather than equity, we show, prior research has erred in evaluating the incentive effects of retirement pay.

Second, the evidence shows that most executives receive the bulk of their retirement payments immediately after they leave the firm. More than 20% of executives receive all of their payments in the year that they

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depart, and the median executive receives the entirety of her retirement pay within three years. Such pay is thus unlikely to align the interests of executives and long-term creditors. Moreover, executives who receive these payments quickly are employed by firms with higher levels of risk.

Third, we explain that even executives who plan to receive their retirement pay over time are often able to accelerate those payments. Thus, executives who face the risk that their payments will be reduced due to insolvency can be expected to accelerate their payments and avoid the losses that other creditors will suffer if the firm enters bankruptcy.

Finally, we find that retirement pay conveys significant amounts of undisclosed compensation to executives, providing support for commentators who argue that these payments reflect managerial influence. We conservatively estimate that the executives in our study received approximately $400 million in undisclosed pay through their retirement arrangements between 2006 and 2011.

The study points to lessons for both policymakers and commentators concerned about the incentive implications of retirement pay. Existing disclosure rules should be amended to give investors the information they need to evaluate these payments. Financial-sector regulators should not rely on retirement benefits to reduce banker appetite for risk without a more complete understanding of incentive effects. And future work examining whether retirement pay reflects managerial influence or incentive alignment would benefit by distinguishing these payments on the basis of their contractual structure.

The remainder of the Article proceeds as follows. Part I summarizes the two competing theories of executive retirement pay. Part II describes the data we used to conduct the first systematic study of the structure of these payments. Part III presents our findings. Part IV offers implications for lawmakers and commentators. Part V concludes.

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I. CURRENT DEBATES ON EXECUTIVE RETIREMENT PAY

The literature has provided competing theoretical explanations for why executives receive significant amounts of pay in the form of retirement benefits. Two major schools of thought have emerged. The first, known as the managerial power view, contends that executives wield significant influence over the directors who set their pay.[1] These observers argue that retirement arrangements permit executives to receive substantial amounts of compensation that is not transparent to investors.[2] The alternative, the optimal contracting view, holds that market forces generally induce directors to pursue the pay bargain that is in shareholders' best interests.[3] These scholars contend that retirement pay aligns executives' interests with those of the company's creditors.[4]

All agree, however, that in order to serve this incentive-alignment function retirement pay must actually be debt-like—that is, the payments must put the executive and creditors in a similar contractual position in the event of insolvency.[5] Yet almost nothing is known about whether executive retirement pay is actually structured in that way.

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[1] *See generally* LUCIAN BEBCHUK & JESSE FRIED, PAY WITHOUT PERFORMANCE: THE UNFULFILLED PROMISE OF EXECUTIVE COMPENSATION (2004).

[2] *See* Lucian A. Bebchuk & Robert J. Jackson, Jr., *Executive Pensions*, 30 J. CORP. L. 823 (2005).

[3] *See generally* Andrei Shliefer & Robert W. Vishny, *A Survey of Corporate Governance*, 52 J. FIN. 737 (1997).

[4] *See, e.g.*, Rangarajan K. Sundaram & David L. Yermack, *Pay Me Later: Inside Debt and its Role in Managerial Compensation*, 62 J. FIN. 1551 (2007) (providing an important early articulation of this view).

[5] *Compare id*. at 1558 *with* Bebchuk & Jackson, *supra* note 2, at 830 (debating whether retirement pay does, in fact, place executives and creditors in comparable contractual positions in the event of insolvency—but agreeing that such a structure is necessary for retirement pay to align the parties' interests).

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A. Managerial Power and Retirement Pay

Executive pay at public companies is negotiated between the executives and the company's board of directors. Although the directors' formal charge is to advance shareholder interests, in practice the interests of directors and shareholders frequently diverge, and this problem is particularly acute when directors bargain with executives over pay.

Directors personally own very small amounts of the company's equity, and so they internalize very few of the costs of corporate decisionmaking. Meanwhile, top executives can influence whether directors are nominated for reelection to the board.[6] And individual shareholders generally hold relatively small stakes in large public companies, and so lack incentives to discipline directors who favor executives over shareholders. The costs to directors of resisting executives' pay demands are many, while the benefits are few.

Scholars in the managerial power school argue that executives' sway over directors skews executive pay away from the deal that is in the best interests of shareholders. They contend that managerial influence over pay manifests itself in three ways. First, public company executives are paid more than is necessary to induce optimal effort—that is, that executives extract rents from shareholders in the form of excess pay.[7] Second, executive pay at public companies is inadequately linked to performance.[8] And third, directors camouflage executive pay from public

[6] *See, e.g.*, Lucian Arye Bebchuk et al., *Managerial Power and Rent Extraction in the Design of Executive Compensation*, 69 U. CHI. L. REV. 751, 761-62 (2002), Lucian Arye Bebchuk & Jesse M. Fried, *Executive Compensation as an Agency Problem*, J. ECON. PERSP., Summer 2003, at 69.

[7] *See, e.g.*, Bebchuk et al, *supra* note 10, at 785.

[8] *See, e.g.*, *id.* at 781; *see also, e.g.*, Robert J. Jackson, Jr., *Private Equity and Executive Compensation*, 60 U.C.L.A. L. REV. 638 (2013).

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investors.[9] Directors concerned that their executive pay decisions may draw the ire of shareholders prefer to pay executives in ways that are difficult to detect, because this strategy further reduces the probability that directors will be disciplined for favoring the interests of executives over those of shareholders.[10]

These commentators argue that the heavy use of executive retirement pay reflects managerial influence rather than the bargain that is in the best interests of investors. Unlike other forms of compensation, retirement pay is subject to limited disclosure and thus easily camouflaged from shareholders. Indeed, until recently retirement pay was subject to virtually no disclosure requirements.[11] And current rules still do not require companies to reveal the additional compensation that executives receive through retirement pay that shifts tax burdens from executives to their employers.[12] Thus, managerial power theorists contend that retirement pay is a way for directors to convey compensation to executives without drawing attention from shareholders.

B. Optimal Contracting and Retirement Pay

By contrast, those who take the optimal contracting view of executive compensation contend that market forces are sufficient to induce directors to bargain for executive pay arrangements that are in shareholder interests.[13] Markets in products, labor and corporate control discipline

[9] *See, e.g.*, Bebchuk et al., *supra* note 10, at 789.

[10] *See, e.g.*, *id*.

[11] *See id.* at 853; *see also* 17 C.F.R. § 240.402(c) (2005) (requiring only "narrative" disclosure of retirement payments).

[12] 17 C.F.R. § 240.402(i) (2012); *see infra* Part III.D.

[13] *See, e.g.*, Frank H. Easterbrook, *Managers' Discretion and Investors' Welfare: Theories and Evidence*, 9 DEL. J. CORP. L. 540 (1984).

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directors who depart from that deal.[14] While slack in market forces may permit occasional departures from the compensation bargain that is in the best interests of shareholders, in general public company directors negotiate with executives for the pay package that is in shareholders' interests.[15]

Theorists in this school argue that executive retirement pay, rather than camouflaging excessive compensation, serves shareholders by reducing the cost of credit. Retirement arrangements merely reflect a promise to pay the executive in the future, making the executive a creditor of the firm—or, in other words, providing her with holdings of *inside debt*.[16] Because retirement pay is usually treated as an unsecured claim in bankruptcy, the executive's payments are at risk if the firm becomes insolvent. Thus, executives owed large amounts of retirement pay have reason to avoid risks that might lead to insolvency—giving creditors comfort that is reflected in the company's cost of borrowing.

C. The Structure of Retirement Pay and Incentive Alignment

Importantly, in order to align executives' incentives with those of creditors, the structure of retirement pay must mimic the structure of the payments the creditors themselves are due to receive. In particular, for retirement payments to serve as inside debt, the amount and timing of the payments must place executives in a contractual position comparable to that of the company's creditors.

[14] *See, e.g.*, Eugene F. Fama, *Agency Problems and the Theory of the Firm*, 88 J. POL. ECON. 288, 291-92 (1980).

[15] *See, e.g.*, John E. Core et al., *Executive Equity Compensation and Incentives: A Survey*, 2 FRBNY ECONOMIC POLICY REV. 27, 28 (2003).

[16] Sundaram & Yermack, *supra* note 4, at 1580 (using this terminology).

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1. Fixed payment and recovery in bankruptcy. Unsecured creditors of public companies are typically entitled to fixed payments in service of the firm's debt. If the company files for bankruptcy, these creditors usually recover *pro rata* with the firm's other unsecured lenders. For retirement payments to align manager and creditor incentives, the contractual structure of the payments should emphasize both features.

First, for retirement payments to serve as inside debt they must provide the executive with payments of fixed amounts rather than payments that vary with the executive's or the company's performance. Unlike bonuses or stock-based pay, which reward managers for taking risk, payments of fixed amounts encourage executives to focus on whether the firm will be sufficiently solvent to make the promised payment.

Second, for retirement arrangements to serve as inside debt the executive must, in the event of bankruptcy, recover amounts comparable to those recovered by the company's other unsecured creditors. Again, unlike bonuses or stock-based pay—which are typically worthless if the firm enters bankruptcy—payments that provide for creditor-like recovery induce executives to focus on whether the firm will be solvent enough to make the payments.[17]

2. Magnitude. Retirement pay that serves an incentive-alignment function must also be of sufficient magnitude to give managers reason to protect creditor interests. In particular, the inside debt payments owed to the executive must be of sufficient value *relative to the value of the*

[17] Thus, in important recent work economists have shown that bonuses contingent on solvency do not fully align the interests of executives and creditors. The reason is that solvency-contingent bonuses have zero value in bankruptcy. Because creditors are sensitive not only to *whether* bankruptcy occurs but also the *amount they recover* in bankruptcy, bonuses of this kind do not perfectly align manager and creditor interests. *See* Alex Edmans & Qi Liu, *Inside Debt*, 15 REV. FIN. STUD. 75 (2011).

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executive's holdings of company stock to induce the executive to maximize the value of all of the claims on the firm.

Economists have long agreed that, in firms financed with both equity and debt, an optimal compensation arrangement will provide executives with a mix of equity- and debt-like payments that give executives reason to maximize firm value.[18] More recent work has argued that, by comparing the value of the retirement pay owed to executives to the value of the executive's holdings of company stock, it is possible to estimate an executive's personal "leverage" ratio, and thus her relative incentives to pursue the interests of creditors and shareholders.[19]

3. Duration and limits on acceleration. Retirement arrangements that serve as inside debt will also provide payments to executives with similar timing as payments to the company's creditors. Only retirement payments that are kept at risk until the firm's creditors are paid will fully align executives' interests with those of creditors.

To see why, note that a company's long-term creditors would likely take little comfort from retirement payments that will be made to the executive shortly after she departs from the firm.[20] Because the executive

[18] For the seminal theoretical work establishing this view, see Michael C. Jensen & William H. Meckling, *Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure*, 3 J. FIN. ECON. 305 (1976).

[19] *See, e.g.*, Chenyang Wei & David Yermack, *Investor Reactions to CEOs' Inside Debt Incentives* 24 REV. FIN STUD. 3813-3840 (2011); *see also* Frederick Tung & Xue Wang, *Bank CEOs, Inside Debt Compensation, and the Global Financial Crisis* 4 (Sept. 22, 2011), *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1570161.

[20] This is especially true because it is common for retirement payments to commence upon the termination of an executive's employment. To the extent that the executive controls the timing of her termination, she may also control the timing of her

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gets paid long before her decisions might cause these creditors to suffer losses, the payments give the executive little reason to manage the firm in a manner consistent with creditor interests.

Moreover, retirement arrangements that serve as inside debt will limit the executive's ability to accelerate the timing of her payments. If managers can arrange to receive payment more quickly to avoid losses that will be suffered by the company's lenders, the arrangements are unlikely to align executive and creditor interests.

D. Previous Study of Executive Retirement Pay

The debate over whether retirement pay merely conceals excessive executive compensation (as managerial power theorists contend) or aligns manager and creditor incentives (as those in the optimal contracting school have argued) has recently grown increasingly vociferous. Each side has marshaled some evidence consistent with its theory.

The ability to study executive retirement pay was long constrained by limited disclosure requirements.[21] Recently adopted rules, however, have led to the publication of two studies that support the optimal contracting theory. First, Chenyang Wei and David Yermack have examined how bond and stock prices respond to firms' initial disclosures of CEO retirement pay.[22] They found that bond prices rose, and stock prices fell, at firms that revealed higher levels of CEO retirement pay.[23]

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retirement payments—permitting her to avoid losses that cannot be avoided by the company's creditors.

[21] Nevertheless, two early papers, including work by one of us, attempted to estimate the value of executive retirement payments. *See* Bebchuk & Jackson, *supra* note 2, at 835; *see also* Sundaram & Yermack, *supra* note 4, at 1562.

[22] *See* Wei & Yermack, *supra* note 19, at 15.

[23] *See id.* at 4, 14, 24.

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Second, Frederick Tung and Xue Wang investigated the relationship between bank CEO retirement pay and bank performance during the recent financial crisis. The authors found, consistent with the view that retirement pay gives executives reason to reduce risktaking, that more retirement pay was linked to stronger performance during the crisis.[24]

Notwithstanding this evidence, managerial power theorists have expressed skepticism that retirement pay serves an incentive-alignment function. These scholars cite studies suggesting that the level of executive retirement pay is not related to the terms on which the company can borrow—but instead is closely related to indices of executive influence in the boardroom.[25]

Importantly, the optimal contracting and managerial power explanations for retirement pay are not mutually exclusive. In some cases, the structure of retirement pay may meaningfully align managers' incentives with those of creditors. In others, the structure of an executive's retirement pay may render the incentive-alignment explanation implausible, suggesting that managerial power may have influenced the bargain. Yet very little is known about the structure of executive retirement pay.[26] In the next Part, we describe the first systematic evidence on the structure of these payments.

[24] Tung & Wang, *supra* note 19, at 4.

[25] Kelli A. Alces & Brian D. Galle, *The False Promise of Risk-Reducing Incentive Pay: Evidence from Executive Pensions and Deferred Compensation*, 38 J. CORP. L. 53 (2012).

[26] One recent study considers the structure of executive retirement pay at a limited sample of companies and concludes, as we do, that "retirement payments provide inside debt to executives only to the extent that [the payments] are indeed debt-like." Divya Anantharaman et al., *Are Executive Pensions and Deferred Compensation Inside Debt? Evidence from Corporate Private Loan Contracts* 3 (Oct. 25, 2010), *available at* http://papers.ssrn.com/sol3/papers. cfm?abstract_id=1697855.

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II. EVIDENCE ON EXECUTIVE RETIREMENT PAY

Until recently, public companies were required to reveal relatively little information about executive retirement pay. In 2006, however, the Securities and Exchange Commission (SEC) developed new rules designed to provide investors with information about the two principal types of executive retirement pay: defined benefit and defined contribution arrangements. These disclosures allow us to provide the first systematic view into the structure of executive retirement pay at public companies.

A. Methodology

SEC rules now require companies to provide specified information on each type of executive retirement arrangement. The information permits us to identify different, but equally important, structural features of defined benefit and defined contribution retirement payments.

1. Defined contribution payments. The first type of executive retirement pay, defined contribution payments, allows executives to defer a certain amount of their current compensation and invest the deferred amounts in specified investment vehicles. Defined contribution arrangements are similar to the 401(k) arrangements that allow employees to defer a limited amount of income each year on a tax-advantaged basis.[27] Because the tax code limits the amount that employees can defer on this basis, however, companies often offer supplemental defined contribution plans that allow executives to defer pay beyond those limits.

The information revealed by the SEC's new disclosure rules allows us to examine whether defined contribution arrangements provide fixed payments that might align executive and creditor incentives. In particular, the evidence permits us to consider whether executives typically invest

[27] *See* 26 U.S.C. § 215(b) (setting forth these limits).

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defined contribution payments in their company's stock—in which case the payments functionally provide executives with holdings of *equity* rather than inside debt.

2. Defined benefit payments. The second type of retirement pay, defined benefit payments, takes the familiar form of pensions: the company promises to pay the executive a specified amount after she leaves the company. When executives and companies enter into agreements governing these pensions, the parties must choose a schedule on which the payments will be made.[28] Once this schedule is chosen, the executive cannot accelerate the payments without incurring a 20% penalty tax.[29] In choosing this schedule, the executive balances the tax benefits of receiving payment over time with the risk that the firm will, over time, become insolvent. Our dataset allows us to estimate the duration of executives' defined benefit payments—and, thus, how long the payments are actually exposed to the risk that the company will become insolvent.

B. Dataset and Summary Statistics

Since 2006, the SEC's disclosure rules have required all public companies to provide detailed information on both types of executive retirement pay. Drawing from these disclosures, we constructed a dataset including annual information on the value of these payments for each year from 2006 through 2011 for more than 19,000 unique executives at more than 2,100 U.S. public companies.[30]

[28] Under Section 409A of the Internal Revenue Code, 26 U.S.C. § 409A(a)(4)(B)(1), most executive retirement pay arrangements must specify the timing of these payments in order to avoid substantial tax penalties.

[29] *Id.* § 409A(a)(1)(2006).

[30] Previous work has been limited to study of CEO retirement pay. *See, e.g.*, *supra* notes 22-25 and sources cited therein. Because SEC rules require public companies to reveal retirement pay for each firm's CEO, Chief Financial Officer, and three most

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As we have noted, it is widely recognized that executives receive a significant amount of their compensation in the form of retirement pay. Our evidence confirms that view. Table I summarizes the average total compensation of the executives in our sample and the average total retirement pay owed to those executives.

	2006	2007	2008	2009	2010	2011
Average Total Compensation	$3.4M	$3.4M	$2.6M	$2.2M	$2.9M	$3.2M
Average Retirement Pay Owed	$2.2M	$1.9M	$1.6M	$1.8M	$2.0M	$2.1M

TABLE I. EXECUTIVE RETIREMENT PAY: SUMMARY STATISTICS

Table I shows that retirement payments promised to public company executives represent a nontrivial proportion of their total pay. In 2011, the companies in our sample owed $2.1 million in retirement pay to the average executive. And as one might expect, the retirement payments promised to CEOs are even more substantial. In 2011, the average CEO in our sample was owed more than $5.4 million in total retirement pay.

Moreover, our evidence indicates that executive retirement pay is distributed approximately evenly between defined contribution payments and defined benefit payments.[31] Table II below summarizes the average

highly paid executives, however, our dataset includes information on a wider range of executives. For detail on the assembly of the dataset, *see infra* Appendix at Part I.A.

[31] These results contrast with previous work, which has generally concluded that defined benefit payments—that is, pensions—represent a much larger proportion of executive retirement pay than defined contribution payments. *See, e.g.*, Wei & Yermack, *supra* note 19. These differences are likely attributable to the broader group of firms and executives included in our study. Previous work has focused only on the CEOs of the largest public companies, *see, e.g., id.* (identifying a sample of 299 CEOs of large public

value of defined contribution payments and defined benefit payments, respectively, due to the executives in our sample.

	2006	2007	2008	2009	2010	2011
Average Defined Contribution Payments (% Total)	$1.1M (50%)	$1.0M (52%)	$0.7M (43%)	$0.8M (45%)	$0.9M (45%)	$0.9M (44%)
Average Defined Benefit Payments (% Total)	$1.1M (50%)	$0.9M (48%)	$0.9M (57%)	$1.0M (55%)	$1.1M (55%)	$1.2M (56%)

TABLE II. COMPOSITION OF EXECUTIVE RETIREMENT PAY

Our evidence allows us to explore the contractual structure of both types of executive retirement pay. In the next Part, we provide the first evidence on the structure of retirement payments for top executives at public companies—and the implications of our findings for the competing theoretical explanations for executive compensation.

III. EXECUTIVE RETIREMENT PAY AND INCENTIVES

Academics are now vigorously debating whether retirement pay reflects excessive compensation camouflaged from view or gives executives important incentives to maximize firm value. The answer to these questions depends critically on the structure of executives' retirement payments. Yet no previous work systematically analyzes the contractual details governing those payments—or their implications for the competing theoretical explanations for executive retirement pay. In

companies), while our dataset includes several executives from all of the firms in the S&P 1500 index. *See infra* Appendix at Part I.A.

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this Part, we describe evidence that, for the first time, provides a view into the structure of top executives' retirement pay.

Do retirement arrangements pay executives fixed amounts, or are the payments linked to company stock prices? What is the typical duration of executive retirement pay? Is there a meaningful link between the duration of these payments and firm risk? And what is the value of the tax benefits executives receive through retirement arrangements? Below we provide the first empirical insights on the answers to those questions.

A. Retirement Pay and Stock Returns

Theory predicts that retirement arrangements designed to align executive and creditor interests would provide for payments of fixed amounts. In practice, however, executives are permitted to invest their defined contribution retirement payments in the company's stock. Because the value of these payments fluctuates with stock prices, the payments are unlikely to align manager and creditor interests. To the contrary, rather than providing executives with holdings of inside debt, retirement payments invested in company stock give executives additional holdings of the company's equity.

Current disclosure rules do not require public companies to reveal whether executives' defined contribution payments are invested in company stock. But the SEC *does* require public companies to disclose executives' earnings on defined contribution payments. And, of course, data on the annual change in the company's stock price is publicly available. By comparing executives' returns on investment of their defined contribution payments to the annual returns on the company's stock, we can estimate the extent to which the value of executive retirement payments depends on stock prices.

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At a summary level, the returns that executives earn on investment of their defined contribution payments appear to fluctuate along with stock returns. Figure I describes the average percentage earnings on executives' defined contribution payments, and the average annual return on the companies' stock prices, in our sample between 2006 and 2011.

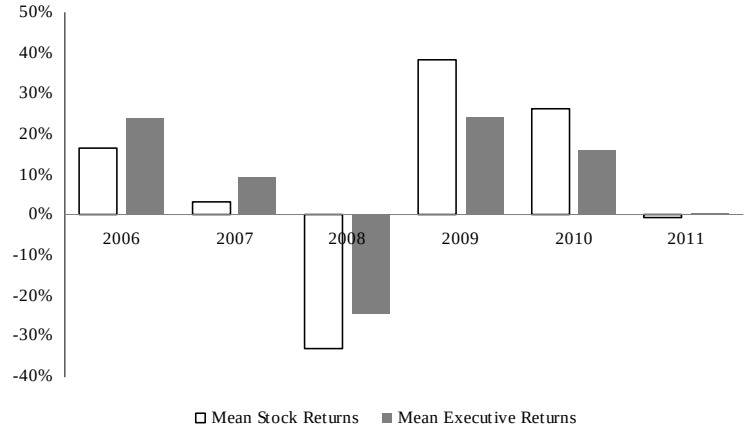

FIGURE I. AVERAGE RETURNS ON DEFINED CONTRIBUTION PAYMENTS AND STOCK PRICE RETURNS, 2006-2011

As Figure I shows, the value of executive retirement pay appears to fluctuate considerably with company stock prices. For example, in 2006, when the stocks in the S&P 1500 performed relatively well, the average executive earned 24% on the investment of her retirement payments. By contrast, in 2008, when the value of the stocks in this group fell considerably, the average executive *lost* 24% on the investment of her retirement payments.

Of course, these patterns do not conclusively establish a close relationship between the returns executives receive on the investment of their retirement payments and the returns on their companies' stock prices. In the Appendix, however, we describe multivariate regression analysis in

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which we examine that relationship more closely. The analysis shows that the returns on investment for executive retirement pay are economically and statistically significantly related to returns on the company's stock, even controlling for the returns on other investments the executives might choose. Overall, the evidence suggests that executive retirement payments are frequently invested in the company's stock.

While there is a strong relationship between the value of executive retirement pay and stock returns in the overall sample, it might also be useful to know how many executives have invested all, or nearly all, of their retirement pay in company stock. We examined this question by calculating the correlation between each executive's returns on investment of her retirement payments and the returns on her company's stock between 2006 and 2011. Figure II below describes the distribution of correlations across our entire sample:

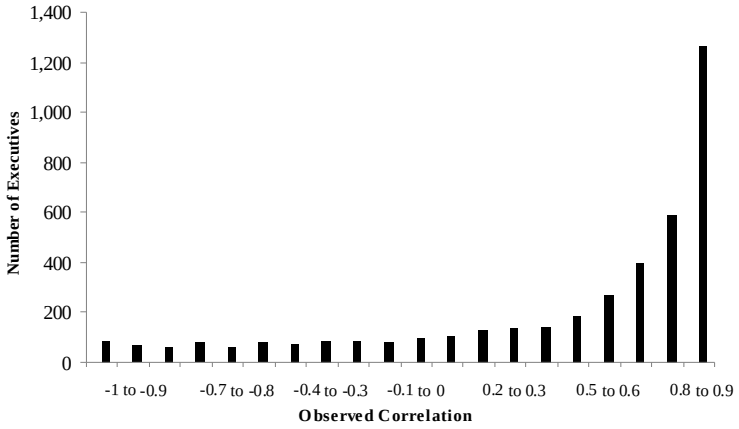

FIGURE II. EXECUTIVE-SPECIFIC CORRELATION BETWEEN RETURNS ON DEFINED CONTRIBUTION PAYMENTS AND STOCK RETURNS

Figure II suggests that a significant proportion of public-company executives invest nearly all of their defined contribution retirement pay in

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company stock.[32] For more than 1,200 executives, or over 30% of the total sample, there is nearly perfect correlation between the company's stock returns and the executive's returns on investment for her retirement pay.

As noted in Part I, economists evaluate an executive's incentives by comparing the value of her inside debt holdings to the value of her holdings of company equity. Recent work has argued that this can be done by comparing the value of the retirement pay owed to the executive with the value of her stock holdings. This work has generally treated defined contribution retirement pay as inside debt.[33] But the evidence presented here shows that, for many executives, these payments in fact represent holdings of the company's *stock*. By treating these payments as debt-like, how much have researchers erred in estimating the executive's relative holdings of debt- and equity-like payments?

To answer that question, we focused only on the executives with nearly perfect correlation between the company's stock returns and the executive's returns on investment for her retirement pay. We then calculated each executive's individual leverage ratio—that is, the ratio of her holdings of inside debt to her holdings of company stock. First, we calculated this ratio while including defined contribution payments as debt-like—even though, for this group of executives, it is clear that nearly all of the payments are invested in company stock. We then recalculated the ratio while excluding defined contribution payments from the ratio altogether.[34] Finally, we recalculated the ratio while including defined

[32] Because our dataset has a limited number of observations for each executive, our correlation estimates are likely to be biased downward. Thus, the frequency of nearly perfect correlations between executives' returns on their defined contribution payments and the returns on their company's stock price is especially striking.

[33] *See, e.g.*, Wei & Yermack, *supra* note 19; Tung & Wang, *supra* note 19.

[34] Some commentators have taken this approach, acknowledging that defined contribution retirement payments may reflect holdings of company stock rather than holdings of inside debt. *See, e.g.*, Tung & Wang, *supra* note 19.

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contribution payments as *equity* holdings—the appropriate treatment for this group of executives. Table III below describes the average leverage ratio for the executives in our sample, calculated using each approach:

Effect on Select Executive Leverage Ratios			
	Debt Includes Defined Contribution Payments	Debt Excludes Defined Contribution Payments	Equity Includes Defined Contribution Payments
Average Leverage Ratio	1.12	0.51	0.30

TABLE III. EFFECT OF THE STRUCTURE OF DEFINED CONTRIBUTION PAYMENTS ON SELECT EXECUTIVES' LEVERAGE RATIOS

As Table III shows, the failure to consider the contractual structure of retirement pay is likely to lead to significant error in estimating the incentive effects of those payments. Among the group of executives whose defined contribution payments are largely invested in company stock, there is little question that it is inaccurate to treat these payments as inside debt. By doing so, for this group of executives observers will estimate the average executive's leverage ratio at 1.12, rather than the correct level of 0.30. Even excluding these payments from an executive's personal leverage ratio altogether causes significant error, leading to an estimated personal leverage ratio of 0.51—an error of more than 100%.

B. The Duration of Retirement Pay

Theory suggests that retirement pay that serves as inside debt will provide executives with payments of similar duration as payments due to the company's creditors. But in practice executives and companies have significant freedom with respect to the timing of retirement pay—and may arrange for most of these payments to be made in a lump sum soon after the executive's departure. In previous work, one of us presented limited

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anecdotal evidence that executives frequently receive retirement pay in a cash lump sum immediately following their departure.[35] Optimal contracting theorists, however, argue that retirement payments are generally made over time, and that there is no systematic evidence on the timing of executive retirement pay.[36]

We provide the first such evidence below. The data reveal that more than 20% of executives receive all of their retirement pay in the year that they leave the firm, and the median executive receives all of the retirement pay she is owed less than three years after her departure. Moreover, the evidence shows that retirement pay of short duration is economically and statistically significantly related to firm risk.

1. Summary statistics. Public companies are not required to disclose the duration of retirement pay. But when an executive leaves the firm, SEC rules *do* require the company to disclose any defined benefit payments the executive receives in that year. By dividing the payments made to the executive in the year she retires by the entire amount she is owed, we can calculate the percentage of the executive's total retirement pay that she receives each year. Thus, we can estimate the duration of the executive's retirement pay—that is, the amount of time it will take the company to pay the entire amount the executive is owed.[37]

[35] Bebchuk & Jackson, *supra* note 2, at 841.

[36] *See, e.g.*, Sundaram & Yermack, *supra* note 4, at 1560.

[37] For purposes of our analysis, we assume that executives receive a constant amount of their defined benefit obligations each year, starting with the year they depart the firm. In interviews, executive compensation counsel who have worked with executives and public companies on these arrangements indicated that these payout schedules are usually constant across time. We separately checked this claim for robustness through additional analysis of the data. Most executives who receive defined benefit payments retire, providing us with only one year of data describing the amount of their payments. In some cases, however, the executive remains employed with the firm, and thus is subject to disclosure of defined benefit payments in subsequent years. We identified 106 such executives in our sample. In unreported analysis, we then compared

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What percentage of their total defined benefit payments do executives receive in the year they leave the firm? Figure III below describes the distribution of the percentage of their total payments that the executives in our sample received in the year of their departure.

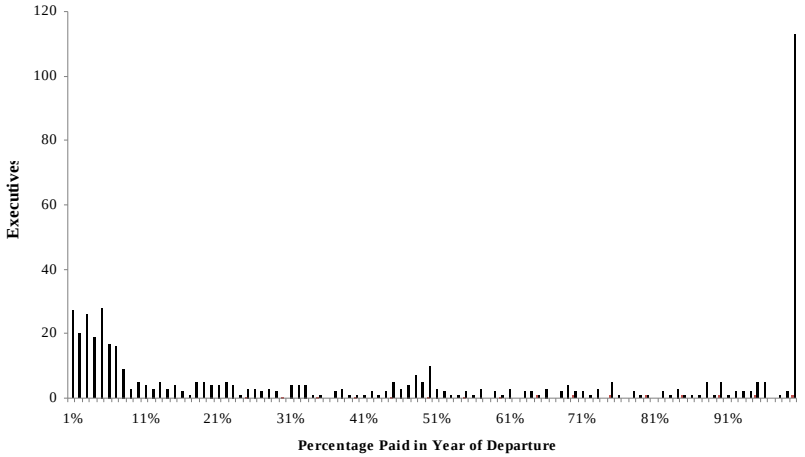

FIGURE III. PERCENTAGE OF EXECUTIVE'S TOTAL DEFINED BENEFIT PAYMENTS RECEIVED IN DEPARTURE YEAR

Figure III provides striking evidence of the short duration of executive retirement pay. Among the 498 executives for whom we can observe the duration of these payments, more than 110—over 20% of the sample—receive the *entire* amount of defined benefit payments they are owed in the year of their departure. The median executive receives 38% of the total she is owed in the year she leaves the company, suggesting that she receives all of her retirement pay in less than three years. To the extent that this timing allows executives to receive their payments before the

the annual distributions for these executives to observe whether they are consistent over time. The evidence indicated that these amounts were indeed consistent over time.

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company's creditors are paid, retirement pay of short duration cannot be expected to align manager and creditor interests.

2. Relationship with firm risk. Executives are most likely to value speedy payment of their retirement benefits when the firm faces significant risk of insolvency. Thus, we would expect to observe a relationship between the duration of executive retirement pay and firm risk. Does the evidence confirm this prediction?

To examine that question, we collected data describing four measures of firm risk: firm leverage (measured using two similar proxies),[38] volatility of the firm's stock price, and prices on the firm's credit default swaps (CDS), which measure the cost of insuring against a default on the company's debt. We then constructed a multivariate regression model that estimates the relationship between the duration of executive retirement pay and each of these four measures of risk. The results, described in detail in the Appendix, are striking. The models show an economically and statistically significant relationship between the duration of executive retirement pay and all four measures of firm risk. The more quickly executives receive their retirement pay, the results indicate, the riskier the firm. These findings are robust to a series of standard controls for differences among executives and firms.[39]

The finding that the duration of executive retirement pay is related to firm risk does not, of course, establish the causal direction of that relationship. On the one hand, executives at riskier firms may choose speedier payments because they anticipate that the firm may soon face insolvency. On the other, firm risk may rise because retirement pay of

[38] For additional detail on these measures, *see infra* Appendix at Part I.B.

[39] These controls include firm size, the executive's age, the executive's total compensation, and the value of the executive's defined benefit payments and holdings of firm equity. For additional detail on these models, *see infra* Appendix at Part II.B.

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short duration gives executives little reason to protect the company from insolvency. For present purposes, it is not important whether executives choose retirement pay of short duration because the firm is risky or vice versa. What is important is that the duration of retirement pay dictates the extent to which these arrangements align the interests of executives and creditors—and, thus, is closely related to firm risk.

C. Acceleration of Retirement Pay

Although executives typically receive the bulk of their retirement pay shortly after they leave the firm, our sample also includes many managers who have chosen to receive their payments over time. It might be argued that, for these executives, retirement pay serves an important incentive alignment function. But this will only be true if the executives are meaningfully restricted from accelerating these payments in the event that the firm faces insolvency.

In practice, executives have considerable freedom to withdraw both defined contribution and defined benefit payments immediately in the event that the firm faces insolvency.[40] To be sure, the tax code imposes substantial penalties on executives who choose to accelerate the schedule of their retirement pay. But in many cases executives can still be expected to withdraw these payments before the company enters bankruptcy.

[40] It is true that contracts governing these payments typically prohibit accelerations. The reason, however, is that Section 409A requires that accelerations be prohibited in order for the agreements to avoid tax penalties. *See* 26 U.S.C. § 409A(a)(4). In practice, directors can and do amend these agreements to permit executives to accelerate retirement payments when the firm faces insolvency. One straightforward way to give creditors comfort that amendments like these will not lead to acceleration of executive retirement pay would be to require creditor approval for any such amendments. In interviews, however, practitioners in this field indicated that they were unaware of any situation in which creditors have the contractual right to approve amendments to these arrangements.

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As noted in Part I, when an executive elects to receive retirement pay over time, the tax code requires that she and the company agree to a schedule on which the compensation is to be paid. If the executive later chooses to accelerate that schedule, the payments are subject to a 20% penalty tax.[41] This penalty was enacted in response to the popular outrage that followed when two top Enron executives withdrew more than $53 million in retirement pay weeks before the company declared bankruptcy.[42] Policymakers hoped that the penalty would discourage executives from withdrawing retirement pay when bankruptcy is on the horizon.[43] But the provision instead merely limits accelerations to cases in which executives are most certain that bankruptcy is coming—and where the company's insolvency will be deepest.

To see why, note that, once an executive has agreed to receive her retirement pay at a later date, she will decide whether to receive the payments early by weighing the costs of the 20% Section 409A penalty against the threat to her future payouts from her firm's bankruptcy risk.[44] When her estimate of the second cost is greater than the first, she will accelerate her payments.

[41] *See* 26 U.S.C. § 409A(a)(4)(B)(1).

[42] *See, e.g.*, Joint Committee on Taxation, *Report of Investigation of Enron Corporation: Volume 1*, at 14 (February 2003).

[43] *See id.* at 16-18.

[44] For ease of exposition, we assume that the executive can predict with accuracy the probability of bankruptcy and the losses creditors will incur in the bankruptcy proceeding. Of course, in practice executives may be unable accurately to predict those variables. If an executive is risk averse, this uncertainty will make her even more likely to withdraw her retirement payments early, because early withdrawal ensures that the executive will receive a specified amount of cash. By contrast, if the executive waits until the firm enters bankruptcy, she will bear the risk that the depth of the firm's insolvency is greater than she anticipated, further reducing her payments.

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Consider, for example, an executive scheduled to receive $10 million in retirement pay ten years from today. Now suppose that the executive discovers that there is a 40% probability that the company will file for bankruptcy, and that if the company does so creditors will lose 40% of the principal owed to them in the bankruptcy proceedings. When deciding whether to accelerate her payments, the executive will weigh the $2 million cost of the tax penalty ($10 million x 20%)[45] against the $1.6 million she expects to lose in bankruptcy ($10 million x 40% x 40%). In this case, the executive will not accelerate: she can do better in bankruptcy than she can by paying the 20% tax. But now suppose that the executive expects that there is a 50% probability that the firm will enter bankruptcy, and that creditors will suffer losses of 50% of their principal in bankruptcy proceedings. Then the executive will expect to lose $2.5 million in bankruptcy ($10 million x 50% x 50%), but pay only a $2 million penalty if she accelerates ($10 million x 20%). Thus, in this case we expect the executive to accelerate her retirement pay in anticipation of bankruptcy.

To be sure, Section 409A deters some executives from accelerating their retirement payments. But we can expect executives to accelerate in cases where bankruptcy is especially likely or the company's insolvency is particularly deep. Managers' freedom to accelerate their retirement pay allows them to avoid losses that other creditors will suffer in bankruptcy. Thus, even retirement pay of relatively long duration may be of limited use in aligning executive and creditor interests.

D. Retirement Pay and Camouflage

Because retirement pay was, until recently, subject to few disclosure requirements, managerial power scholars have argued that these

[45] For simplicity, we include here only the 20% penalty, although acceleration may increase the executive's tax burden in other ways—for example, by requiring her to include all of her retirement pay as income in a single tax year. *See* 26 U.S.C. § 409A(a).

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arrangements allow directors to convey substantial compensation to top managers without drawing attention from investors. As we have noted, however, the SEC recently adopted new rules requiring public companies to disclose retirement payments owed to executives. Thus, it might be argued that investors now have the information necessary to assess the costs and benefits of executive retirement pay. But as we explain below, our evidence shows that the SEC's rules currently do not capture significant tax benefits that executives receive through retirement pay.

All public companies are required to disclose the total amount of individual executives' pay in a clear, simple table, known as the "Summary Compensation Table," in their annual proxy statements.[46] Since 2006, these tables have included the value of each executive's retirement payments as part of the executive's total annual pay.[47] The tables do not, however, include the value of tax savings executives receive through supplemental defined contribution payments. Thus, consistent with the managerial power view, these payments may allow public company directors to convey compensation to executives in a manner that is not transparent to investors.

Supplemental defined contribution plans do not receive the preferred tax treatment given to 401(k)s and similar arrangements, so part of the tax burden associated with supplemental plans is shifted from the executive to the company. When a company defers an executive's pay through a tax-advantaged arrangement, the company is immediately entitled to deduct the deferred pay from its income for tax purposes, but when pay is deferred through supplemental arrangements that are not tax-advantaged, the company may not tax this deduction until the executive receives the payment. The executive, by contrast, enjoys the same tax treatment on amounts deferred in the supplemental arrangement as she

[46] *See generally* 17 C.F.R. § 299.402(a) (2012).
[47] *Id.* § 229.402(c)(2)(vii) (2012).

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does in her 401(k), avoiding taxes on deferred amounts until the amounts are paid. The executive's tax savings from receiving tax-advantaged treatment of amounts above the federal statutory limit—equal to the amount of her gains on investments of defined contribution payments multiplied by her tax rate—are equal to the gains the company foregoes from having been unable to deduct the executive's pay at the time it was deferred.[48] Although current disclosure rules do not require these savings to be reflected in disclosures of the executive's total compensation, our dataset allows us to estimate their value for the first time.

Because our dataset includes information on each executive's earnings on investment of her defined benefit payments, we can estimate her tax savings by multiplying those earnings by her tax rate. To be conservative, we assume that the marginal tax rate for each executive in our sample is 20%, although in practice we would expect rates to be much higher. Table IV below provides an annual estimate of the undisclosed compensation the executives in our sample received through supplemental defined contribution arrangements:

	2006	2007	2008	2009	2010	2011
Estimated Compensation, All Executives	$181M	$126M	($355M)	$232M	$190M	$19M
Estimated Compensation, CEOs Only	$86M	$63M	($185M)	$118M	$98M	$12M

TABLE IV. ESTIMATED EXECUTIVE TAX BENEFITS FROM SUPPLEMENTAL DEFINED CONTRIBUTION ARRANGEMENTS, 2006-2011

[48] For examples demonstrating how companies provide executives with tax-advantaged treatment of amounts above the federal statutory limit by increasing the company's tax burden, *see infra* Appendix Part I.B.3. *See also* MYRON S. SCHOLES ET AL., TAXES & BUSINESS STRATEGY 204 (4th ed. 2009).

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As Table IV shows, the executives in our sample received significant benefits by shifting the tax burden associated with retirement pay from themselves to their companies.[49] During the six-year period we study, we conservatively estimate that the executives in our sample enjoyed nearly $400 million in tax savings through these arrangements. CEOs received the bulk of these benefits: the CEOs in our sample received $191 million in tax savings. This compensation was excluded from the summary disclosures that investors use to evaluate executive pay levels.

IV. IMPLICATIONS FOR POLICYMAKERS AND COMMENTATORS

The debate over whether executive retirement pay camouflages excessive compensation or aligns the interests of managers and creditors has drawn considerable attention from policymakers and academics alike. The evidence presented in this Article suggests that understanding the contractual structure of these payments is critical to answering these questions. Our findings point to important lessons for both lawmakers and commentators concerned about the incentive effects of retirement pay.

The study offers three insights for policymakers. First, existing disclosure rules do not provide investors with the information they need to evaluate the structure of executive retirement pay. These rules should be revised to require public companies to disclose the value and duration of these payments. Second, the rules governing summary disclosure of

[49] As noted in Part III.A., a significant proportion of executives invest defined contribution payments in company stock. Thus it is unsurprising that, on average, executives incurred losses on investments of their defined contribution payments during 2008, when stock prices fell. Because executives' earnings in 2008 were negative, executives lost the ability to reduce their tax burden in that year as a result of their defined contribution arrangements, effectively reducing their pay in 2008. Thus, we have included those losses in Table IV.

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executive pay levels do not require companies to include the tax benefits that executives receive through retirement arrangements when calculating total pay. Rulemakers should require public companies to include these amounts when disclosing executives' total compensation. Third, regulators now charged with overseeing banker incentives should closely examine the structure of retirement pay before concluding that these payments give bankers reason to manage their firms more carefully.

In addition, our study offers a framework for future research on executive retirement pay. Commentators evaluating whether retirement pay reflects managerial influence or incentive alignment should carefully distinguish payments invested in company stock from those with fixed amounts, and payments with short duration from those with long duration. These distinctions will allow observers to assess the incentive effects of retirement pay—and the implications of these arrangements for broader debates on executive compensation—more precisely.

A. Regulation of Executive Retirement Pay

Our findings suggest that current disclosure rules should be amended to give investors the information they need to evaluate the structure and magnitude of executive retirement pay. Our evidence also shows that the financial regulators who supervise banker incentives should not assume that retirement pay will discourage bankers from pursuing risk.

1. Disclosure of the structure of retirement pay. Although SEC rules now require public companies to provide investors with some information on executive retirement pay, the rules do not require disclosure of the contractual structure of these payments. Regulators should make two changes to these rules that would allow investors to evaluate the incentive implications of retirement pay.

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First, public companies should have to disclose whether executive retirement pay is invested in company stock.[50] Second, the rules should require disclosure of the duration of executive retirement pay. Without this information, investors cannot evaluate whether these payments align executive and creditor interests. Moreover, disclosing these details will not be costly. Public companies administer investments of retirement pay in company stock, so information about those investments is readily available to the firm. And because tax law requires that the timing of retirement pay be specified in advance, companies should be able to provide this information to investors at low cost.[51]

2. Disclosure of the magnitude of retirement pay. Until recently, executive retirement pay was completely excluded from the highly salient summary tables that investors use to evaluate pay levels. Current rules now require that companies include the value of retirement pay when disclosing executives' total compensation.[52] These rules do not, however, require that companies include the value of tax benefits that executives

[50] Although some information about these investments is required to be disclosed in scattered securities rules, current law does not provide investors with a clear view of whether retirement payments are invested in company stock. *See, e.g.*, SEC Rule 16b-5, 17 C.F.R. § 240.16b-3 (requiring some disclosure of purchases and sales of company stock through retirement arrangements); Securities and Exchange Commission, Item 403 of Regulation S-K—Security Ownership of Certain Beneficial Owners and Management Question 2.02 (requiring disclosure of some, but not all, executive stock ownership through defined contribution arrangements).

[51] *See supra* note and text accompanying note 29 (noting that, to avoid significant tax penalties, companies and executives must specify the timing of retirement payments in advance).

[52] These rules, which require that companies include changes in the actuarial present value of retirement benefits in summary disclosure of the executive's total pay, correspond with disclosure proposals that one of us offered in previous work. *See* Bebchuk & Jackson, *supra* note 2, at 841.

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receive through supplemental retirement arrangements when calculating an executive's overall pay.[53]

Our evidence shows that these benefits are significant. We estimate that the executives in our sample shifted about $400 million in tax liability from themselves to their employers between 2006 and 2011 through the use of supplemental defined contribution arrangements. Because companies convey these benefits to executives by increasing the firm's tax burden, excluding these amounts from total compensation figures makes it difficult for investors to assess the costs of executive retirement pay. Moreover, excluding these benefits from disclosures of executive pay levels increases the likelihood that retirement pay will be used to camouflage excessive compensation from investors.

Companies should be required to include tax benefits that executives receive through retirement pay in the total compensation amounts they disclose to investors. Calculating the value of these benefits, which are approximately equal to the product of the executive's earnings on investment of her defined contribution payments and her tax rate, will not be costly.[54] Existing rules already require companies to calculate and disclose executive earnings on defined contribution payments, and companies are generally able to estimate their executives' tax rates.[55]

3. Regulation of banker pay. In the wake of the recent financial crisis, Congress has directed federal regulators to monitor incentives at the

[53] *See supra* text accompanying note 46; *see also* 17 C.F.R. § 229.402(c)(2)(vii) (2012) (requiring that these summary tables include changes in the present value of retirement payments in total pay calculations—but excluding tax benefits executives receive through supplemental retirement payments from total compensation figures).

[54] *See supra* text accompanying note 48 (describing how to calculate the value of the tax benefits executives receive through supplemental defined contribution payments).

[55] *See supra* Part III.A. (noting that existing rules require disclosure of earnings on investment of executives' defined contribution payments).

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nation's largest banks.[56] It is now well-accepted that shareholders of large banks want executives to pursue socially excessive levels of risk. Shareholders capture the full upside from bank risktaking, while some of the downside of bank failures is borne by the government through deposit insurance and bailout financing. Based on these insights, in the short time since the crisis an extensive literature has emerged analyzing the optimal incentives for bank executives.[57] Although the details of proposals for regulating banker pay vary, most agree that it may be dangerous to require bank executives to hold significant amounts of company stock, because stock holdings might give bank executives, like shareholders, reason to prefer that the bank take too much risk. Some have argued that providing executives with inside debt in the form of retirement pay might deter them from risktaking of this kind. Indeed, bank regulators have expressly argued that retirement pay may serve this function.[58]

Our findings suggest that regulators should proceed with caution when relying on retirement pay to reduce bankers' appetite for risk. For one thing, a significant proportion of executives invest their retirement pay in company stock. These payments may therefore give bankers additional stock in the firm rather than inside debt—exacerbating, rather than dampening, their incentives to take excessive risks. For another, bankers

[56] Dodd-Frank Wall Street Reform and Consumer Protection Act, Pub. L. No. 111-203, 124 Stat. 1376, § 956 (2010).

[57] *See, e.g.*, Lucian A. Bebchuk & Holger Spamann, *Regulating Bankers' Pay*, 98 GEO. L.J. 247 (2010); Frederick Tung, *Pay for Banker Performance: Structuring Executive Compensation for Risk Regulation*, 105 NW. U. L. REV. 414 (2012).

[58] Federal Reserve et al., *Incentive Based Compensation Arrangements*, 76 Fed. Reg. 21,170, 21,177 (proposed April 14, 2011) (to be codified at 12 C.F.R. pt. 42), *available at* http://www.sec.gov/spotlight/dodd-frank/956-proposedrule-draft.pdf (relying upon "one study [that] conclude[s] that bank CEOs with large amounts of inside debt in the form of pensions and deferred compensation exposed their firms to less risk and obtained greater performance during the recent financial crisis").

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may receive their retirement payments shortly after leaving the firm, giving them little reason to avoid risktaking that may cause future losses.

After the recent crisis, Congress gave regulators the authority to require that banks report "the structures of all incentive-based compensation arrangements."[59] Supervisors should use this authority to require banks to reveal whether executive retirement payments are invested in company stock and the duration of retirement pay. Financial regulators need this information to evaluate the effects of retirement pay on bankers' incentives to pursue risk.

B. Future Study of Executive Retirement Pay

Commentators are now engaged in the early stages of a strident debate over whether executive retirement pay is a product of managerial influence or a device for aligning manager and creditor interests.[60] Our study provides two contributions to this research. First, we present evidence that is inconsistent with the optimal-contracting view of retirement pay—and more easily reconciled with the predictions of the managerial-power hypothesis. Second, we show that future study of the incentive effects of retirement pay should take account of the structural detail identified in this Article.

Much of the evidence presented here is difficult to reconcile with the view that retirement pay aligns executive and creditor interests. Retirement payments are often invested in company stock, producing payments that vary with stock returns instead of fixed amounts. The payments tend to be made relatively quickly after the executive leaves the firm, permitting managers to receive payment before the company's

[59] Dodd-Frank Wall Street Reform and Consumer Protection Act, Pub. L. No. 111-203, 124 Stat. 1376, § 956 (2010).

[60] *See supra* text accompanying notes 1-16.

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creditors. Even executives who receive retirement pay with long duration retain some freedom to accelerate those payments. And current law obscures the full costs of retirement pay, consistent with the view that these payments allow directors to camouflage excessive compensation. Nevertheless, previous work has also identified substantial evidence suggesting that retirement pay plays a meaningful role in aligning executive and creditor interests.[61] Since the competing explanations for executive retirement pay are not mutually exclusive, it is hardly surprising that empirical study has so far yielded mixed results.

More importantly, the debate over executive retirement pay has ignored whether the contractual structure of the payments actually aligns managers' and lenders' interests. By taking account of these details, future work will likely be able to assess the incentive effects of retirement pay with more precision. Researchers should, for example, distinguish between retirement payments invested in company stock and payments of fixed amounts when assessing executives' relative holdings of equity and debt. Future work should also distinguish retirement payments of short duration from payments likely to be made over time when evaluating whether these payments give executives reason to protect the interests of the company's creditors.

Our study identifies, and provides a preliminary empirical assessment of, the key contractual features relevant to the incentive effects of executive retirement pay. We hope that, by doing so, we have provided researchers with a framework for future work in this area.

[61] *See, e.g.*, Sundaram & Yermack, *supra* note 4; *see also* Tung & Wang, *supra* note 19 (finding that banks with CEOs who were owed more retirement pay enjoyed stronger performance during the financial crisis); Wei & Yermack, *supra* note 19 (finding, based upon an event study of early disclosures of CEO retirement arrangements, that bond prices rose at firms that revealed larger amounts of retirement pay).

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CONCLUSION

Public company executives receive significant compensation in the form of retirement pay. Academics are now debating two possible explanations for these payments. Some argue that retirement arrangements allow directors to camouflage excessive executive pay from investors. Others contend that retirement benefits, which represent unsecured promises that the company will make certain payments in the future, align executive and creditor interests. The resolution of this debate depends, in part, on whether retirement pay actually places executives in a contractual position comparable to that faced by the company's creditors. Yet no previous work has examined the contractual structure of executive retirement payments.

In this Article, we have provided the first comprehensive empirical study of the structural features of executive retirement pay at large public companies. The evidence reveals several important considerations that policymakers and researchers should take into account when evaluating the incentive effects of retirement pay.

First, our study shows that a substantial amount of executive retirement pay is invested in company stock. Although retirement payments have long been thought to provide executives with holdings of company debt, these payments are actually equivalent to holdings of company stock instead. The evidence suggests that treating these payments as debt rather than equity will lead to significant errors in assessing executives' incentives.

Second, the Article has shown that retirement payments often have short duration—that is, executives receive the bulk of their payments immediately after they leave the firm. The median executive in our study receives all of her retirement payments less than three years after her departure. Because the executive receives her payments before creditors

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do, these payments are unlikely to align executives' interests with those of the company's long-term creditors. And the evidence shows that, as we might expect, on average executives choose to receive their payments more quickly as firm risk increases. Moreover, even executives who choose to receive their pay over time often retain the ability to accelerate the payments and avoid losses that other creditors will face in bankruptcy.

The study also shows that, as managerial-power theorists predict, retirement arrangements permit executives to receive significant benefits that are not included in the total compensation amounts that companies must disclose to investors. We estimate that the executives in our sample received about $400 million in such benefits over a six-year period.

The Article has also described the implications of our study for lawmakers who regulate executive retirement pay. Disclosure rules should be revised to give investors the information they need to evaluate the structure and magnitude of these payments. And bank regulators should not rely on retirement pay to curb the pursuit of risk without understanding the payments' actual incentive effects.

Although a great deal has been written about the potential explanations for executive retirement pay, previous work has failed to closely examine the contractual structure of these payments. This Article has offered the first assessment of the contractual considerations that influence whether retirement payments actually align executive and creditor interests. The possibility that these payments serve an important incentive-alignment function deserves further study. Future work, however, should take careful account of the structural nuances identified here. Without understanding those details, this Article has shown, lawmakers and researchers cannot assess whether retirement pay aligns the interests of public company executives with those of creditors.

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APPENDIX

The evidence described in this Article was assembled from three separate databases. Information on executive compensation, including retirement pay, was drawn from Compustat's Execucomp database, which contains compensation data for executives of all of the public companies included in the Standard & Poor's 1500 Composite Index. Data on firm characteristics were separately drawn from Compustat's Fundamentals Annual database, which contains annual accounting data from securities filings. Finally, information on stock prices was drawn from the Center for Research in Security Prices (CRSP), which contains daily and monthly closing prices for all NYSE, Amex, and NASDAQ listed equities. All of the data are available upon request.

I. DATA

A. Dataset Assembly

1. Executive compensation and retirement pay. As explained in the Article, prior to 2006 public companies were required to disclose relatively little information about executive retirement payments. Thus, our dataset includes information on executive compensation and retirement payments between 2006 and 2011. The data include information on the total value of defined contribution payments owed to each executive, the earnings each executive obtained through investment of those defined contribution payments, the total value of defined benefit payments owed to each executive, and the amount of any defined benefit payment made to each executive during the sample period.

2. Executive characteristics. In addition to information on executive compensation, the dataset includes detail on executive-specific characteristics, including each executive's age, equity ownership, and

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whether the executive was the Chief Executive Officer or Chief Financial Officer in each observation year.

3. Firm characteristics. We combined the information on executives' retirement benefits, compensation, and characteristics with detailed accounting data describing each firm in our sample. The accounting information includes detail on each firm's level of current debt, long-term debt, assets, market value, and industry, along with information on each company's stock returns during the sample period.

4. Firm risk. Finally, to assess each company's level of risk over time, we added four different variables frequently used to measure risk to the dataset. First, we included information on the volatility of the company's stock price, a standard measure of firm-specific risk. Second, we drew information from Compustat to calculate the firm's leverage, or the ratio of its total debt to total equity, as of the end of each calendar year. Third, because some researchers argue that it is more accurate to calculate leverage at the end of each fiscal year, we separately calculated the ratio of each firm's total debt to total equity as of that date.[62] Finally, as a fourth measure of firm risk, we separately drew information on the price of credit default swaps (CDS), or insurance against the possibility that the firm will default on its debt. We obtained these prices from the Bloomberg terminal at the Columbia Business School library. CDS prices were available for

[62] Some argue that the value of the firm's total equity should be calculated at the end of the fiscal year because this approach ensures that the calculation of both debt and equity values occur on the same date; others contend that equity value should be calculated at the end of the calendar year because fiscal year calculations ignore important stock-market dynamics at the end of each calendar year. *Compare* Philip G. Berger, Eli Ofek & David L. Yermack, *Managerial Entrenchment and Capital Structure Decisions*, 52 J. FIN. 1411 (1997) *with* Miguel A. Ferreira & Pedro Matos, *The Colors of Investors' Money: The Role of Institutional Investors Around the World*, 88 J. FIN. ECON. 499 (2008). Since both arguments have merit, we include both controls in our analyses.

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approximately 23% of the firms in our sample. Because CDS may not be traded daily, we pulled the most recent trade data from an annual window between December 20 and December 31. To normalize the distribution and control for outliers, we used the natural log of each CDS price in the analysis described below.

B. Estimated Variables

1. Return on defined contribution balances. We calculated each executive's return on investment of her defined contribution balance using the data described above. The data include information on the total value of the defined contribution payments owed to each executive, the earnings each executive obtained through investment of those defined contributions, and the annual company and executive contributions to the executive's defined contribution plan. We estimated the executive's defined contribution balance at the beginning of the year by subtracting all contributions and earnings from the year-end balance. We then calculated the executive's percentage return on her investment by dividing her earnings by her defined contribution balance at the beginning of the year.[63]

2. Duration of defined benefit payments. We separately identified the group of executives who received defined benefit payments during our sample period. We then divided the amount of these payments by the total amount owed to the executive to obtain the percentage of the total payments made to the executive in the year she left the firm. This percentage allowed us to estimate the duration of the executive's retirement pay—that is, the number of years it will take until the executive

[63] This calculation is necessarily imprecise because, for example, some companies contribute continually throughout the year, rather than solely at the end of the year. Nevertheless, we have no reason to expect that errors relating to the timing of company or executive contributions systematically bias our results.

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receives the entire amount she is owed. For example, an executive who receives 50% of her defined benefit payments in the year she retires is assumed to receive the entire amount in two years.[64]

3. Executive tax benefits from supplemental defined contribution plans. As noted in the Article, executives receive substantial tax benefits through supplemental defined contribution plans, which shift some of the tax burden associated with retirement pay from the executive to the company. No previous study has attempted to estimate the value of this benefit for executives, but we do so here. The value of the benefit is roughly equivalent to the earnings the executive receives from the investment of her defined contribution payments multiplied by her tax rate. To see why, consider the below examples in which an executive defers $100 in compensation, generates a 50% return on this amount, and then receives the payment. For these purposes, assume that the executive and the company face a 40% tax rate, including on capital gains.

First, suppose that the executive is paid $100 and saves it that amount on her own. The executive pays taxes of $40 and invests her after-tax income of $60, generating gains of $30 ($60 x 50%). Then, when she withdraws her savings, she pays $12 in taxes on these gains ($30 x 40%), receiving a total of $78 ($60 in savings plus after-tax gains of $18). The company deducts $100 from its taxable income at the time the executive receives the pay, reducing its taxes by $40 ($100 x 40%). This $40 can be invested, generating returns of $20 ($40 x 50%). The company pays taxes of $8 on these earnings ($20 x 40%), resulting in a gain of $12 after taxes.

Now consider the after-tax payoffs if the executive invests through

[64] We exclude from the sample any observations in which this value is less than 1%, because these payments are likely to reflect rebalancing in the executive's defined benefit account rather than actual retirement payments.

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a tax-advantaged arrangement like a 401(k). The company deducts $100 from its taxable income at the time the executive defers the compensation, reducing its taxes at that point by $40 ($100 x 40%). The executive then withdraws $150 in total from the account, paying a tax of $60 ($150 x 40%)—leaving the executive with $90, or $12 more than if she saved this amount on her own. The additional $12 the executive receives does not, however, come at the expense of the company, which has still reduced its taxable income by $40 when the executive defers her pay, and therefore can generate investment returns on those savings.

Now suppose that the executive instead defers $100 through a supplemental defined contribution retirement arrangement that is not tax-advantaged. The company sets aside $100 for the executive, which grows to $150 by the time she receives the payment. The executive receives the same treatment as she did in the 401(k): she receives $150 in total, paying a tax of $60, leaving her with $90. But the company does not receive the same treatment as it does in the 401(k). When the executive receives the payment, the company may deduct $150 from its taxable income, but this deduction is partially offset by the $50 in gains the company generated to boost the executive's payment. Thus, the company's taxes are reduced by $40 (($150 - $50) x 40%) when the executive receives the payment. But the company is worse off than in the 401(k) case, because there the company reduced its taxes by the same amount *at the time the executive deferred the compensation*—rather than when she received her pay.

The company gives the executive tax-advantaged treatment of defined contribution payments above the federal statutory limit by increasing the company's own tax burden. To see this, note that the company defers $40 in tax savings when the executive defers pay through a "supplemental" arrangement. Like the executive's savings, those savings could have been invested and generated a 50% return, providing the company with an extra $20 before taxes and $12 ($20 x 40%) after taxes.

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On the whole, the company reduces its own expected payoff by $12 in order to increase the executive's payoff by an equivalent amount.

Because our dataset includes each executive's earnings on the investment of defined contribution payments, we can estimate the total value of these tax benefits by multiplying these earnings by the average executive tax rate. To be conservative, we assume an average rate of 20%. The resulting estimates of the tax benefits were presented in Table IV.

II. ANALYSIS

Below we present the results of multivariate regressions explaining the relationships described in the Article. All regressions include year and industry fixed effects; the latter are estimated using the 48 Fama-French industry classifications.[65] Additionally, all models control for firm size, as measured by the log of firm assets, and for a number of additional controls specific to each regression.[66] The standard errors in all regressions are clustered by executive. In the tables below, significance levels of 1, 5, and 10 percent are indicated by ***, **, and *, respectively.

A. Retirement Pay and Stock Returns

Below we present the results of two multivariate regressions in which each executive's annual return on her defined contribution payments is the dependent variable. The variable of interest is the firm's

[65] Eugene F. Fama & Kenneth R. French, *Industry Costs of Equity*, 43 J. FIN. ECON. 153, 179–81 (1997). Kenneth French's online library identifies Fama-French industry codes for each Standard Industry Classification code. *Detail for 49 Industry Portfolios*, KENNETH R. FRENCH, http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/Data_Library/det_49_ind_port.html.

[66] To address outliers, throughout our analysis all continuous control variables are winsorized at the first and ninety-ninth percentiles.

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stock return, and the regressions capture the effect of a change in the company's stock return on the return on each individual executive's defined contribution payments.[67] Model (a) includes observations from all firms in our sample; model (b) includes only firms in the Standard & Poor's 500. Each model controls for the executive's age, the size of her deferred compensation balance at the beginning of the year, the size of the firm, the value weighted market return, the Standard & Poor's 500 Index return, and the 5-year bond return. The mean values of the dependent variable for each sample are presented in parentheses.

	All Firms (7.1%) *(a)*	S&P 500 (7.5%) *(b)*
Annual Stock Return	0.221*** *(0.017)*	0.272 *** *(0.034)*
Controls for S&P 500, Value-Weighted Market, and Five-Year Bond Market Returns?	Yes	Yes
Controls for Executive and Firm Characteristics?	Yes	Yes
Industry Fixed Effects?	Yes	Yes
Year Fixed Effects?	Yes	Yes
Observations	23,141	9,527
R-squared	0.02	0.04

TABLE V. RETIREMENT PAY AND STOCK RETURNS[68]

[67] While the results described below reflect models including all executives in our dataset, the results were unchanged when we ran the models for CEOs only.

[68] In unreported analysis we included controls for the executive's tenure as well as the firm's leverage, research-to-asset ratio, and the value of assets squared; our results were unchanged. Additionally, because ordinary least squares regression may be problematic given the distribution of our earnings returns, we also ran a bounded Tobit model. Our results were unchanged. We thank Darius Palia for these suggestions.

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B. The Duration of Retirement Pay and Firm Risk

To examine the relationship between the duration of executives' defined benefit payments and firm risk, we constructed multivariate regression models in which the percentage of the total amount of an executive's defined benefit payments that are received in the year the executive leaves the firm is the dependent variable.[69] In each of the models below, the variable of interest is one of four measures of firm risk: the firm's equity volatility (model (*a*)), leverage as calculated on a calendar-year basis (model (*b*)), leverage as calculated on a fiscal-year basis (model (*c*)), and the price of a credit default swap on the firm's debt (model (*d*)).[70] In addition to the controls described above, all four models include controls for the value of the executive's total defined benefit payments, the executive's age, the executive's total compensation, and the total value of the executive's equity holdings.[71]

[69] Because our dependent variable has a lower bound of zero and an upper bound of one, in unreported analysis we also run bounded Tobit regressions. The statistical significance of our results is strengthened under this alternate specification.

[70] Although we include models evaluating the relationship between the duration of defined benefit payments and CDS prices, we note that the sample of firms with CDS prices is necessarily limited. CDS contracts are available only for firms carrying debt, and they are not traded daily. Thus, many of the firms in our sample do not have CDS prices. Overall, the firms for which we have CDS prices available are more debt-laden, larger, and riskier than the average firms in our broader sample. Nevertheless, it is notable that, even in this limited sample, we find a statistically significant relationship between the duration of executives' defined benefit payments and the level of firm risk.

[71] In unreported analysis, we separately control for the executive's tenure as well as the firm's research-to-assets ratio and the value of the firm's assets squared. Our results remain significant.

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	Percentage Received in Retirement Year (0.46) (*a*)	Percentage Received in Retirement Year (0.46) (*b*)	Percentage Received in Retirement Year (0.46) (*c*)	Percentage Received in Retirement Year (0.46) (*d*)
Equity Volatility	3.903** *(1.530)*			
Calendar Year Leverage		0.026*** *(0.008)*		
Fiscal Year Leverage			0.043** *(0.02141)*	
CDS Price				0.094*** *(0.035)*
Controls for Executive and Firm Characteristics?	Yes	Yes	Yes	Yes
Industry Fixed Effects?	Yes	Yes	Yes	Yes
Year Fixed Effects?	Yes	Yes	Yes	Yes
Observations	392	391	364	200
R-squared	0.41	0.41	0.39	0.48

TABLE VI. DURATION OF EXECUTIVE RETIREMENT PAY AND FIRM RISK