EFFECTIVE BONUS?

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Abstract

Is it economically meaningful and ethical for firms to pay their CEOs cash bonuses in thousands, if not millions, of dollars? This paper empirically addresses two aspects of this issue. First, we document that a bonus is only statistically, but not economically, sensitive to short-term firm performance and shareholder value creation. In addition, a discretionary bonus, on average representing 12% of a CEO's annual compensation, adds little value to shareholders. Second, we find that firms with increased CEO bonuses have a higher likelihood of engaging in takeover activities, although such takeovers do not necessarily result in greater firm risk.

Keywords: Cash Bonus, Agency Problem, Business Ethics, Pay-for-performance, Takeovers

JEL Classification: G30

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I. Introduction

Is it economically meaningful and ethical for a firm to pay its CEO a cash bonus of thousands, if not millions, of dollars? Is a bonus an effective compensation that aligns the interest of the CEO to that of his shareholders?

More generally, is an executive compensation contract the solution to the principal agent problem, or is it rather a mechanism through which an entrenched CEO extracts private rents from shareholders? American International Group (AIG) recorded a $99.2 billion total loss in 2008, and its market value plummeted to $2.7 billion at the end of March 2009, from nearly $148 billion in December 2007[1]. The US government had to create an $85 billion credit facility in September 2008 to bail out the insurance giant in order to avoid a systemic shock to the nation's financial system. The loss was huge and the corporate performance was devastating, but what infuriated the public was that after such a huge loss, the company rewarded its key employees with retention bonuses worth $165 million[2]. Moreover, this $165 million was part of the bailout money, and these key employees belonged to AIG Financial Products Division, a London-based subsidiary that was the "patient zero" of AIG's meltdown.

The overly generous bonus handouts ignited public backlash. Barney Frank, Chairman of the House Financial Services Committee, asserted that paying these bonuses would be "rewarding incompetence"[3]. Senator Richard Shelby reacted to the AIG bonus publicly by saying, "These people brought this on themselves. Now you're rewarding failure. A lot of these people should be fired, not awarded bonuses. This is horrible. It's outrageous"[4]. While the media and public are deriding the ethics of cash bonus recipients, we academics should re-explore the theories and empirical evidence of corporate governance with respect to executive compensation, especially from the perspective of business ethics.

Ethical behavior of corporate executives, or the lack of it, has been widely discussed in economics and management. In standard economics theories, managers (in particular CEOs) are modeled as self-interest driven, risk-averse agents, hired by principals (shareholders) to maximize shareholder wealth. A CEO has invested in professional knowledge of

[1] CRSP monthly data.

[2] These bonus payments were announced in March 2009. Ironically, 52 of those who received such bonuses quit their jobs after getting the money.

[3] "Off with their heads: Samples of AIG outrage". By Phil Mintz. Business Week, March 17, 2009.

[4] On ABC's "Good Morning America", Monday 16, 2009.

managing the firm, and he possesses critical information that may not be easily observed by outside shareholders. The CEO, caring about himself, seeks opportunities to increase his personal welfare, sometimes even at the expense of his shareholders. When this happens, an agency problem arises. Eliminating the agency problem is not only a matter of enhancing economic efficiency, but also an aim of establishing business ethics. However, given information asymmetry, incomplete contracts, and dispersed ownership structures widely used in Corporate America, this can be a difficult task. There are several approaches to dealing with the agency problem; one of them is to align the interest of the CEO with that of his shareholders though the executive compensation package.

Executive compensation has traditionally been viewed as a solution to the agency problem: the compensation contract is designed to motivate the agent/CEO to maximize the principal/shareholder value (Bebchuk and Fried, 2003; Baker et al., 1987; Paul, 1992; Kole, 1997; Gibbons and Murphy, 1992b). The CEO is risk-averse, welfare-aware and self-interest driven, so an effective compensation package must address all these aspects. A typical compensation package has four components: base salary, annual bonus, equity-based compensation and perquisites, with base salary taking care of risk aversion, perquisites (such as employee benefits plans, pension, etc.) looking after personal welfare, equity-based compensation aligning long-term interests, and annual bonus addressing the short-term value creation.

There is a substantial literature covering the effectiveness of long-term equity-based compensation (mainly in the forms of stock options and restricted shares). For instance, it has been documented that equity-based compensation affects firm financial policies, including dividend payouts and capital structure decisions (e.g., Lambert et al., 1989; Mehran, 1992; John and John, 1993; Yermack, 1995; White, 1996; Berger et al., 1997; and Fenn and Liang, 2001), that there is an association between corporate investment policies and equity-based compensation (e.g., Holmstrom and Weiss, 1985; Campbell et al, 1989; Gibbons and Murphy, 1992a; and Kang et al. 2006), and that equity-based compensation affects the firm's equity riskiness (Agrawal and Mandelker 1987; and Lambert, 1986).

Few academic papers focus on annual bonus (see Murphy, 1999). Is it because bonus compensation is so insignificant that nobody should care? Some simple statistics from COMPUSTAT ExecuComp database reveal the opposite. In fact, over a sixteen-year window of 1993-2008, annual bonuses represent both a large portion of a CEO's income (32% of CEO annual compensation) and a non-negligible amount of corporate resources ($1.2 out of every $1000 of corporate sales). The importance of bonus compensation to both the firm and its CEO warrants a careful investigation of its usefulness – does it help alleviate principal-agent conflicts?

Our paper contributes to the integration of two literatures: executive compensation and business ethics. First, we address the particular gap in the current compensation literature by focusing on the effectiveness and ethics (or lack thereof) of CEO bonus compensation. Second, by drilling deeper into firms that grow through takeover activities, we further examine whether bonus compensation encourages the CEO to pursue goals other than shareholder wealth maximization and, more importantly, whether such takeovers increase the firm's equity riskiness. One important feature that separates cash bonuses from equity-based compensation is that a bonus is not necessarily related to risk. On the contrary, equity-based pay (stock options in particular) can be used to encourage corporate risk-taking behavior.[5]

The remainder of the paper is structured as follows. Section II provides an overview of the issues specifically related to CEO annual bonuses and develops three testable hypotheses. Section III details our data collection process, outlines the empirical strategy and provides descriptive statistics of some key variables. Section IV presents our regression results and discusses their implications. We conclude with Section V.

II. Theoretical Framework and Hypotheses Development

Bonus is defined as "the cash or cash equivalent of any annual incentive award"[6]. Cash bonuses can be either performance-based (amount determined by the firm's short-term performance) or discretionary (amount set at the discretion of the board). It is common for firms to reward their CEOs with bonuses, and firms have great flexibility in deciding the type and amount of such bonus payments. In terms of financial disclosure, performance-based bonuses can be reported as business expenses, thus deductible for corporate tax purposes. Non-performance-based discretionary bonuses, on the other hand, can be treated as expenses only when certain conditions are met[7]. The SEC has become increasingly serious about the transparency of executive compensation, in particular after some high-profile corporate scandals

[5] In option pricing models such as Black-Scholes, multiple parameters affect option valuation. Everything else kept constant, greater stock volatility (i.e., equity riskiness) will lead to higher option value. This is beneficial to the holder of the stock options, such as the CEO.

[6] Corporate Library definition.

[7] Essentially, the sum of discretionary bonuses and fixed salaries should be below $1 million in order to be eligible for tax deductions. Otherwise, bonuses must be reported as part of net income and be treated the same as dividends, as per IRC 162 (m).

in the early 2000s. In terms of annual bonus, since the fiscal year end of 2006, the SEC has required separate reporting of performance-based and discretionary items. In the COMPUSTAT ExecuComp database, both types of bonuses would appear as 'bonus' prior to December 2006; afterward, only a discretionary bonus remains in this column, while a performance-based bonus should be reported as part of 'non-equity incentive payments' (Kim and Yang, 2010).

According to the optimal contract theory, a bonus should be sensitive to the change of the firm's shortterm performance: there should be positive (negative) bonus awards when there is superior (inferior) annual firm performance. However, given the nature of limited liability in labor contracts, fining executives (negative bonus) is not feasible. In this sense, a bonus has a born flaw in serving its purpose of completely resolving agency conflicts.

If a positive (zero) bonus is rewarded to good (poor) short-term performance, the bonus still achieves a second-best solution – rewarding value creation, not punishing value destruction, similar to the asymmetric payoff structure of stock options. Unfortunately, what has been observed recently casts doubts on even this second-best solution. The media already concludes that any bonus, in cases like AIG, "is rewarding incompetence." In general, Jensen and Murphy (1990) report very low sensitivity of pay-for-performance links in the US: top executives are not rewarded enough cash compensation (bonus plus fixed salary) for superior performance and they are not punished effectively for inferior outcomes.

In the first part of our empirical study, we examine the effectiveness of the annual bonus. As a first step, we update Jensen and Murphy (1990) using recent CEO compensation data. In particular, we test the association between the change in CEO annual bonus and the change in shareholder wealth creation. The separate reporting of discretionary vs. performance-based bonuses also provides an ideal setting to test whether discretionary bonuses have any bearing on performance improvement. If not, this amount becomes a private rent, or agency cost as defined by Fama (1980) and Fama and Jensen (1983), rather than a solution. In such a case, one might argue that it is unethical for firms to reward large amounts of discretionary bonuses to their agents (CEOs) without benefiting the principals (shareholders).

A rich body of literature reports that executive compensation is sensitive to firm size (pay-for-size argument), which sometimes is used as an alternative measure of 'performance'. One popular theory explaining the link between compensation and size is executive productivity theory: most capable CEOs are likely to be matched with the largest, and possibly more complex, firms. In such a context, firm size can be used as a proxy for CEO productivity: larger firm size implies better CEO productivity and thus higher CEO compensation, including cash bonuses.

Taking the above arguments into consideration, we test the following related hypotheses:

(H1a): A bonus is insensitive to the firm's short-term performance and value creation[8].

(H1b): A bonus is insensitive to firm size.

Firms grow to create more value for their shareholders. A firm can expand either through generic internal growth or by taking over other companies. Organic growth can be achieved through investing in inputs (such as human capital and physical fixed assets), improving technology, expanding markets, and so on, thus realizing growth. Growth in this way is gradual and often takes considerable time for the firm to achieve its target. Taking over other companies, on the other hand, enables the firm to expand fairly quickly. For instance, when a firm has superior technology and would like to capitalize on it and scale up quickly, before its competitors replicate the technology, it is better for the firm to grow through acquisitions than by way of generic growth. Despite the different theoretical arguments for growing through acquisitions, a firm should not engage in takeovers purely for the purpose of giving its executives higher compensation, including cash bonuses. However, are top executives rewarded cash bonuses for taking over other companies? Probably yes. In 2008, Pfizer paid a $1.6 million bonus (total compensation $6 million) to Frank A. D'Amelio, Pfizer's CFO, for his role in acquiring its rival Wyeth. In 2000, in the ill-fated £160 billion acquisition of Mannesmann, Vodafone paid £10 million bonus to Chris Gent, the CEO at that time[9].

Mergers and acquisitions thus present an interesting opportunity for us to test the relationship between managerial incentives and the efficiency of their decisions to invest and grow (Datta et al., 2001). In the second part of our empirical analysis, we address the issues of how CEO bonus compensation relates to the likelihood of the firm engaging in takeover activities, and whether such acquisitions are reasonable. If we believe that the US capital market is efficient, a well-reasoned takeover should be welcomed by investors. In order to avoid possible dilution effects on variables, such as EPS, (which might in turn bias the return measures of an acquiring firm), we use the firm's riskiness instead of return as our measurement to distinguish between well-reasoned and poorly reasoned takeovers.

[8] Accounting-based measures, such as earnings, are often used as measures for CEO incentive compensation. However, Ashley et al. (2004) reveal that earnings persistence affects both the structure of CEO compensation and the pay-for-performance association. In this study, though including accounting-based measures, we focus more on market-based measures, such as shareholder value creation, as well as volatility of stock returns.

[9] http://dealbook.blogs.nytimes.com/2009/11/05/rewarding-ceos-for-dealmaking/.

Specifically related to acquisitions, we test the following two hypotheses:

(H2): Firms with CEO bonus increases do not tend to engage in more takeover activities than firms without such bonus increases.

(H3): Among firms that reward bonuses to CEOs and engage in takeover activities, the riskiness of firm assets before and after a takeover does not increase as CEO bonuses increase.

III. Empirical Methodology

We hereby outline our empirical methodology in investigating the testable hypotheses, and discuss our sample construction process. The SEC regulatory change in 2006 of executive compensation reporting rules provides an ideal test as to the agency costs and ethics issues related to a corporate board's decision to reward discretionary bonuses. We thus run all models over our entire data window of 1998-2006 and also separately for two sub-windows, *Sub1* including years from 1993 to 2005 (pre-event) and *Sub2* covering 2006 to 2008 (post-event).

3.1 CEO bonus and firm performance

We follow Jensen and Murphy (1990) in testing (H1), the sensitivity of change in the CEO bonus on the changes in the firm's short-term value creation, financial performance and size.

$$\Delta(CEO\ bonus)_t = a + b\Delta(independent\ variable)_t \quad (1)$$

Different model specifications and their associated implications are as follows:

(a) When $\Delta(independent\ variable)_t$ is defined as $r_t V_{t-1}$, where r_t is the inflation-adjusted rate of return on common stock realized in fiscal year *t*, and V_{t-1} is the firm's market value at the end of the previous fiscal year, equation (1) tests the sensitivity of change in CEO bonus on the change in shareholder total wealth.

(b) When $\Delta(independent\ variable)_t$ is based on the market return-adjusted rate of return on common stock, i.e., $(r_t - market\ index_t) \times V_{t-1}$, the shareholder wealth measure is free of the market's influence;

(c) When $\Delta(independent\ variable)_t$ is defined as $Net\ Income_t - Net\ Income_{t-1}$, equation (1) tests this sensitivity on the change in annual accounting performance;

(d) When $\Delta(independent\ variable)_t$ is defined as $(Total\ assets_t - Total\ assets_{t-1})$ or $(Sales_t - Sales_{t-1})$, we examine the sensitivity on the change in the firm's size.

We posit that, if bonuses reward short-term value maximization, performance enhancement, or if bonuses are instead paid according to firm size, the regression coefficient, *b*, should be positive and significantly different from zero.

3.2 CEO bonus and takeover activities

Similar to the empirical strategy of Davis et al. (2007), we employ a logistic model to test (H2), the association between increased CEO bonuses and the likelihood of a firm engaging in takeover activities.

$$ln\left[\frac{prob(merger_t)}{1 - prob(merger_t)}\right] = a + b(bonus\ flag_{t-1}) \quad (2)$$

Where

$$merger_t = \begin{cases} 1, & if\ there\ is\ a\ takover\ event \\ 0, & otherwise \end{cases}$$

$$bonus\ flag_{t-1} - \begin{cases} 1, & if\ bonus_{t-1} - bonus_{t-2} > 0 \\ 0, & otherwise \end{cases}$$

The coefficient, *b*, can be converted to probability of a bonus-increase firm undertaking acquisitions, relative to that of a non-bonus-increase firm. If the probability is statistically large enough, the evidence supports the argument that when CEOs are rewarded more bonuses they are more likely to acquire other companies.

3.3 CEO bonus, takeovers and firm risk

We also use a logistic model to test (H3), the consequence of takeover activities on the firm, with respect to its riskiness.

$$ln\left[\frac{prob(\Delta risk_t)}{1 - prob(\Delta risk_t)}\right] = a + b(bonus\ flag_t) \quad (3)$$

where

$$\Delta risk_t = \begin{cases} 1, & if\ risk\ of\ firm_t - risk\ of\ the\ firm_{t-1} > 0 \\ 0, & if\ risk\ of\ firm_t - risk\ of\ the\ firm_{t-1} < 0 \end{cases}$$

Agrawal and Mandelker (1987) correctly pointed out that riskiness of a firm is not only composed of the riskiness of its equity, but also its overall leverage. As a result, we classify that a firm's risk increases only when we observe increases both in its financial leverage (measured by the D/V ratio) and in the volatility of its equity (measured by σ, standard deviation of its daily stock return over a period of three months)[1].

We restrict this test to a sub-sample of firms that have conducted takeovers. If the coefficient, *b*, and the corresponding probability are statistically large enough, we interpret the evidence as suggesting that, among acquiring firms, CEO bonus increases are associated with greater likelihood of risky acquisitions (i.e., poorly reasoned takeovers).

3.4 Sample selection and construction of key variables

Our sample begins with all firms listed in the COMPUSTAT ExecuComp database over a 16-year period, from 1993 to 2008, (hence the *data window*)[2]. This sample is then matched to all firms listed in the COMPUSTAT annual database over the same period. Firms that appear in only one database, and firms that belong to financial industries – Standard Industrial Classification (S.I.C.) codes 6,000 through 6,999 – are then excluded. The matched sample contains compensation variables from ExecuComp, such as the

annual bonus rewarded to a CEO (BONUS), CEO's total annual compensation (ANNUALCOM,) which includes bonus, base salary and other annual compensation, and CEO's total compensation (TOTALCOM), which includes annual compensation plus the dollar value of all long-term incentive plans. This sample also contains accounting information from COMPUSTAT, such as Total Assets (TA), Sales (SALE), Net Income (NI), Debt (DEBT) and market value of the firm (MKTVAL) calculated by multiplying the shares outstanding (CSHO) and the price (PRCC_F). This matched sample is called the *basic sample.*

Next, we construct a *takeover sample*, based on both the *basic sample* and a takeover dataset sourced from the Thomson SDC Platinum database. Firms listed in the *basic sample*, but not in the takeover dataset, are assumed to have zero takeover activities. However, they remain in the *takeover sample*. Firms listed in the takeover dataset, but not in the *basic sample*, are discarded from the *takeover sample*. We use the *basic sample* to test (H1a) and (H1b), and the *takeover sample* for examining (H2).

In order to investigate (H3), we consider a subset of the *takeover sample*: we include only those firms that have acquired other companies.

In the spirit of Agrawal and Mandelker (1987), we consider changes both in the acquirer's return volatility and in its financial leverage. The change in volatility (leverage) is calculated by subtracting the pre-event volatility (leverage) from the post-event volatility (leverage). If both changes are positive, we consider the takeover event as 'risk-increasing'; if both are negative, we name it 'risk-reducing' acquisition; otherwise, the acquisition is labeled as 'indecisive'. In order to avoid potential bias on the accuracy of volatility and leverage measures, multiple takeover events done by the same acquirer within any 12-month window are deleted from the takeover dataset.

Table 1 summarizes CEO bonuses during the 16-year *data window* of 1993-2008. It highlights two reasons why bonus payments should not have been ignored in the literature. First, the majority of firms reward bonuses to their CEOs and bonuses represent a large amount of CEO income. During the *Sub1 data window*, from 1993 to 2005, the number of firms that rewarded CEOs with bonuses is about four times that of those that did not. The maximum amount of annual bonus was $102 million, with the average (median) annual bonus around $715,000 ($350,000). During the *Sub2 data window*, from 2006 to 2008, the average (median) bonus dropped substantially to $346,800 ($0). We contribute this drastic difference mainly to the SEC reporting change regarding discretionary bonuses[3]. Second, bonuses represent a non-trivial expenditure to firms. During *Sub1*, an average firm rewarded to its CEO bonuses that accounted for 0.14% (0.05%) of the firm's gross sales (total assets). This ratio dropped in *Sub2* to 0.03% (0.02%).

[1] Daily returns over a period of three months, starting 180 days and ending 90 days before the takeover announcement, are used to calculate the pre-event expected return and volatility. Allowing for 90 days before the event is to avoid potential information leakage. Daily returns over a period of three months, starting right after the takeover and ending 90 days afterwards, are used to calculate the post-event expected return and volatility. The financial leverage pre-/post-event is proxied by the Debt/Value ratio obtained from the most recent COMPUSTAT quarterly data prior to (after) the takeover announcement. Daily stock returns data are sourced from CRSP.

[2] We do not include data in 1992 because the number of observations is less than half of the other years.

[3] As pointed out by Kim and Yang (2010), although only discretionary bonuses should be reported under 'Bonus' after 2006, this is not always correctly reflected in the ExecuComp database.

Table 1. Descriptive Statistics of Key Variables

		Mean	Standard Deviation	Minimum	Median	Maximum	OBS
Bonus	Sub1: 1993-2005	715.1	1608.5	0	350	102015.2	21218
	Sub2: 2006-2008	346.8	1987	0	0	76951	5157
Change in bonus	Sub1: 1993-2005	79.5	1292.7	-97811.9	16.56	43511.5	18867
	Sub2: 2007-2008	-99.7	1910.3	-26985.5	0	75125	3272
Bonus over CEO annual income	Sub1: 1993-2005	0.37	0.25	0	0.41	1	21084
	Sub2: 2006-2008	0.12	0.23	0	0	1	5123
Bonus over CEO total income	Sub1: 1993-2005	0.19	0.17	0	0.17	1	21045
	Sub2: 2006-2008	0.06	0.14	0	0	0.97	5098
Bonus over firm net income	Sub1: 1993-2005	0.0054	0.2313	-27.6	0.003	8.67	21218
	Sub2: 2006-2008	0.0019	0.0221	-0.4	0	0.53	5157
Bonus over firm sales	Sub1: 1993-2005	0.0014	0.0377	0	0.0002	3.41	21218
	Sub2: 2006-2008	0.0003	0.0056	0	0	0.39	5157
Bonus over firm asset	Sub1: 1993-2005	0.0005	0.0012	0	0.0002	0.047	21218
	Sub2: 2006-2008	0.0002	0.0007	0	0	0.025	5157

Note: Change in bonus data is from 1994 instead of 1993.

IV. Key Findings

Our empirical results are discussed below, with all values in all models having been adjusted by the PPI index obtained from the US Department of Labor, and are in 1993 constant dollars.

4.1 Are CEOs paid (annual bonuses) for maximizing shareholder value?

Results of (H1) are presented in Table 2, with columns 2-6 reflecting total bonuses (discretionary plus performance-based) during *Sub1* data window, columns 7-11 representing discretionary bonuses only during Sub2, and columns 12-16 summarizing aggregate results over the entire data window.

Column 2 reports a regression coefficient, *b*, of 0.00003. This implies that when there is an increase in shareholder wealth by $1,000, the CEO's bonus will increase by 3 cents (p=0.00). Column 2 also reports an intercept of 41.2, which means that when there is no change in shareholder wealth, the CEO bonus will go up by $41,200 from previous year. Although the regression coefficient is statistically significant, it represents an economically trivial amount compared to the intercept. How much additional wealth should a CEO create for his shareholders in order to receive $1,000 extra bonus? He will have to bring in market-adjusted wealth of $33 million. Relative to the $41,200 easy money, this certainly does not look attractive. In terms of different specifications of performance, columns 2 to 6 show very consistent results. That is, annual bonus is a statistically important, but economically ineffective, mechanism for motivating the CEO to improve shareholder wealth, firm's accounting profit, or firm size.

Columns 7 to 11 provide some different results and, more importantly, implications. First, the intercept turns negative, indicating a net decrease of discretionary bonuses, regardless of the firm's performance. Second, there is little association between discretionary bonuses and shareholder wealth creation, or between discretionary bonuses and the firm's financial performance. Third, the positive and statistically significant coefficient on firm size seems to suggest that a CEO will be awarded more discretionary bonus when the firm becomes bigger.

In summary, our results reject both (H1a) and (H1b) for years from 1993 to 2005, when both discretionary and performance-based bonuses are reported as annual incentive rewards. However, the sensitivity of bonus to performance is statistically significant but economically less meaningful. Regression results cannot reject (H1a) for years from 2006 to 2008, when we test the association between firm performance and CEO's discretionary bonuses, although firm size does matter in (H1b).

While these results are consistent with the pay-for-size argument of executive compensation, they certainly do not support the idea that discretionary bonuses can help address agency problems. To the advocates of rewarding bonuses to CEOs and other top executives (for retention purposes, for instance), these findings might be somewhat disappointing.

Table 2. Regressions – Are CEOs paid (cash bonus) for maximizing shareholder value?

	Sub1					Sub2					Complete Data Window				
	1994 to 2005	1994 to 2005	1994 to 2005	1994 to 2005	1994 to 2005	2007 to 2008	2007 to 2008	2007 to 2008	2007 to 2008	2007 to 2008	1994 to 2008	1994 to 2008	1994 to 2008	1994 to 2008	1994 to 2008
Intercept	41.2 0.00	47.6 0.00	39.5 0.00	29.4 0.00	35.3 0.00	-55.1 0.02	-50.3 0.03	-45.2 0.05	-61 0.01	-52.7 0.02	31.3 0.00	33.2 0.00	29.3 0.00	16.3 0.01	22.1 0.00
Change in shareholder wealth	0.00003 0.00					-0.00001 0.19					0.00002 0.00				
Change in market adjusted wealth		0.00003 0.00					0.00001 0.18					0.00002 0.00			
change in accounting Profit			0.00031 0.00					0.00008 0.14					0.00025 0.00		
change in sales				0.00009 0.00					0.00008 0.01					0.00009 0.00	
Change in assets					0.00005 0.00					0.00006 0.00					0.00005 0.00
Regression F statistic	295.9 0.00	181.9 0.00	272.7 0.00	180.6 0.00	82.9 0.00	1.7 0.190	1.8 0.178	2.2 0.136	7.7 0.006	9.5 0.002	180.5 0.00	140 0.00	197.4 0.00	161.1 0.00	90.3 0.00
R-squared	0.018	0.011	0.016	0.011	0.005	0.001	0.001	0.001	0.003	0.003	0.009	0.007	0.01	0.008	0.005

a: Sub2 and Complete data windows do not include 2006.
b: All data are winsorized at 1st and 99th percentile.

4.2 Are CEOs paid to take over other companies?

Before getting into regression results, we first examine the direct correlations between change in firm performance – measured in terms of shareholder wealth, accounting profitability, and firm size – and both the level of CEO cash bonus compensation and the change in bonus. Pearson correlation coefficients, separately for the two sub-sample data windows, are presented in Table 3. First, the correlation coefficients with respect to change in CEO bonus are very much consistent with the regression results from Table 2. Second, in terms of the level of CEO bonus pay, the central message is that firm size matters. Before the SEC reporting rule change, movement of all firm performance measures is positive and significant, with the largest correlation being with firm size measured in sales (correlation = 0.22). After the regulatory change, only proxies for firm size, both in sales and assets, are still significantly correlated with the level of CEO cash bonus compensation.

Table 3. Pearson Correlation – Are CEOs paid to increase firm size?

	Level ($) of Cash Bonus		Change in Cash Bonus	
	1993-2005	2007-2008	1993-2005	2007-2008
Change in shareholder wealth	0.12 0.00	-0.03 0.10	0.13 0.00	-0.02 0.19
Change in market adjusted wealth	0.08 0.00	0.01 0.70	0.10 0.00	0.03 0.18
change in acc. Profit	0.12 0.00	-0.01 0.56	0.13 0.00	0.03 0.14
change in sales	0.22 0.00	0.08 0.00	0.10 0.00	0.05 0.01
Change in assets	0.20 0.00	0.07 0.00	0.07 0.00	0.06 0.00
obs	17840	2829	16509	2778

a: Sub2 and Complete data windows do not include 2006.
b: All data are winsorized at 1st and 99th percentile.

As discussed previously, one important channel for a CEO to increase firm size is through taking over other companies. We present regression results concerning (H2) in Table 4. Again, we report findings separately, before and after the 2006 SEC regulation change, and also over the entire data window.

As discussed previously, one important channel for a CEO to increase his firm size is through taking over other companies. Next, we proceed with regression results concerning (H2) in Table 4. Similar to previous tables, we report findings separately before and after the 2006 SEC regulation change, and also over the entire data window.

Column 2, without the independent variable concerning bonus, provides the estimated log odds of firm engaging in takeover activities. The log odds of -0.98 indicate for an average firm, there is an odds of 0.38 that it will take over other companies.[1] Column 3 is the regression model with the predictor variable, change in CEO bonus. The intercept -1.08 provide base-line odds, 0.34, for firms undertaking acquisitions, when their CEOs do not receive increased bonus payments. The odds ratio of 1.32 indicate firms that pay their CEOs more bonus compensation have a 32% higher odds in acquiring other companies than firms without CEO bonus increases. This result is significant at 1 percent level.

Results for Sub2, from 2007 to 2008, are similar to those of 1994-2005. This indicates that our results are insensitive to the SEC reporting change in separating performance-based bonuses from discretionary payments. This is not surprising because of the size impact we identified in (H1b). An acquisition, aside from its potential to improve the firm's future performance, will arguably increase firm size, which in turn is associated with more CEO bonus compensation.

4.3 Are CEOs paid to conduct riskier acquisitions?

Table 5 presents regression results concerning (H3)[2]. While it follows the same structure as Table 4, we now shift our attention from all takeovers to those that are risk-increasing. The empirical framework and definition of risk-increasing takeovers are outlined in Section 2.3.

For *Sub1* of 1994-2005, when reported bonuses include both discretionary and performance-based components, an average firm has almost the same odds, and in turn the same likelihood, to undertake either risk-increasing takeovers or risk-decreasing acquisitions (indicated by the intercept of -0.02). If a firm's CEO receives smaller bonus compensation in comparison to the previous year, the firm has odds of 1.18 that it will undertake risky takeovers, as implied by the intercept of 0.17. On the contrary, if the CEO's bonus has gone up, the odds decrease by 69%, to 0.82. The difference between these two scenarios is statistically significant at the 1% level. For sub2, an average firm has odds of 2.8 that it will undertake risky takeovers, and the corresponding likelihood of such behavior is statistically independent of its CEO's bonus compensation.

The combination of Tables 4 and 5 provide some interesting implications. Discretionary bonuses, which we have shown to have no link with improved firm performance, are associated with the greater likelihood that a firm takes over other companies. However, these takeovers do not seem to generate an overwhelmingly positive response from the equity market. Performance-based bonus, which is related to enhanced performance and higher shareholder value, is also associated with greater likelihood of firm's acquiring other companies. In addition, these acquisitions are less risky. However, we are cautious not to over-claim. After all, discretionary and performance-based bonuses are not reported separately prior to December 2006.

V. Discussion

In standard agency theory, executive compensation is viewed as a solution to shareholders' optimal contracting problem, given that "boards are assumed to design compensation schemes to provide managers with efficient incentives to maximize shareholder value" (Bebchuk and Fried 2003). An effective compensation contract should have a clearly defined principal's objective, measurable standards for agent performance, and effective enforcement when the performance exceeds the standards *and* when it is far from meeting the standards.

Cash bonuses, accounting for 37% of CEO annual compensation[3] and at times amounting to millions of dollars, have not received the attention in current executive compensation literature accorded to other stock-based items, such as stock options. The current paper addresses this issue. We find that cash bonuses are statistically important, but not economically effective, in aligning the interest of the CEO with those of his shareholders. First, while it is true that the principal's objective (e.g., short-term value maximization) is sometimes stated for performance-based bonuses, it does not apply to discretionary bonus payments. Second, the agent's performance standards are not always clearly measurable. In addition, the economic meaningfulness of achieving these standards is questionable. The

[1] Based on probability theory, the odds in favor of a firm taking over another company are defined as = (p/1-p), where p stands for the probability of such a takeover event, and 1-p for the probability of nothing happening. The log odds, therefore, are defined as = log(p/1-p).

[2] In a sub-sample with only firms that do takeover other firms.

[3] This is for the sub-sample period of 1993-2005, when reported cash bonuses include both discretionary and performance-based components. Over the sub-sample period of 2006-2008, discretionary bonuses represent about 12% of CEO annual compensation, while the performance-based component is no longer disclosed under cash bonus.

change in CEO bonus has low sensitivity to the change in the oft-used measures of firm performance. Relative to bonus increases (decreases) without any change in underlying performance, such sensitivity is trivial. Last but certainly not least, discretionary bonuses certainly provide no punishment to the CEO. Even performance-based bonus components only reward the CEO when he beats a benchmark; however, offers little downward pressure when the benchmark is missed.

Table 4. Logistic Regressions – Are CEOs paid to take over other companies?

	Sub1		Sub2		*Complete Data Window*	
	1994 to 2005	1994 to 2005	2007 to 2008	2007 to 2008	1994 to 2008	1994 to 2008
Intercept	-0.98	-1.08	-1.10	-1.18	-0.99	-1.16
	0.00	0.00	0.00	0.00	0.00	0.00
Bonus increase		0.27		0.36		0.35
		0.00		0.00		0.00
OBS	14992	14992	2673	2673	17665	17665
Log-likelihood	-8792.7	-8748.9	-1497.3	-1492.5	-10293.8	-10241.5
odds ratio		1.32		1.43		1.42

a: Sub2 and Complete data windows do not include 2006.
b: All data are winsorized at 1st and 99th percentile.

Table 5. Logistic Regressions – Are CEOs paid to conduct riskier acquisitions?

	Sub1		Sub2		*Complete Data Window*	
	1994 to 2005	1994 to 2005	2007 to 2008	2007 to 2008	1994 to 2008	1994 to 2008
Intercept	-0.02	0.17	0.98	0.98	0.11	0.34
	0.48	0.00	0.00	0.00	0.00	0.00
Bonus increase		-0.37		0.01		-0.49
		0.00		0.97		0.00
OBS	3399	3399	556	556	3955	3955
Log-likelihood	-2355.8	-2341.7	-326.1	-326.1	-2735.8	-2706.5
Odds ratio		0.694		1.011		0.613

a: Sub2 and Complete data windows do not include 2006.
b: All data are winsorized at 1st and 99th percentile.

Is it economically meaningful and ethical for a firm to pay large bonus to its CEO and other top executives? Probably not. Performance-based bonuses have shown to be economically ineffective in motivating the CEOs to act in the best interests of his shareholders. Discretionary bonuses, based on our analyses, add no value to shareholders. Yet it is with great amazement that we observe how popular bonuses have become – with 7-8 out of every 10 firms in America rewarding bonus compensation to their CEOs – and how handsome these payments can be. In a sense, instead of its traditional role as a solution, CEO bonus compensation has become part of the principal-agent problem.

There might, however, be some hope. Recent events suggest that both the SEC and some firms, in particular those in the financial industries, are taking actions to address the ethical concerns of the cash bonus. The improved SEC reporting rules have required separate disclosure of discretionary bonuses, which are paid out without any classical shareholder-value-maximization rationale. Now, even an unsophisticated shareholder can start thinking about whether she wants to hold shares in a firm whose board generously gives her money to the CEO without a good reason. The effort from industry to improve the effectiveness of bonuses has also occurred. In 2008, Goldman Sachs declared that it would ask its executives who received bonuses to donate a certain percentage (not yet exceeding 100% though) to charity, as negative bonuses. Let us hope this is not merely window dressing or crisis management to sooth the public's fury towards ineffective, sometimes unethical bonus checks. Rather, it should serve as a first voluntary step towards making CEO cash bonuses more accountable.

Reference

1. Agrawal, A. and G. N. Mandelker: 1987, 'Managerial Incentives and Corporate Investment and Financing Decisions', *Journal of Finance* 42(4), 823–837.
2. Ashley, A. S. and S. S. M. Yang: 2004, 'Executive Compensation and Earnings Persistence', *Journal of Business Ethics* 50(4), 369-382.
3. Baker, G. P., M. C. Jensen and K. J. Murphy: 1988, 'Compensation and Incentives: Practice vs. Theory'. *The Journal of Finance* 43(3), 593-616.
4. Bebchuk, L. A. and J. M. Fried: 2003, 'Executive Compensation as an Agency Problem', *The Journal of Economic Perspectives* 17(3), 71-92.
5. Berger, P., E. Ofek and D. Yermack: 1997, 'Managerial Entrenchment and Capital Structure Decisions', *Journal of Finance* 52(4), 1411–1438.
6. Campbell, T. S., Y. Chan and A. M. Marino: 1989, 'Incentive Contracts for Managers Who Discover and Manage Investment Projects', *Journal of Economic Behavior and Organization* 12(3), 353–364.
7. Datta, S., M. I. Datta and K. Raman: 2001, 'Executive Compensation and Corporate Acquisition Decisions', *Journal of Finance* 56(6), 2299-2336.
8. Davis, J. L., G. T. Payne and G. C. McMahan: 2007, 'A Few Bad Apples? Scandalous Behavior of Mutual Fund Managers', *Journal of Business Ethics* 76(3), 319-334.
9. Fama, E. F. and M. C. Jensen: 1983, 'Separation of Ownership and Control', *Journal of Law and Economics* 26(2), 301–325.
10. Fama, E. F.: 1980, 'Agency Problems and the Theory of the Firm', *Journal of Political Economy* 88(2), 288-307.
11. Fenn, G. W. and N. Liang: 2001, 'Corporate Payout Policy and Managerial Stock Incentives', *Journal of Financial Economics* 60(1), 45–72.
12. Gibbons, R. and K. J. Murphy: 1992a, 'Does executive compensation affect investment?', *Journal of Applied Corporate Finance* 5(Summer), 99–109.
13. Gibbons, R. and K. J. Murphy: 1992b, 'Optimal Incentive Contracts in the Presence of Career Concerns: Theory and Evidence', *Journal of Political Economy* 100(3), 468–505.
14. Holmstrom, B. and L. Weiss: 1985, 'Managerial Incentives, Investment and Aggregate Implications', *Review of Economic Studies* 52(3), 403–425.
15. Jensen, M. C. and K. J. Murphy: 1990, 'Performance Pay and Top-management Incentives', *Journal of Political Economy* 98(2), 225–264.
16. John, T. A. and K. John: 1993, 'Top-management Compensation and Capital Structure', *Journal of Finance* 48(3), 949–974.
17. Kang, S., P. Kumar and H. Lee: 2006, 'Agency and Corporate Investment: The Role of Executive Compensation and Corporate Governance', *Journal of Business* 79(3), 1127-1147.
18. Kim, D. S. and J. Yang: 2010, 'Beating the Target: A Closer Look at Annual Incentive Plans', Working paper, American Finance Association Meeting, Atlanta.
19. Kole, S. R.: 1997, 'The Complexity of Compensation Contracts', *Journal of Financial Economics* 43(1), 79–104.
20. Lambert, R. A.: 1986, 'Executive Effort and Selection of Risky Projects', *Rand Journal of Economics* 17(1), 77–88.
21. Lambert, R. A., W. N. Lanen and D. F. Larcker: 1989, 'Executive Stock Option Plans and Corporate Dividend Policy', *Journal of Financial and Quantitative Analysis* 24(4), 409–425.
22. Mehran, H.: 1992, 'Executive Incentive Plans, Corporate Control, and Capital Structure', *Journal of Financial and Quantitative Analysis* 27(4), 539–560.
23. Murphy, K. J.: 1999, 'Executive Compensation', in Orley Ashenfelter and David Card (eds.), *Handbook of Labor Economics*. Vol. 3b, (Elsevier Science North Holland).
24. Paul, J. M.: 1992, 'On the Efficiency of Stock-Based Compensation', *The Review of Financial Studies* 5(3), 471-502.
25. White, L. F.: 1996, 'Executive Compensation and Dividend Policy', *Journal of Corporate Finance* 2(4), 335–358.
26. Yermack, D.: 1995, 'Do Corporations Award CEO Stock Options Effectively?', *Journal of Financial Economics* 39(2–3), 237–269.