EXECUTIVE COMPENSATION AND CORPORATE CONTROVERSY

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INTRODUCTION

Recent notable bankruptcies such as Global Crossing, Qwest, Worldcom, and Enron have led many observers to question whether there is a link between poor firm performance and incentive compensation for firm managers.[1] Specifically, the large stock option grants realized by the management teams at the aforementioned firms prior to their bankruptcies raise the question of whether stock-based incentives actually create perverse incentives. Do stock option grants and other forms of incentive compensation lead to a focus on short-term results, manipulation of accounting statements, tax avoidance, and outright fraud? What this survey will argue is that, in general, the answer is no. Stock-based incentives normally function as they are intended to—they have a positive impact on firm performance. However, in cases of very large stock option grants (such as those realized by the management teams of Global Crossing, Qwest, and Worldcom), the grants themselves may be symptomatic of deeper problems involving a culture of corporate greed, malfeasance, and a failure of corporate governance. To the extent that extremely disproportionate grants are correlated with deeper firm-level problems, then the existence of such grants can usefully serve as an early warning sign for investors, employees, regulators, and others about impending corporate crises and collapses. To understand these issues, it is important to begin with why we use incentives in the first place.

Modern finance theory holds that the proper objective of managers is to run the company in the shareholders' interests.[2] But managers, with effective control over the company, can make decisions and take actions that serve their own interests instead. The best way to ensure that they act in the interests of shareholders is to tie their compensation to the company's

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1. *See, e.g.*, Paul Krugman, *For Richer*, N.Y. TIMES, Oct. 20, 2002, (magazine), at 62, 66 ("[A] great executive can make a big difference—but those huge pay packages have been going as often as not to executives whose performance is mediocre at best."); Lucian Arye Bebchuk et al., *Managerial Power and Rent Extraction in the Design of Executive Compensation*, 69 U. CHI. L. REV. 751, 754 (2002) ("[M]anagerial power can lead to the use of inefficient pay structures that weaken or distort incentives and that thus, in turn, further reduce shareholder value.").

2. RICHARD BREALEY & STEWART MYERS, PRINCIPLES OF CORPORATE FINANCE 3 (2d ed. 1984).

performance. Recent experience has borne this out: top executive compensation and stock prices have both increased dramatically in the 1990s.[3]

However, the increase in executive compensation has sparked a growing debate about whether such compensation is excessive, especially when average workers' incomes have been relatively stagnant.[4] Furthermore, the highly publicized bankruptcies above, along with the collapse in share prices since 2000, have led some to argue that executive compensation practices, specifically the granting of stock options, are pernicious.[5] Do executive compensation packages provide appropriate incentives to managers, thereby aligning their interests with those of shareholders, or do they actually destroy shareholder value over the medium to long-run?

Much of the discussion in the academic literature has focused on the degree to which managers' interests are aligned with those of shareholders.[6] Understanding this debate and how it informs the optimal design of compensation packages will be the major focus of this survey. I will discuss the structure of executive compensation packages, the strength of these compensation packages as incentives for executives, and finally, the consequences of compensation packages on firm performance.

I. THE STRUCTURE OF EXECUTIVE COMPENSATION

In order to understand the determinants of incentives, we must first understand the components of executive compensation. As an illustrative example, consider the case of top management at IBM. Figure 1 presents executive compensation data for the five highest paid executives at IBM for fiscal year 1999. Figure 1 includes data on salary, bonus, other annual compensation, restricted stock grants, grants of stock options, long-term incentive payouts (LTIP), and all other compensation. It does not include data on stock options exercised, sales of stock, or existing holdings of stock

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3. RAJESH K. AGGARWAL & ANDREW A. SAMWICK, EMPIRE BUILDERS AND SHIRKERS: INVESTMENT, FIRM PERFORMANCE, AND MANAGERIAL INCENTIVES (2002) (Nat'l Bureau of Econ. Research, Working Paper No. 7335); Brian J. Hall & Jeffery B. Liebman, *Are CEOs Really Paid Like Bureaucrats?*, 113 Q. J. ECON. 653, 662 (1998).

4. *See* Jennifer Reingold, *Special Report: Executive Pay*, BUS. WK., April 17, 2000 (noting that blue-collar workers only received a 3.4% pay raise in 2000 as compared with the 17% raise obtained by corporate executives).

5. Krugman, *supra* note 1; Bebchuk, *supra* note 1.

6. Michael C. Jensen & Kevin J. Murphy, *Performance Pay & Top Management Incentives*, 98 J. POL. ECON. 225, 225–26 (1990); Rajesh K. Aggarwal & Andrew A. Samwick, *The Other Side of the Tradeoff: The Impact of Risk on Executive Compensation*, 107 J. POL. ECON. 65, 66, 103 (1999). *But see* Hall & Liebman, *supra* note 3, at 656 (noting that "CEOs have goals that often conflict with the interests of shareholders").

or options. The components included add up to the total annual compensation.

Figure 1

Executive Compensation, IBM Corp., Fiscal Year 1999

Name	Louis V. Gerstner, Jr.	J.M. Thompson	S.J. Palmissano	Lawrence R. Ricciardi	N.M. Donofrio
Title	Chmn. & CEO	Sr. V-P	Sr. V-P	Sr. V-P & Gen. Couns.	Sr. V-P
Salary	2,000,000	662,500	575,000	500,000	550,000
Bonus	7,200,000	900,000	775,000	725,000	650,000
Other Annual	66,376	5,122	0	276	729
Restricted Stock Granted	0	0	6,312,500	0	0
Stock Options Granted	0	3,890,899	3,890,899	3,112,720	2,334,540
LTIP	5,250,717	3,029,530	2,019,686	2,524,608	3,029,530
All Other Comp.	285,000	49,875	44,250	40,500	36,000
Total Annual Comp.	14,802,093	8,537,926	13,617,335	6,903,104	6,600,799

Source: Standard & Poor's ExecuComp.

Total annual compensation can be divided into two categories: short-term components of compensation and long-term components of compensation.

A. Short-Term Components of Compensation

Short-term components of compensation include salary, bonuses, and other annual compensation. Annual salary is fixed in advance and generally does not have an incentive component associated with it. The exception to this statement is that future increases in salary may in part be determined by current firm performance. Jensen and Murphy show that the present value of current and future increases in salary and bonuses are a small fraction of total incentives.[7]

Annual bonuses are typically tied to measures of firm performance. Interestingly, the performance measures are often based on accounting information such as earnings, sales, or operating income. Common metrics employed include return on equity (ROE), return on assets (ROA), return

7. Jensen & Murphy, *supra* note 6, at 226–32.

on investment (ROI), and economic value added (EVA).[8] Other measures of performance include subjective reports by board members or superiors for lower ranking executives and targets established by the board for investment, product or plant quality (e.g., "zero-defects"), market share, growth rates for income or sales, strategic objectives (e.g., expansion into new lines of business or restructuring of old businesses), and performance relative to that of industry competitors.[9]

There are several points to note about short-term components of compensation. While short-term compensation does have some incentive features (especially the bonus component), it is typically not linked to stock performance in the form of stock returns. Given that shareholders presumably care most about stock returns, this is somewhat surprising. It will become apparent, however, that long-term components of compensation are much more strongly linked to stock returns. For this reason, the right way to think about annual salary and bonuses is that salary provides the executive with a minimum level of income prior to any performance standards or targets being met. Bonuses typically reflect how well the firm or executive has met non-stock return based objectives established by the board. Other annual compensation is usually negligible.

When looking at IBM in Figure 1, Chairman and CEO Louis V. Gerstner, Jr.'s salary, and especially his bonus, stand out. The short-term components of his annual compensation are roughly six (or more) times those of the other IBM executives. The large size of Gerstner's bonus is perhaps a reflection of the fact that while bonuses are usually set quite objectively according to predetermined standards, there is also room for some discretion in bonus payouts. Gerstner's bonus was large enough for him to remain the highest paid executive at IBM.[10]

B. Long-Term Components of Compensation

Long-term components of compensation include new grants of restricted stock, new grants of stock options, long-term incentive plan payouts, and all other compensation. All other compensation, including gross-ups for tax liabilities, perquisites, preferential discounts on stock purchases, contributions to benefit plans, and severance payments, is usually relatively unimportant.

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8. Kevin J. Murphy, *Executive Compensation*, *in* 3 HANDBOOK OF LABOR ECONOMICS 2485, 2500–03 (O. Ashenfelter & D. Card eds., 1999).

9. *Id.*; *see also* Rajesh K. Aggarwal & Andrew A. Samwick, *Performance Incentives Within Firms: The Effect of Managerial Responsibility*, 58 J. FIN. 1613 (2003).

10. See fig. 1 *infra*.

1. Restricted Stock

Restricted stock grants are restricted in the sense that the executive must remain with the firm for a specified amount of time in order to not forfeit the stock grant.[11] Restricted stock grants with a five-year vesting period are typical.[12] There are two practical implications of this restriction. First, the executive has potentially a strong incentive to stay with the firm in order to benefit from the grant. Second, while the vesting period is in effect, the executive cannot sell the stock. She is, in effect, forced to have part of her compensation tied to firm performance over the vesting period. Restricted stock grants clearly align an executive's interests with those of the company's shareholders. For this reason, it is interesting that the use of restricted stock grants has declined in recent years. As an incentive mechanism, restrictive stock grants have been supplanted by stock options. Figure 1 shows that of the five highest paid executives at IBM, only S.J. Palmisano received any restricted stock in 1999.

2. Stock Options

Stock options have become the primary mechanism through which managers' interests are aligned with those of shareholders.[13] A stock option gives the manager the right, but not the obligation, to purchase a share of the firm's stock for a pre-specified price (known as the exercise price) on, or before, a pre-specified date.[14] Most stock options are granted "at the money," which means that the exercise price is set equal to the stock price on the day of the grant.[15] A typical stock option grant has a life of ten years.[16] Since stock prices on average increase from year to year, over time most stock options will move "into the money," meaning that the current stock price is greater than the exercise price. Stock options usually have a vesting schedule associated with them, such as 10% of an option grant vests every six months, so that the full grant vests over five years with another five years to maturity.[17]

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11. Murphy, *supra* note 8, at 2516.

12. *See id.* (stating that "the average vesting period for restrictive stock grants" is between 50 months for producer firms and 20 months for consumer firms).

13. Hall & Liebman, *supra* note 3, at 656; *see* Aggarwal & Samwick, *supra* note 9, at 1621–25.

14. Fisher Black & Myron Scholes, *The Pricing of Option and Corporate Liabilities*, 81 J. POL. ECON. 637, 637 (1973); Robert C. Merton, *Theory of Rational Option Pricing*, 4 BELL J. ECON. & MGMT. SCI. 141, 142 (1973).

15. Murphy, *supra* note 8, at 2508.

16. *Id.*

17. *Id.* at 2507–08.

For purposes of reported earnings, options granted at the money or out of the money do not count against earnings.[18] Options that are in the money or options that have a variable exercise price (such as indexed options where the option is indexed to aggregate stock market returns) do count against earnings.[19] This may explain why most options are issued at the money and why we so rarely see indexed options.

For tax purposes, I focus on non-qualified options, which are the form of stock options that most executives receive. Non-qualified options have no tax implication at the time that they are issued.[20] When the option is exercised, the executive pays tax on the difference between the stock price and the exercise price at the ordinary income tax rate.[21] The firm deducts the difference between the stock price and the exercise price as compensation expense.[22] If the executive later sells the stock, then the executive pays tax on the difference between the sale price and the market price at exercise of the option at the capital gains tax rate.[23] Because the firm is able to deduct the difference between the stock price at exercise and the exercise price as compensation expense, non-qualified options have favorable tax treatment from the firm's perspective.

Favorable tax treatment is a significant part of the explanation for why the use of stock options has increased so dramatically. Favorable accounting treatment also explains why the use of stock options has increased. For the most part, stock options never show up on accounting statements. Firms are required to disclose grants of stock options but are not required to take an accounting charge for them.[24] As a result, stock options are an excellent way of providing managers with deferred compensation without incurring an accounting liability. The fact that favorable accounting treatment only accrues to options that are granted at or out of the money with a pre-specified exercise price and date helps to explain the prevalence of granting stock options at the money.

Stock options are usually valued using the Black–Scholes formula.[25] It is beyond the scope of this survey to explain the Black–Scholes method, but numerous references for computing Black–Scholes values exist. Murphy's survey contains a lucid description of Black–Scholes in a compensation

18. *Id.* at 2514.
19. *Id.*
20. *Id.*
21. *Id.*
22. *Id.*
23. *Id.*
24. *Id.*
25. *Id.* at 2511.

setting.[26] The most salient point about using the Black–Scholes method is that it probably overstates the value to the executive of the option grant.[27] Hall and Murphy argue that because executives are risk averse and hold large, undiversified positions in their own firms, they will value stock options at a lower level than a well-diversified outside investor.[28] Figure 1 reports Black–Scholes values for stock options granted to executives at IBM. While Gerstner did not receive any new option grants in 1999, the other four executives received substantial grants of new options. Gerstner received a very large grant of new options in 1997, consistent with the view that options are designed to provide incentives over many years.

IBM is quite typical in its grants of stock options. Stock options have become the dominant mechanism through which incentives are provided to managers.[29] Clearly, stock options are tied to the firm's stock price performance. As a result, in many situations they do a good job of aligning a manager's interests with those of the shareholders. This becomes more true as options move into the money.

3. Long-Term Incentive Plans

Long-term incentive plan payouts are similar to bonuses but are awarded for performance over several years.[30] For example, a long-term incentive plan payout may be triggered if ROA is at least 15% for three consecutive years.[31] In general, long-term incentive plans are not that important on a year to year basis because they occur only when a long-term target is met. For IBM in 1999, however, long-term incentive plan payouts were quite important for all five executives. As is clear from Figure 1, IBM's top five highest paid executives were compensated quite well in 1999.

C. Measures of Compensation

There are several different measures of compensation that can be used. They are: total annual compensation given by the firm (as in Figure 1 for

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26. *Id.* at 2556–57.

27. Brian J. Hall & Kevin J. Murphy, *Optimal Exercise Prices for Executive Stock Options*, 90 AEA PAPERS & PROC. 209, 210 (2000).

28. *Id.*

29. Hall & Liebman, *supra* note 3, at 679; Aggarwal & Samwick, *supra* note 9, at 1621.

30. Murphy, *supra* note 8, at 2516.

31. *Id.*

IBM), annual dollar compensation taken by the executive, and the annual change in wealth for the executive based on changes in firm value.[32]

Total annual compensation given by the firm includes salary, bonus, new grants of restricted stock, new grants of stock options, long-term incentive plan payouts, gross-ups for tax liabilities, perquisites, preferential discounts on stock purchases, contributions to benefit plans, and severance payments.[33] The most important elements of total annual compensation given by the firm in terms of magnitude are usually salary, bonus, grants of restricted stock, and grants of stock options (IBM is a bit of an exception with the large long-term incentive payouts).[34]

Annual dollar compensation taken by the executive includes salary, bonus, new grants of restricted stock, the net value of stock options exercised, long-term incentive plan payouts, gross-ups for tax liabilities, perquisites, preferential discounts on stock purchases, contributions to benefit plans, and severance payments.[35] The most important elements of annual dollar compensation taken by the executive are salary, bonus, new grants of restricted stock, and exercises of stock options.

The annual change in wealth for the executive includes total annual compensation given by the firm and also includes changes in the value of existing holdings of stock and existing holdings of stock options. Interestingly, the most important elements of the annual change in wealth are the changes in the value of existing holdings of stock and options.[36]

Which of these measures is preferred? To a large extent, it depends on the purpose for which the information is gathered. Total annual compensation given by the firm is a fair reflection of the dollar value of compensation given to the executive in that year. This is not necessarily the best measure of how strong the executive's incentives are or how closely the executive's interests are aligned with those of the shareholders.

Annual dollar compensation taken by the executive is a fair reflection of how much cash the executive has taken from his or her stake in the firm. This measure only takes account of grants of options when they are exercised, usually for cash. In a sense, this measure focuses on how the executive's interests are becoming de-coupled from those of the shareholders. Since our interest is in incentive alignment, we will not focus on this measure going forward.

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32. *See* STANDARD & POOR'S, DATA ITEM DEFINITIONS, EXECUTIVE COMPENSATION DATA ITEMS, *available at* http://mi.compustat.com/cgi-mi-auth/mihelp.cgi?tab=defs (last visited, May 11, 2003).

33. *Id.*

34. Murphy, *supra* note 8, at 2491.

35. STANDARD & POOR'S, *supra* note 32.

36. Murphy, *supra* note 8, at 2491–92.

The third measure, the annual change in wealth, focuses on how large a position the executive holds in the firm. For this reason, it is a good measure of how aligned an executive's interests are with those of other shareholders. On the other hand, at least some of an executive's holdings of stock and options are voluntary in the sense that the shares and options are not restricted from being sold. Because some of the holdings are voluntary, the shareholders are not, strictly speaking, providing incentives. While this issue is real, it is also worth noting that the stock market reaction to insider sales is typically negative, implying that there are some limitations on an insider's ability to sell shares. Overall, as a measure of incentive strength, the third measure seems to perform best in the sense that it captures the bulk of incentives provided to executives.

D. Compensation Statistics

Figure 2 provides summary information about the elements of compensation. The data come from Standard and Poor's ExecuComp dataset.[37] The data cover the 1500 firms included in the S&P 500, S&P MidCap 400, and S&P SmallCap 600 from 1993 to 1997. For each firm, data are reported for the top five executives ranked annually on the basis of salary and bonus. Figure 2 divides executives into four categories based on the classification scheme in Aggarwal and Samwick (2003).[38] The first category is chief executive officers (CEO).[39] The second is executives with oversight authority for the firm (e.g., executives with titles such as president (non-CEO), chief operating officer (COO), chief financial officer (CFO), chairman, and vice-chairman).[40] The third is executives with divisional responsibility (e.g., CEOs of divisions or subsidiaries, executives in charge of a specific product line or geographical area, and executives with specific production-related responsibilities).[41] The fourth is executives with neither oversight authority nor divisional responsibility (e.g., vice presidents with no other information given).[42]

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37. STANDARD & POOR'S, S&P COMPUSTAT EXECUCOMP: THE EXECUTIVE COMPENSATION DATABASE (Nov. 1995).

38. Aggarwal & Samwick, *supra* note 9, at 1621–25.

39. *Id.*

40. *Id.*

41. *Id.*

42. *Id.*

Figure 2

Descriptive Statistics on Compensation by Job Classification, 1993–97

Group and Variable	Mean	Median	Standard Deviation
Total Annual Compensation (in 1997 dollars)			
CEO	$2,739,000	1,494,000	5,183,000
Oversight	1,532,000	847,000	3,461,000
Divisional	973,000	605,000	1,324,000
Neither	873,000	555,000	1,254,000
Long-Term Components of Total Annual Compensation (in 1997 dollars)			
CEO	1,571,000	543,000	4,381,000
Oversight	879,000	296,000	3,252,000
Divisional	488,000	190,000	1,054,000
Neither	417,000	170,000	985,000
Holdings of Stock (in 1997 dollars)			
CEO	74,606,000	5,801,000	722,605,000
Oversight	17,039,000	1,079,000	117,583,000
Divisional	2,496,000	422,000	15,908,000
Neither	4,898,000	475,000	98,923,000
Holdings of Options (in 1997 dollars)			
CEO	7,968,000	2,218,000	22,664,000
Oversight	3,151,000	887,000	11,320,000
Divisional	2,018,000	583,000	7,964,000
Neither	1,776,000	578,000	4,514,000

Note: Long-term compensation is comprised of the following components of total annual compensation: grants of restricted stock, grants of stock options, long-term incentive plan payouts, gross-ups for tax liabilities, perquisites, preferential discounts on stock purchases, contributions to benefit plans, and severance payments.
Source: Aggarwal and Samwick (2003)

1. Total Annual Compensation

There are a number of important features of executive compensation brought out by Figure 2. Executives, and especially CEOs, seem to be quite well-paid. The average CEO made $2,739,000 in total annual compensation given by the firm. The average is skewed by the fact that there are

some CEOs who made enormous amounts of money in some years. Figure 3 lists the twenty highest paid CEOs in 2000, plus Bernard Ebbers from Worldcom and Kenneth Lay and Jeffrey Skilling from Enron. The spread in compensation among even the twenty highest paid is quite dramatic, from $690,347,363 for Steven Jobs, the CEO of Apple Computer, to $68,984,309 for Stephen Case, the CEO of AOL Time Warner. Of the $690 million in compensation Stephen Jobs received, $600 million was in the form of a stock option grant. In contrast, Ebbers, Lay, and Skilling, while obviously highly compensated, do not particularly stand out.

Figure 3

20 Most Highly Paid CEOs—2000

Company	Last Name	First Name	Compensation
APPLE COMPUTER	Jobs	Steven	$ 690,347,363
SIEBEL SYSTEMS	Siebel	Thomas	$ 293,097,323
KANSAS CITY SOUTHERN INDS	Rowland	Landon	$ 245,016,942
CITIGROUP INC	Weill	Sanford	$ 230,033,668
TYCO INTERNATIONAL	Kozlowski	L. Dennis	$ 139,494,530
PRICELINE.COM	Schulman	Daniel	$ 130,007,279
GENERAL ELECTRIC	Welch, Jr.	John	$ 125,402,919
TIBCO SOFTWARE	Ranadive	Vivek	$ 120,640,498
CMGI INC	Wetherell	David	$ 118,191,639
SPX CORP	Blystone	John	$ 117,669,131
LUCENT TECHNOLOGIES INC	McGinn	Richard	$ 116,091,764
INKTOMI CORP	Peterschmidt	David	$ 110,536,133
COCA-COLA CO	Daft	Douglas	$ 108,489,998
CISCO SYSTEMS	Chambers	John	$ 107,822,524
CONSECO INC	Wendt	Gary	$ 102,783,568
NABORS INDUSTRIES	Isenberg	Eugene	$ 89,210,087
GLOBAL CROSSING LTD	Hindery, Jr.	Leo	$ 85,889,774
SPRINT PCS GROUP	Esrey	William	$ 79,830,775
VIACOM INC-CL B	Redstone	Sumner	$ 70,346,074
AOL TIME WARNER	Case	Stephen	$ 68,984,309
WORLDCOM INC-WORLDCOM GROUP	Ebbers	Bernard	$ 40,382,527
ENRON CORP	Lay	Kenneth	$ 30,904,588
ENRON CORP	Skilling	Jeffrey	$ 27,235,119

From Figure 2, the median CEO made $1,494,000 over the period, substantially less than the average CEO. Other executives made smaller

amounts, although in all cases executive compensation is quite substantial. Executives with oversight authority made, on average, $1,532,000, with a median of $847,000. Executives with divisional responsibility made, on average, $973,000, with a median of $605,000. Executives with neither oversight authority nor divisional responsibility made, on average, $873,000, with a median of $555,000. It is worth noting that while these sums are substantial, they are not as large as is often portrayed in the media. The media tend to focus on the most highly paid executives, such as those listed in Figure 3. What is perhaps more interesting is to focus on the strength of incentives and how well aligned managers' interests are with those of shareholders.

2. Holdings of Stock and Options

While the sums paid to executives on an annual basis are large, they pale in comparison to the dollar value of executives' holdings of stock and options, especially CEOs. On average, the dollar value of CEOs holdings of stock is $74,606,000 while the dollar value of options held is $7,968,000. However, when dealing with estimates of executive compensation, one should always be concerned with the skewness of the data. For example, the median dollar value of holdings of stock for CEOs is $5,801,000. Much of the reason the mean dollar value of stock holdings is so much greater than the median can be attributed to a few outliers. In particular, the holdings of one man, Bill Gates, who was CEO of Microsoft over the sample period, have a pronounced effect on the results. For a brief while in 1999, the dollar value of Bill Gates's holdings in Microsoft exceeded $100 billion. Over the sample period, the dollar value of Bill Gates's holdings averaged about $20 billion. Figure 2 also shows that the dollar value of holdings of stock and options for executives other than the CEO are quite substantial and quite skewed. These holdings of stock and options provide the bulk of incentives for all executives.

When looking at medians, holdings of stock are more important for CEOs and executives with oversight authority than are holdings of options. Conversely, for executives with divisional responsibility and executives with neither divisional responsibility nor oversight authority, options are more important than holdings of stock. This is not true when looking at average dollar values of holdings. Mean holdings of stock are greater than mean holdings of options for all four job groups. Again, medians are more likely to provide a representative picture of the dollar value of stock and option holdings.

One reason why holdings of stock are more important for CEOs and executives with oversight authority than for executives with divisional responsibility and executives with neither divisional responsibility nor oversight authority is that the former two groups are more likely to include founders of the firm. Founders typically have large equity positions and may not participate in option programs (a good example of this is Bill Gates of Microsoft). Executives in the divisional and neither groups are less likely to be founders or early employees, and so may have fewer equity holdings. The dramatic extension of stock option grants to employees lower in the firm hierarchy is consistent with this pattern.

II. INCENTIVES

Given these basic facts about executive compensation, one may well wonder how compensation is translated into incentives and how incentives are determined. Incentives have historically been calculated as pay–performance sensitivities (PPS).[43] The idea behind the pay–performance sensitivity is to see how much compensation depends on how well the firm performs.[44] Typically, firm performance is measured either in terms of stock returns or accounting returns (e.g., net income divided by the book value of equity or assets).[45] Here we will focus on firm performance based on stock returns. Estimates from the literature find that CEOs receive between $3.25 and $5.29 for every thousand-dollar increase in shareholder wealth.[46] Aggarwal and Samwick show that these estimates are biased downwards because they do not take into account the risk executives face from having compensation tied to firm performance.[47]

More recent estimates from Aggarwal and Samwick for these sensitivities are provided in Figure 4.[48]

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43. *See* Jensen & Murphy, *supra* note 6, at 227–28 (discussing the calculation and implications of pay–performance sensitivities).

44. *See id.* ("[P]ay performance sensitivity . . . [is] the dollar change in CEO's wealth associated with a dollar change in the wealth of the shareholders.")

45. Murphy, *supra* note 8, at 2500.

46. Hall & Liebman, *supra* note 3, at 653–54, 676.

47. Aggarwal & Samwick, *supra* note 6, at 84 (indicating that the pay–performance sensitivity for CEOs is between $6.59 and $14.52 for every thousand-dollar increase in shareholder wealth).

48. *Id.* at 80.

Figure 4

Descriptive Statistics on Incentives by Job Classification

Group and Variable	Mean	Median	Standard Deviation
Stock and Option PPS			
CEO	3.9941	1.2769	7.1526
Oversight	1.2504	0.3137	3.5974
Divisional	0.3750	0.1835	0.8289
Neither	0.4336	0.1765	1.0910
Stock PPS			
CEO	3.1658	0.3883	7.0067
Oversight	0.9112	0.0622	3.5339
Divisional	0.1626	0.0281	0.0307
Neither	0.2245	0.0307	1.0000
Option PPS			
CEO	0.8283	0.4153	1.2027
Oversight	0.3393	0.1609	0.5867
Divisional	0.2124	0.1160	0.3805
Neither	0.2092	0.1048	0.3641

Note: Pay–performance sensitivities (PPS) reflect the executives' percentage ownership of the firm on a scale of 0 to 100.
Source: Aggarwal and Samwick (2003)

For CEOs, the average stock and option pay–performance sensitivity is 3.99%. That is, we can think of the CEOs holdings of stock and options as being 3.99% of the total equity outstanding in the firm. Pay–performance sensitivities are often reported as the dollars that accrue to an executive from a thousand-dollar increase in shareholder wealth. On average, then, a CEO receives $39.94 from changes in the value of her stock and option holdings for a thousand-dollar increase in shareholder wealth. Once again, the medians are smaller than the means. At the median, a CEO receives $12.77 from changes in the value of her stock and option holdings for a thousand-dollar increase in shareholder wealth.

Several other points stand out. First, the skewness of pay–performance sensitivities is much more pronounced for stock than it is for options.[49] Second, CEOs have much greater pay–performance sensitivities than do the other groups of executives.[50] Third, at the median, all four groups of executives have greater pay–performance sensitivities from options than

49. Aggarwal & Samwick, *supra* note 9, at 1623 tbl. II.
50. *Id.*

they do from stock. To a large extent, this is a reflection of the fact that options have become the incentive device of choice for most companies.

The following figures graphically illustrate the evolution of the use of stock and options as incentive devices from 1993 to 1997.

Figure 5
Median Pay-Performance Sensitivities from Stock

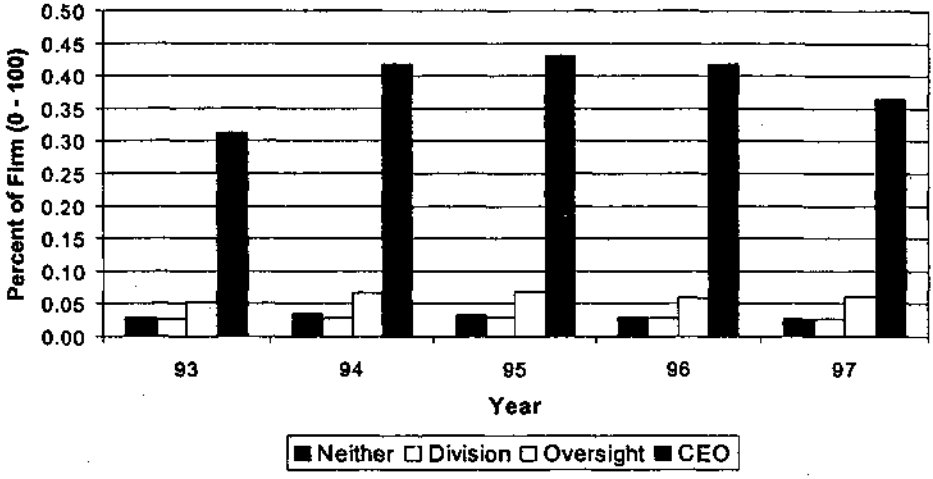
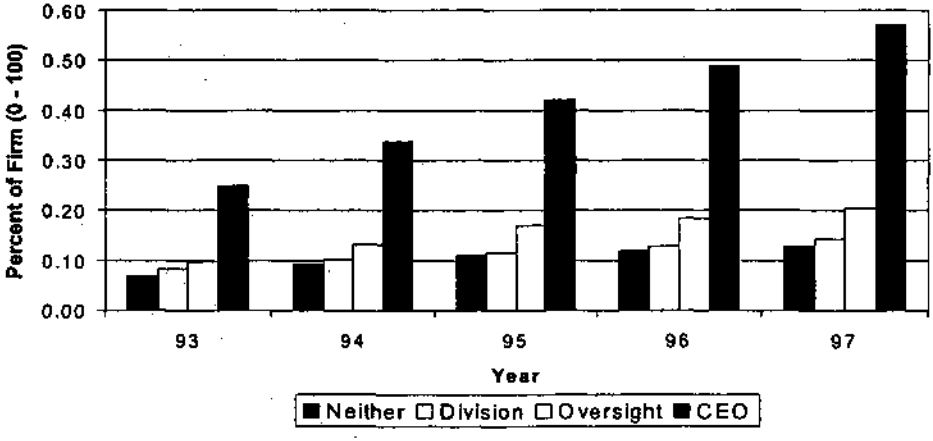


Figure 6
Median Pay-Performance Sensitivities from Options



While pay–performance sensitivities from stockholdings have remained relatively constant over the sample period, pay–performance sensitivities from options have shown a dramatic increase.[51] From 1993 to 1997, pay–performance sensitivities from options for CEOs have more than doubled. The same is true for executives with oversight authority. While the pay–performance sensitivities from options have shown large increases for executives with divisional responsibility and executives with neither responsibility, these increases have not been as large as the increases for CEOs and executives with oversight authority. Aggarwal and Samwick argue that this is a reflection of the fact that overall firm returns are a better measure of a CEO's or an oversight executive's performance than they are of a divisional executive's performance or the performance of an executive with neither divisional responsibility nor oversight authority.[52] In other words, CEOs and oversight executives should have more sensitivity of pay to performance.

It is also worth noting that the rise in pay–performance sensitivities from options corresponds to a large rise in the stock market as a whole. This effect is not driving the full increase in pay–performance sensitivities from stock options.

III. DO INCENTIVES INFLUENCE FIRM PERFORMANCE?

If incentives are to matter, it must be the case that incentives have a significant impact on firm value. Interestingly, the basic question of whether greater incentives improve firm performance has been quite controversial. Here, I present some of the evidence in this debate.

Morck, Shleifer, and Vishny present a result in which greater incentives do not improve firm performance.[53] They define incentives as the amount of stock managers' hold in their firms.[54] They find that firm performance is increasing in managerial ownership for ownership between zero and five percent of the total equity in the firm.[55] However, they find that firm performance is decreasing in managerial ownership between ownership of five and twenty five percent.[56] They then find that firm

51. *Id.* at 11, 40 fig. 2.

52. *Id.* at 3–4.

53. Randall Morck et al., *Management Ownership and Market Valuation—An Empirical Analysis*, 20 J. FIN. ECON. 293, 294–95 (1988).

54. *Id.* at 294.

55. *Id.*

56. *Id.* at 295.

performance is once again increasing for managerial ownership greater than twenty five percent.[57]

They argue that for low levels of ownership (between zero and five percent), incentives work and greater incentives lead to better firm performance.[58] For intermediate levels of ownership (between five and twenty five percent), incentives cease to function.[59] Instead, greater ownership entrenches managers in the sense that they are hard to dismiss when they own a substantial fraction of the equity in the firm. As a result, managers take actions that benefit themselves while decreasing the value of the firm in this intermediate range of ownership. Managers are willing to forego some firm value, even though this reduces the value of their own equity stakes, because outside shareholders still bear the majority of the value reduction while the managers get all of the benefits. For high levels of ownership (greater than twenty-five percent), incentives function once again.[60] Managers own a sufficiently large fraction of the equity that they are no longer willing to take actions that reduce the value of the firm. Greater incentives again lead to better firm performance, although in this region of ownership the relationship is weaker.[61] The interesting implication of Morck, Shleifer, and Vishny's findings is that greater incentives are not always better—in the five to twenty-five percent ownership range, greater incentives are worse.[62]

While this result clearly has important implications for the amount of equity managers should hold in their firms, this result has not gone unchallenged. Himmelberg, Hubbard, and Palia make the point that we do not know if greater incentives lead to better performance or if firms that perform better happen to give their managers more stock.[63] They much more carefully control for firm-specific factors when estimating the relationship between firm performance and incentives. They find that there is essentially no relationship between incentives and firm performance.[64]

An additional and important piece of evidence in this debate can be found by looking directly at the data on executive compensation. Figure 7 lists the twenty most highly paid CEOs in 1999, plus Kenneth Lay and Jeffrey Skilling from Enron.

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57. *Id.*
58. *Id.*
59. *Id.*
60. *Id.*
61. *Id.*
62. *Id.*
63. Charles P. Himmelberg et al., *Understanding the Determinants of Managerial Ownership and the Link Between Ownership and Performance*, 53 J. FIN. ECON. 353, 371–81 (1999).
64. *Id.* at 354, 381.

Figure 7

20 Most Highly Paid CEOs—1999

Name	Company	Total Annual Compensation
1. Robert Annunziata	Global Crossing, Ltd.	193,784,118
2. Joseph Nacchio	Qwest Communication Intl., Inc.	172,205,151
3. L. Dennis Kozlowski	Tyco International Ltd.	138,331,617
4. Thomas Siebel	Siebel Systems, Inc.	134,437,170
5. Michael Jeffries	Abercrombie & Fitch	124,513,616
6. Sanford Weill	Citigroup, Inc.	109,426,548
7. Carleton Fiorina	Hewlett-Packard Co.	101,299,548
8. Hugh McColl, Jr.	Bank of America Corp.	84,825,255
9. John Welch, Jr.	General Electric Co.	70,366,772
10. H. Brian Thompson	Global Telesystems, Inc.	66,548,901
11. John Chambers	Cisco Systems, Inc.	64,005,282
12. Charles Lillis	MediaOne Group, Inc.	62,515,711
13. Harvey Golub	American Express Co.	56,996,770
14. William McGuire	UnitedHealth Group, Inc.	51,611,855
15. John Wren	Omnicom Group	50,671,565
16. Robert Davis	Lycos, Inc.	50,526,628
17. Bernard Ebbers	Worldcom, Inc.	50,374,936
18. William Esrey	Sprint PCS Group	47,821,117
19. Michael Bonsignore	Honeywell Intl, Inc.	45,377,623
20. Timothy Koogle	Yahoo, Inc.	44,648,351
Kenneth Lay	Enron	22,154,808
Jeffrey Skilling	Enron	17,767,941

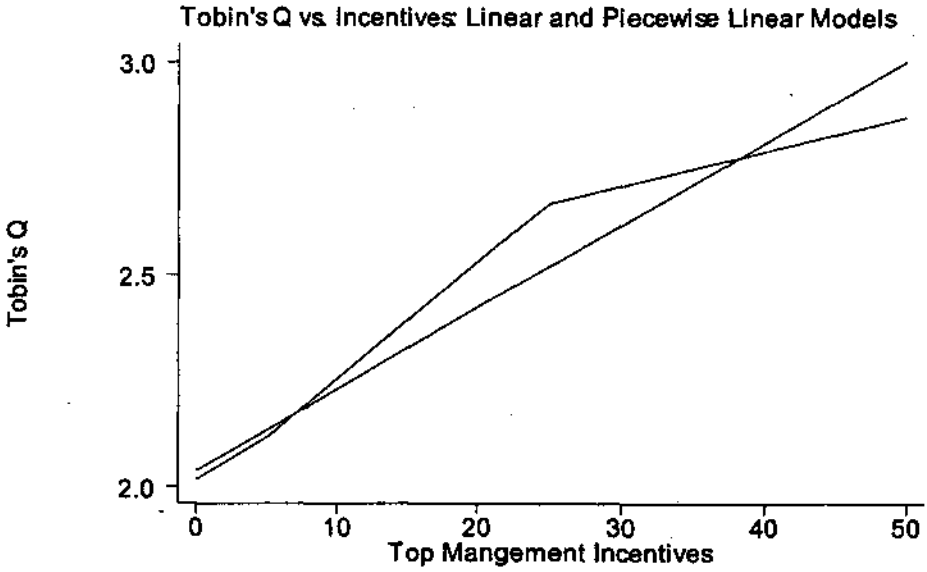
Source: *S&P Compustat ExecuComp*

One striking feature of this list is that the three highest paid CEOs, Annunziata, Nacchio, and Kozlowski, are from companies that are either

bankrupt (Global Crossing and Qwest) or notorious for high level corporate greed (Tyco). Bernard Ebbers from Worldcom (bankrupt) also makes the list, and Lay and Skilling from Enron (defunct) are not far behind. All of the above mentioned executives received large stock option grants in 1999—in most cases, stock option grants were virtually their entire compensation. Two to three years after the grants, their companies were in trouble or bankrupt. The interesting question is are these cases pathological or do they point to larger problems with the use of stock options?

To address this question, Andrew Samwick and I systematically examine the relationship between firm performance and incentives.[65] We look at many more firms over more years than the Morck, Shleifer, and Vishny and Himmelberg, Hubbard, and Palia studies. We also incorporate holdings of stock options in addition to ownership of stock. We find that firm performance is increasing in incentives for all levels of incentives. This is shown in Figure 8.

Figure 8



The horizontal axis is top management incentives from holdings of stock and options over the period 1993 to 2000. The vertical axis is Tobin's Q, which is simply a measure of firm performance (a higher Tobin's Q implies higher profitability).[66] The relation between firm performance and

65. AGGARWAL & SAMWICK, *supra* note 3.
66. Morck et al., *supra* note 53, at 294.

incentives is clearly increasing, and we show this in a variety of ways and for different sub-periods. However, the implication we draw from this is *not* that greater incentives lead to better firm performance. Instead, we argue that every firm is different, and that the amount of incentives each firm provides to its managers is generally (although not always) appropriate for that firm.

We make the point that the original Morck, Shleifer, and Vishny paper is based on the idea that many managers have been provided with the wrong level of incentives. To see this, remember that Morck, Shleifer, and Vishny find that firm performance is decreasing in incentives for managerial ownership between five and twenty-five percent.[67] Firms with managerial ownership in this region could increase firm performance by either lowering managerial ownership to five percent or increasing it past twenty-five percent. In practice, it may be easier to lower managerial ownership than to raise it by either having the firm issue equity (thereby diluting managers' ownership stakes) or inducing managers to sell some of their holdings of stock. For some reason, firms do not have managers lower their ownership levels when the firms are in the region of decreasing firm performance. The firms are behaving in what appears to be a value-decreasing fashion.

We argue that firms are not, in fact, behaving in a value-decreasing fashion. Instead, we argue that firms and managers have very different characteristics that determine how large the level of incentives should be. Managers differ in how risk averse they are, how hard they are willing to work, and how much pleasure they derive from wasteful spending on perquisites such as corporate jets, artwork, celebrity golf tournaments, and expensive corporate staffs. Firms differ in how risky they are, how productive their assets are, and how talented their workers are. All of these differences can influence the level of incentives. We look within firms and conclude that firms with "better" characteristics (e.g., less risk-averse managers) have greater incentives and better performance. A firm with worse characteristics (e.g., very risk averse managers) cannot increase incentives and demonstrate better performance. Increasing incentives would actually result in a worse outcome for shareholders. On average, firms seem to get the level of incentives about right. The conclusion is that incentives do influence firm performance, but the design of incentives relies crucially on firm characteristics.

How then does this explain the cases of Enron, Worldcom, and the others? These companies seem to be characterized by entrenched managers, weak boards, generally poor corporate governance, and cultures

67. *Id.* at 295.

of corporate greed. Incentive systems clearly failed at these firms. Instead of stock options being used as an incentive device, it now seems clear that stock options were used at these firms as a tool for management enrichment. A popular view in the press and among some commentators is that these CEOs effectively set their own pay. The argument is that boards of directors (and, by extension, compensation committees) are either stacked with friends and cronies of the CEO or have been effectively captured by the CEO.

Some evidence along these lines comes from a recent paper by Bertrand and Mullainathan.[68] They argue that in poorly governed firms, managers essentially set their own pay and are able to skim firm profits. Skimming is less prevalent in firms that are well governed.[69] Well-governed firms are those in which the board of directors and compensation committees are independent of the CEO.[70] They also find evidence that managers are not overpaid in firms that are well governed in the sense that stock options are substitute compensation for other forms of compensation.[71] By contrast, in firms that are not well governed, stock options seem to be strictly additional compensation. These findings suggest that board independence is an important check on CEO compensation.

I conclude from this evidence that the use of stock-based incentives, specifically stock options, is neither inherently good nor bad. In general, the use of stock options is associated with better firm performance, suggesting that companies use options appropriately. However, in cases of very large option grants that seem disproportionate such as those detailed in Figure 7, executive compensation may be symptomatic of deeper problems within the firm. Corporate governance may well have failed at these firms, and executives may only be constrained by what they can get away with. Thus the current set of corporate crises is not caused by excessive compensation, but excessive compensation may well be a leading symptom of impending collapse.

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68. Marianne Bertrand & Sendhil Mullainathan, *Are CEOs Rewarded for Luck? The Ones Without Principals Are*, 116 Q. J. ECON. 901, 901 (2001).

69. *Id.* at 903.

70. *Id.* at 929 (noting that firms "with large shareholders, smaller boards and so on are better able to charge their CEOs").

71. Marianne Bertrand & Sendhil Mullainathan, *Do CEOs Set Their Own Pay? The Ones Without Principals Do*, at 30 (Mar. 2000) (Nat'l Bureau of Econ. Res., Working Paper No. 7604).