THE RELATIONSHIP BETWEEN EXECUTIVE PAY AND ALTERNATIVE EARNINGS MEASURE

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ABSTRACT

In this study, I present empirical evidence that using executive stock options to remunerate top 5 corporate executives increases future corporate performance even when alternative earnings measure (premanaged earnings) is considered. The findings further show that the contributions of executive stock options become progressively smaller into the future. It thus becomes an empirical question how far into the future the positive dollar impact of current option grants on future earning ends or becomes negative, as this could provide valuable decision tool to compensation committees on the efficient grant-frequency of executive stock options to top corporate executives. Overall the results of this study strongly support the incentive alignment theory of executive stock option grants.

Key words: executive compensation; earnings performance, earnings quality, stock options

INTRODUCTION

The objective of this study is to examine the findings of Hanlon et al (2003) and Akindayomi and Warsame (2012) within the context of alternative earnings measure – premanaged earnings1[1]. The findings from these studies show that granting stock options to top executives increase future reported earnings (Hanlon et al) and non-discretionary earnings (Akindayomi and Warsame).

The fact that executive pay has come under increased scrutiny in the recent past cannot be ignored. Unquestionably, this scrutiny substantially focuses on top (mostly the top 5) executives in corporate America. While some argue that top executives are over-remunerated, others contend that executive pay tied to performance is appropriate as these executives are motivated to improve corporate performance and thus increase shareholders' wealth. These contradicting positions have extensively attracted the interests of academics/scholars in accounting, economics and finance. However, scholarly research output in this area remains at best contradictory.

The genuine challenge posed by the separation of ownership and control is visibly highlighted in the agency research work of Jensen & Meckling (1976). The real agency cost associated with the agency problem in shareholder (principal)/manager (agent) relationship is

magnified due to varying interests and the opposing incentive structures of the shareholder and the manager. This creates an incentive alignment gap that must be bridged for the manager to maximize the shareholder's wealth. Executive stock option is one of the widely employed bridging tools in this context. However, the extent to which this compensation tool achieves its anticipated objective remains a practical and an empirical question in compensation research domain. In sum, research findings in this area have been at best inconclusive and controversial.

In practice, using executive stock options to remunerate executives continues to increase exponentially in the corporate world. The relative popularity of the choice of stock options among corporations is attested to in the literature. For example, Moran (2002) documents that the use of stock options grew among employee-recipients by about 900% between the late 1990's and the year 2002. In about the same time frame, Bear Stearns & Co reports (see Amromin and Liang, 2003) that stock option grants jumped by 200% relative to corporate operating earnings.

Given the preponderance of earnings management evidence in the literature, it is interesting that scholars findings are inconclusive especially (among others) on the relationship between executive compensation (stock options) and managers financial reporting strategies. Even though the literature in these areas has long history, it is still very active. Hence, the motivation for this study. Among others, my study contributes to the literature in the following ways. On one hand, it extends our understanding of the effect of compensation choice on future firm performance especially when one controls for financial misreporting (i.e.. earnings management) by managers. On the other hand, it reinforces the incentive alignment findings in Hanlon et al. This is important in that the findings of the current study provides a conclusive evidence that irrespective of the earning measures, remunerating corporate executive with stock options improves future corporate performance and thus align shareholders/managers interests thus minimizing the agency costs.

The remainder of the paper continues as follows. Section 2 examines relevant literature and the stated hypothesis. In section 3, I provide the research methodology and design. The empirical results/findings are presented in section 4 while final section is on the summary and the potential limitations of this study.

REVIEW ON EXECUTIVE PAY AND EARNINGS MANAGEMENT MEASURES

The connection between executive compensation and stock options continues to grow in recent corporate history (see Gritsch & Snyder, 2005). Hall & Liebman (1998) note the increasing level of executive wealth exposure to stock prices. Bergstresser & Phillppon (2006) corroborate this view claiming that such exposure becomes stronger in the mid 1990s leading to the new millennium. Two competing theories are advanced in this area of the compensation literature vis-à-vis the increasing use of stock options to remunerate executives. On one hand, some argue that given the agency problem and its attendant costs (see Jensen & Meckling, 1976), tying executive

pay to future performance reduces incentives gap between top management and the shareholders. This is called the incentive alignment theory (for more see, Rajgopal & Shevlin, 2002; Hanlon et al, 2003; Mawani, 2003). On the other hand, other scholars believe that if anything, such a corporate decision actually rewards executives in good times without any punishment during years of dismay performance, thus becoming a conduit for channeling shareholders' wealth to executives. This is referred to as rent extraction theory (for more see, Johnson 2003; Aboody & Kasznik, 2000; Baker et al, 2003).

During the sample period examined in this study, research evidence suggests that managers actively consider *ex ante* financial reporting costs in stock options grant decisions as well as the magnitude of the options to grant to executives (see Matsunaga, 1995; Klassen and Mawani, 2000 for example). This thus implies a substitution effect between stock options and cash compensation. However, findings in Bryan et al (2000) do not produce 'strong evidence' to support such a relationship. Notwithstanding, Murphy (1999) emphasizes the dominance of the financial reporting incentives albeit in the grant choice between at-the-money options and in-the-money options, suggesting the prevalence of the former. Hall & Murphy (2002) provide explanation for the lack of popularity of out-of- the money options grant. They argue that in addition to the de-motivational effect, such grants will trigger demand for higher premiums by executive recipients. This I contend could increase the firm's cost of capital.

With the prominence of stock options in the executive compensation and its relative dominant magnitude in the total compensation package, managers have renewed incentives to manage performance measures. A common performance measure candidate in this context is corporate earnings. Hence the popularity of earnings management studies in accounting, economics, finance and related literature from the 1900s till date. I must mention that there are different types of earnings and earnings management vis-à-vis executive stock options examined in the literature by related studies. This ranges from reported earnings (see for example, Hanlon et al, 2003), and nondiscretionary earnings (Akindayomi & Warsame, 2012). Another earnings management measure is premanaged earnings. To the best of my knowledge, very few studies examine this measure in the context of stock options as a remuneration choice to reward executive performance. A notable exception is Baker e al (2003)[2].

One way to improve corporate earnings is to increase managers' appetite for risks. The appeal of executive stock options to compensation committee is premised on the fact that it provides incentives for executives to move from their natural comfort zone of risk neutrality into the realm of risk taking. For example, Agrawal & Mandelker (1987) suggest that stock option holders experience increase in the value of options and the payoffs when they are able to increase the variance of their company's stock prices. In essence, stock options motivate managers to "adopt and not avoid" risky projects (Rajgopal and Shevlin, 2002). This implies that option's reward increases as managers take more risks. This is consistent with the risk-return rule. Two questions arise from this proposition. One, how effective is executive stock options in this context

and two, how aggressive should managers be in their risk taking endeavors. My study aims at examining the former in the context of accounting numbers and earnings measures

Both Hanlon et al (2003) and Akindayomi & Warsame (2012) find results consistent with the incentive alignment hypothesis, even though the latter shows that the positive impact executive stock options have future earnings is not as high (relative to the former) if one controls for the potentials of managers to actively interfere in the financial reporting process. In this study, I intend to subject both findings to alternative earnings measure – premanaged earnings, in terms of the direction and magnitude of the stock options contributions.

RESEARCH METHODS/DESIGN

There is a strong link between executive compensation (particularly stock options) and corporate performance, notwithstanding the controversy as to the direction and magnitude. Earnings management is uniquely situated in this controversy. It is a consensus that managers cannot manage earnings indefinitely in either direction. Cheng & Warfield (2005) state that "it is difficult, if not impossible, for a firm to manage earnings upward (or even downward) consistently". In fact, recent empirical evidence in the literature indicates that after an initial misstatement of earnings, managers tend to be more forceful in their future accounting choices in order to prevent being detected and the attendant penalizing market reactions that could follow such detection. Myers et al. (2007) term this a 'slippery slope' in the multi-period earning management process (see Schrand & Zechman, 2012 for example of studies of the slippery slope financial reporting).

Therefore, if the above is true, examining *ex post* performance effects of executive stock options should be earnings variables devoid of earnings management. Consequently, using accounting-based measures (as opposed to market-based measures)[3], I test the variation of the following hypothesis stated in alternative form:

> *Ceteris paribus, using stock option compensation to reward top 5 executives will increase the premanaged operating earnings of the firm.*

Consistent with Kang and Sivaramakrishnan (1995) Reitenga et al (2002), Baker et al (2003). I calculate premanaged earnings as:

$$[\text{OPINC}_t - \text{REV}_t \times \Delta(\text{AR} \div \text{REV})_t + \text{OpExp}_t \times \Delta(\text{CL-CM}) \div \text{OpExp})_t - \text{OpExp}_t \times \Delta(\text{Inventory} \div \text{OpExp})_t] \quad (1)$$

Where:

OPINC = Operating Income before depreciation scaled by Sales of firm i at time t;
REV = revenues;

OpExp = Cost of goods sold and selling and administration expense before depreciation;
AR = Accounts Receivable
CL = Current Liabilities
CM = current maturities of long term debt.
Δ is the change and computed as the difference between time t and t – 1.

The following empirical models are used to test the above hypothesis:

$$(PMGD/S)_{it} = \alpha_0 + \alpha_1(TA/S)_{i,t-1} + \sum_{k=0}^{5} \alpha_{2,k}(BSO/S)_{i,t-k} + \sum_{k=0}^{5} \alpha_{3,k}(BSO/S)^2_{i,t-k} + \sum_{k=0}^{5} \alpha_{4,k}(R\&D/S)_{i,t-k} + \alpha_5\sigma(PMGD/S)_{i,t-1} + \alpha_6 \text{ Idummies} + \alpha_7 \text{ Ydummies} + \varepsilon_{it} \quad (2)$$

$$(PMGD/S)_{it} = \alpha_0 + \alpha_1(TA/S)_{i,t-1} + \alpha_2(BSO/S)_{i,t-1} + \alpha_3(BSO/S)^2_{i,t-1} + \alpha_4(R\&D/S)_{i,t-1} + \alpha_5 \text{ Idummies} + \alpha_6 \text{ Ydummies} + \varepsilon_{it} \quad (3)$$

Where:

PMGD = Premanaged earnings scaled by Sales of firm i at time t.
TA = Total Assets of firm i at time t
BSO = Black-Scholes value of executive stock options granted to top 5 executives. BSO is also squared to adjust for an observed non-linearity in the relationship between BSO and PMGD.
R&D = Research and development expenses of firm i during the year *t – k (k = 0 – 5)*
$\sigma(P\ PMGD)_{i,t-1}$= Standard deviation of earnings measures estimated over the prior 5 year, for firm i.
S = is the annual sales in time t.
Idummies = Industry dummies
Ydummies = Year dummies

The difference between equation (2) and (3) is that the former is the modified version of the Hanlon et al baseline model which is referred to by Larcker (2003) as "backward-looking" empirical design and the latter as "forward-looking". One improvement of the "forward-looking model is that it allows the model specification to efficiently maximize the sample size. In addition, Larcker considers the absence of the control for prior performance in the baseline model as an important exclusion. Therefore, consistent with Larcker's position, I control for prior performance in the following equation:

$$(PMGD/S)_{it} = \alpha_0 + \alpha_1(TA/S)_{i,t-1} + \sum_{k=0}^{5} \alpha_{2,k}(BSO/S)_{i,t-k} + \sum_{k=0}^{5} \alpha_{3,k}(BSO/S)^2_{i,t-k} + \sum_{k=0}^{5} \alpha_{4,k}(R\&D/S)_{i,t-k} + \alpha_5\sigma(PMGD/S)_{i,t-1} + \alpha_6(PMGD/S)_{i,t-1} + \text{Idummies} + \alpha_8 \text{ Ydummies} + \varepsilon_{it} \quad (4)$$

$$(PMGD/S)_{it} = \alpha_0 + \alpha_1(TA/S)_{i,t-1} + \alpha_2(BSO/S)_{i,t-1} + \alpha_3(BSO/S)^2_{i,t-1} + \alpha_4(R\&D/S)_{i,t-1} + \alpha_5(PMGD/S)_{i,t-1} + \alpha_6 Idummies + \alpha_7 Ydummies + \varepsilon_{it} \quad (5)$$

(See variable definitions above).

All variables in the above equations are scaled by sales to control for potential heteroscedascticity. Consistent with Core et al (1999), the standard deviation estimated previous five years controls for the possible relation between firm risk and future premanaged earnings (see also Hanlon et al). To control for size effects, all variables are scaled by sales. The year dummies are the fiscal year when the premanaged earnings variable is measured. The industry dummies are based on a two-digit SIC code.

Research and Development (R&D) variable is introduced into the models above in order to avoid estimation error. This is because R&D expenditure has the potential to increase or decrease future corporate earnings and failure to account for this reality may over (under)estimate the performance value of BSO/S.

SAMPLE

In this study, I use all US firms that meet the data availability criteria in the Execucomp database (which begins in 1992) and Compustat tapes. The choice of the sample locale is mainly to avoid potential complications from different reporting rules in different jurisdictions/countries (see Matsunaga, 1995). In addition, due to different earnings management incentives, I exclude firms in regulated industries, i.e., utilities (SIC codes 4900-4999) and financials (SIC codes 6000-6099).

The sample period spans 1992 through 2004. This period is relatively longer than Hanlon et al, thus providing a more efficient sample size good for improved generalizability of results. Further, due to the financial reporting changes vis-à-vis expensing stock options (FAS 123 with year 2005 effective date) and the potential confounding effects it will have on my study, year 2004 is the cut-off period. The initial analysis for all the relevant models begins with 2507 firms with 17,970 firm-years. Recall that the empirical models are both 'backward-looking' and 'forward-looking'. After necessary data screening, there are 858 firms with 2,579 firm years in the former design. The latter model has three designs as follows:

i. n + 1 (1,666 firms with 8,384 firm years);
ii. Sum n + 1 + 2 (1,476 firms with 6,666 firm years);
iii. Sum n + 1 + 2 + 3 (1,283 firms with 5,357 firm years);

(n in the above designs is the grant year)

Note that the discrepancies in the number of firms and firm-years above is primarily due to more stringent data screening requirements necessitated by their unique individual underlying characteristics. In all models, I use firm-years and not firm-quarters because Execucomp database, from where I obtain the Black-Scholes value of an option for my sample period, only provides the stock options data on annual basis.

RESULTS

The empirical results for this study are presented in this section. I start with the descriptive statistics showing the sample characteristics of the data in relation to the variations of the designs developed above, i.e. 'backward-looking design and 'forward-looking design' hereinafter referred to as BLD and FLD respectively in this section.

Descriptive Statistics

In tables 1 through 4, panel A shows descriptive statistics while panel B contains the correlation matrix of the variables tested in the models. All variables in panel B are significant at conventional thresholds.

Table 1: Backward Looking Design} Descriptive Statistics And Correlation Matrix

Panel A: Descriptive Statistics (N = 2,579: F = 858)

Variables	Mean	Std. deviation	Median	Q1	Q3
PMGD($billion)	0.887	2.238	0.236	0.087	0.731
SALES ($billion)	5.395	11.151	1.737	0.73	4.977
BSO grants ($million)	7.758	18.819	2.684	0.865	7.512
ASSETS ($billion)	5.05	12.382	1.564	0.654	4.611
PMGD/S	0.157	0.237	0.142	0.083	0.221
TA/S	1.083	0.794	0.887	0.621	1.281
BSO/S	0.004	0.009	0.001	0.0005	0.003
R&D/S	0.043	0.181	0.004	0	0.037

Panel B: Correlation Matrix

Variables		PMGD/S	TA/S	BSO/S	R&D/S
PMGD/S		1			
TA/S		0.294	1		
BSO/S		0.216	0.382	1	
R&D/S		0.213	0.522	0.491	1

Note on Panel A: The 'backward-looking' design model is estimated using 2,579 firm-year observations for a total of 858 firms with no missing data. The firm years span through 1998 to 2001. PMGD is premanaged earnings, Sales is annual sales, BSO is Black-Scholes value of options grants to top 5 corporate executives as per Execucomp, ASSETS is year-end balance sheet value of total assets (TA) and R&D is research and development expenditure. Missing values of R&D are set to zero.

Note on Panel B: Variables are as described above scaled by sales. All correlations are significant at conventional thresholds except otherwise indicated as a superscript NS.

Table 2: {Forward Looking Design} {Year + 1} Descriptive Statistics And Correlation Matrix					
Panel A: Descriptive Statistics (*N* = 8,384: *F* = 1,666)					
Variables	**Mean**	**Std. deviation**	**Median**	**Q1**	**Q3**
PMGD($billion)	0.625	1.965	0.159	0.057	0.476
SALES ($billion)	4.089	10.057	1.216	0.494	3.497
BSO grants ($million)	4.428	11.171	1.673	0.645	4.263
ASSETS ($billion)	3.805	10.983	0.991	0.384	2.952
PMGD/S	0.15	0.221	0.14	0.08	0.21
TA/S	1.01	0.921	0.82	0.59	1.18
BSO/S	0.003	0.004	0.001	0.0004	0.004
R&D/S	0.03	0.071	0.001	0	0.033
Panel B: Correlation Matrix					
Variables	**PMGD/S**	**TA/S**	**BSO/S**	**TCC/S**	**R&D/S**
PMGD/S	1				
TA/S	0.029	1			
BSO/S	0.145	0.19	1		
TCC/S	0.082	0.301	0.434	1	
R&D/S	0.245	0.279	0.36	0.375	1

Note on Panel A: *The 'forward-looking' design model {Year + 1} is estimated using 8,384 firm-year observations for a total of 1,666 firms with no missing data. Firm years span through 1992 to 2001. PMGD is premanaged earnings following the year of grant, Sales is annual sales, BSO is Black-Scholes value of options grants to top 5 corporate executives as per Execucomp, ASSETS is year-end balance sheet value of total assets (TA), TCC is cash compensation for top 5 corporate executives as per Execucomp, and R&D is research and development expenditure. Missing values of R&D are set to zero.*

Note on Panel B: *Variables are as described above scaled by sales. All correlations are significant at conventional thresholds except otherwise indicated as a superscript NS.*

Table 3: {Forward Looking Design} {Sumyear + 1 + 2} Descriptive Statistics And Correlation Matrix					
Panel A: Descriptive Statistics (*N* = 6,666: *F* = 1,476)					
Variables	**Mean**	**Std. deviation**	**Median**	**Q1**	**Q3**
PMGD1 ($billion)	1.371	3.923	0.36	0.137	1.065
SALES ($billion)	9.034	22.517	2.707	1.089	7.72
BSO grants ($million)	4.687	10.677	1.811	0.703	4.564
ASSETS ($billion)	3.984	11.302	1.02	0.401	3.165
PMGD1/S	0.16	0.146	0.14	0.09	0.21
TA/S	0.48	0.393	0.39	0.28	0.56
BSO/S	0.002	0.004	0.001	0.0002	0.002
R&D/S	0.009	0.014	0.002	0	0.014
Panel B: Correlation Matrix					
Variables	**PMGD1/S**	**TA/S**	**BSO/S**	**TCC/S**	**R&D/S**
PMGD1/S	1				
TA/S	0.07	1			
BSO/S	0.106	0.154	1		
TCC/S	0.048	0.213	0.442	1	
R&D/S	0.308	0.036	0.204	0.175	1

Note on Panel A: *The 'forward-looking' design model {SumYear + 1 + 2} is estimated using 6,666 firm-year observations for a total of 1,476 firms with no missing data. Firm years span through 1992 to 2001. PMGD1 is sum of premanaged earnings for two years following the grant year, Sales is annual sales, BSO is Black-Scholes value of options grants to top 5 corporate executives as per Execucomp, ASSETS is year-end balance sheet value of total assets (TA), TCC is cash compensation for top 5 corporate executives as per Execucomp, and R&D is research and development expenditure. Missing values of R&D are set to zero.*

Note on Panel B: *Variables are as described above scaled by sales. All correlations are significant at conventional thresholds except otherwise indicated as a superscript NS.*

Table 4: {Forward Looking Design} {Sumyear + 1 + 2 + 3} Descriptive Statistics And Correlation Matrix					
Panel A: Descriptive Statistics (*N* = 5,357: *F* = 1,283)					
Variables	**Mean**	**Std. deviation**	**Median**	**Q1**	**Q3**
PMGD2 ($billion)	2.14	5.678	0.55	0.207	1.625
SALES ($billion)	12.866	29.887	3.943	1.587	11.265
BSO grants ($million)	5.065	12.627	1.587	0.748	4.727
ASSETS ($billion)	3.66	8.358	1.015	0.396	2.993
PMGD2/S	0.16	0.102	0.15	0.1	0.2
TA/S	0.285	0.107	0.267	0.199	0.353
BSO/S	0.001	0.004	0	0.0002	0.001
R&D/S	0.01	0.013	0.004	0	0.014
Panel B: Correlation Matrix					
Variables	**PMGD2/S**	**TA/S**	**BSO/S**	**TCC/S**	**R&D/S**
PMGD2/S	1				
TA/S	0.265	1			
BSO/S	0.166	0.14	1		
TCC/S	0.088	0.137	0.364	1	
R&D/S	0.501	0.293	0.237	0.257	1

Note on Panel A: *The 'forward-looking' design model {SumYear + 1 + 2 + 3} is estimated using 5,357 firm-year observations for a total of 1,283 firms with no missing data. Firm years span through 1992 to 2001. PMGD2 is sum of premanaged earnings for three years following the year of grant, Sales is annual sales, BSO is Black-Scholes value of options grants to top 5 corporate executives as per Execucomp, ASSETS is year-end balance sheet value of total assets (TA) and R&D is research and development expenditure. Missing values of R&D are set to zero.*

Note on Panel B:

Variables are as dscribed above scaled by sales. All correlations are significant at conventional thresholds except otherwise indicated as a superscript NS.

In panel A of table 1, the sample characteristics of BLD indicates average value of (BSO) stock options granted to the top 5 executives is $7.758 million (median $2.7 million). This represents approximately 0.4% of operating revenues. The average assets are $5 billion (median $1.6 million) with asset turnover rate of approximately 0.90. With approximately 16% premanaged earnings margin, the firms generated revenue worth 5.395 billion (median 1.7 billion) on the average during the sample period. Overall, the statistics indicate that the sampled firms are clearly large and profitable with intensive use of executive stock options compensation to remunerate top executives[4]. Similar inferences are drawn from the figures in tables 2 through 4 on the FLD.

REGRESSION RESULTS

These results are analyzed in two subsections i.e., Backward-Looking design (BLD) and Forward-Looking design (FLD).

Backward-Looking Design

The baseline model results are contained in table 5. In panel A, the regression coefficients are presented in columns 1 through 4. However, for discussions purposes, I only focus on

columns 3 and 4 which have nonlinear specifications since nonlinear relationship is established between the main regressor of interest (BSO/S) and the dependent measure (PMGD/S)[5]. The coefficients BSO/S and $(BSO/S)^2$ are respectively positive and negative consistent with the concavity relation between executive stock options and the earning measure. This means that while future performance increases in executive stock option grants, such an increase only occurs at diminishing rate[6].

Table 5: {Backward Looking Design} Estimation Of Payoffs Using Black-Scholes Values Of BSO Grants {N = 2,579; F = 858}

Panel A: Regression Coefficients}

	LINEAR		NONLINEAR	
	1	2	3	4
Variable **{Dependent: PMGD/S}**	Coefficient	Coefficient	Coefficient	Coefficient
TA/S	0.142***	0.079***	0.108***	-0.029
$\sum_{k=0}^{5} \alpha_{2,k}(BSO/S)_{i,t-}$	0.436***	0.446***	0.879***	0.920***
$\sum_{k=0}^{5} \alpha_{3,k}(BSO/S)^2_{i,t-k}$			-0.417***	-0.418***
$\sum_{k=0}^{5} \alpha_{4,k}(R\&D/S)_{i,t-k}$	-0.021***	-0.038***	0.139***	-0.193***
$\sigma(PMGD/S)_{i,t-1}$	-0.217***	-0.200***	-0.156***	-0.119***
$(PMGD)_{t-1}/S$		0.169***		0.195***
Adj. R^2 without dummies	0.224	0.265	0.262	0.305
Adj. R^2 overall	0.311	0.328	0.34	0.36

Panel B: Economic effects sensitivity of various BSO distribution {without previous performance}

		LINEAR			NONLINEAR	
		Effect on	Implied		Effect on	Implied
Distribution Cutoff	BSO/S	PMGD/S	Sensitivity	BSO/S	PMGD/S	Sensitivity
FIRST	0.0005	0.0002	0.44	0.0005	0.0004	0.88
MEDIAN	0.0012	0.0005	0.44	0.0012	0.0011	0.88
THIRD	0.0033	0.0014		0.0033	0.0029	

Panel C: Economic effects sensitivity of various BSO distribution {with previous performance}

FIRST	0.0005	0.0002	0.45	0.0005	0.0004	0.92
MEDIAN	0.0012	0.0006	0.45	0.0012	0.0011	0.92
THIRD	0.0033	0.0015		0.0033	0.003	

*Note on Panel A: ***, ** and * represent significance levels at 0.01, 0.05 and 0.10 respectively. The 'backward-looking' design model is estimated using 2,579 firm-year observations for a total of 858 firms with no missing data. The firm years span through 1998 to 2001. PMGD is premanaged earnings; Sales is annual sales, BSO is Black-Scholes value of options grants to top 5 corporate executives as per Execucomp, ASSETS is year-end balance sheet value of total assets (TA) and R&D is research and development expenditure. Missing values of R&D are set to zero. All variables are scaled by sales. Years are indexed by t and firms by i, time and industry dummies are suppressed for expositional convenience. Panel A contains regression coefficient estimates. Columns 1 and 3 contain coefficients without previous performance while columns 2 and 4 cover estimates with previous performance. Columns 1 to 2 and columns 3 to 4 are for linear and nonlinear models respectively.*

Note on Panel B and C: Implied sensitivity analyses in panel B and C refer to the change in PMGD/S scaled by change in BSO/S.

From panel A of table 5, column 3 shows that without controlling for prior performance, BSO/S and $(BSO/S)^2$ are 0.879 and -0.417 respectively. Controlling for prior performance, the coefficients are respectively 0.920 and -0.418. The positive signs of the variable of interest

(BSO/S) show the positive contribution of executive stock options to alternative earnings measure (PMGD). Panels B and C confirm this assertion as the economic effect of BSO/S provide consistent results. Implied economic sensitivity numbers computed using Hanlon et al approach is the change in PMGD/S scaled by change in BSO/S. This is the dollar amount of changing the median BSO up or down to next quartile cutoff (Hanlon et al and then Akindayomi & Warsame). With (without) prior performance, this 'economic impact' analysis shows that using one dollar executive stock options to remunerate top executives increases my measure of corporate earnings by $1.92 ($1.88). In sum, even after using alternative earnings measure (premanaged earnings), it is shown that executive stock options increase future earnings performances as reflected in the results from both the regression and implied sensitivity analyses.

Forward-Looking Design

Recall that Larcker (2003) criticized Hanlon et al BLD as restrictive in sample size, sample period and diminished model explanatory power. In effect, Larcker challenged the BLD results presented above. In response, I re-examine the hypothesis using the FLD (see subsection on 'Sample' above) and the results are presented in tables 6 through 8.

Please note that in (i) – (iii) above (see subsection on 'Sample'), I examine the effects of granting executive stock options to top executives in year n and the option-payoffs of such grants to future earnings performance in: one year after the new grants (Year + 1); combined two years after the grant (SumYear + 1 + 2); combined three years after the grant (SumYear + 1 + 2 + 3). After controlling for firms' total assets, R&D, earnings performance in year t-1, and cash components of the executive compensation package, tables 6 - 8 indicate that my main variables of interest viz: BSO/S and $(BSO/S)^2$ are significant with very high t-statistic while displaying positive and negative signs respectively. Similar to the findings in Akindayomi & Warsame, it is instructive to note that BSO/S coefficients in all the three specifications are consistently lower when previous earnings performances are controlled for. The coefficients are 0.208 (0.245), 0.176 (0.191) and 0.129 (0.149) respectively for Year + 1, SumYear + 1 + 2, SumYear + 1 + 2 + 3 in with (without) prior performance models specifications. These results corroborate Lacker assertion of potential omission variable bias in similar empirical research settings. Further, I interpret the implied analyses results on the strength of this assertion (i.e. only panel D) even though, the dollar effects of stock option grants to the target executives are provided in panel C and D (mainly because Panel D reports results after controlling for previous earnings performance).

Table 6: {Forward Looking Design} {Year + 1} Estimation Of Payoffs Using Black-Scholes Values Of BSO Grants {N = 8,384; F = 1,666}

Panel A: {Regression Coefficients without Previous Performance}

	1	2	3		4	5	6
Variable **{Dependent: PMGD/S}**	Coefficients	t-statistic	p-value		Coefficients	t-statistic	p-value
TA/S	-0.201	-16.25	.000		-0.2	-16.2	.000
BSO/S	0.049	4.12	.000		0.245	7.96	.000
$(BSO/S)^2$					-0.203	-6.9	.000
RD/S	0.262	20.77	.000		0.269	21.31	.000
TCC/S	-0.029	-2.38	0.017		-0.036	-2.98	0.003
Adj. R^2 without dummies	0.066				0.075		
Adj. R^2 overall	0.167				0.172		
Panel B: {with previous performance}							
TA/S	-0.24	-18.98	.000		-0.239	-18.98	.000
BSO/S	0.062	5.24	.000		0.208	8.79	.000
$(BSO/S)^2$					-0.213	-7.33	.000
RD/S	0.286	22.66	.000		0.294	23.25	.000
TCC/S	-0.043	-3.59	.000		-0.051	-4.24	.000
$(PMGD)_{t-1}/S$	-0.134	-12.74	.000		0.136	12.97	.000
Adj. R^2 without dummies	0.068				0.077		
Adj. R^2 overall	0.183				0.188		

Panel C: Economic effects sensitivity of various BSO distribution {without previous performance}

		LINEAR			**NONLINEAR**	
Distribution Cutoff	BSO/S	Effect on PMGD/S	Implied Sensitivity	BSO/S	Effect on PMGD/S	Implied Sensitivity
FIRST	0.0004	0.0000	0.05	0.0004	0.0001	0.24
MEDIAN	0.0012	0.0001	0.05	0.0012	0.0003	0.24
THIRD	0.0035	0.0002		0.0035	0.0008	
FIRST	0.0004	0.0000	0.06	0.0004	0.0001	0.27
MEDIAN	0.0012	0.0001	0.06	0.0012	0.0003	0.27
THIRD	0.0035	0.0002		0.0035	0.0009	

Notes on Panels A & B: *The 'forward-looking' design model {Year + 1} is estimated using 8,384 firm-year observations for a total of 1,666 firms with no missing data. Firm years span through 1992 to 2001. PMGD is premanaged earnings following the year of grant {the dependent measure}; Sales is annual sales, BSO is Black-Scholes value of options grants to top 5 corporate executives as per Execucomp, ASSETS is year-end balance sheet value of total assets (TA), TCC is cash compensation for top 5 corporate executives as per Execucomp and R&D is research and development expenditure. Missing values of R&D are set to zero. All variables are scaled by sales. Years are indexed by t and firms by i, time and industry dummies are suppressed for expositional convenience. Panel A is with respect to estimates without previous performance while Panel B covers estimates with previous performance. Columns 1 to 3 and columns 4 to 6 are for linear and nonlinear models respectively in both panels.*

Note on Panel C and D: *Implied sensitivity analyses in panel C and D refer to the change in PMGD/S scaled by change in BSO/S.*

Pane D shows that executive stock options grants to the top 5 executives increase my earnings measure by $1.27 in Year + 1, $1.18 in SumYear + 1 + 2, and $1.13 in SumYear + 1 + 2 + 3. These results document strong empirical evidence for the theoretical assertion of concave relations between executive stock options and future earnings performances maintained by Hanlon et al, but which they could not empirically test because of the limitations imposed by their backward-looking empirical design[7]. The fact the contribution becomes progressively smaller in the FLD suggests an interesting dimension. Since my sample period coverage does not permit the empirical analysis beyond SumYear 1 + 2 + 3, future studies may examine at what point in the

future does the positive dollar impact of options grants to top corporate executives on future earnings ends or even becomes negative. This is important in that it could provide valuable decision tool to compensation committees on the efficient *grant-frequency* of executive stock options to top corporate executives.

Table 7: {Forward Looking Design} {Sumyear + 1 + 2} Estimation Of Payoffs Using Black-Scholes Values Of BSO Grants {N = 6,666; F = 1,476}

Panel A: {Regression Coefficients without Previous Performance}

	1	2	3		4	5	6
Variable **{Dependent: PMGD1/S}**	Coefficients	t-statistic	p-value		Coefficients	t-statistic	p-value
TA/S	-0.144	-11.18	0.000		-0.146	-11.38	0.000
BSO/S	0.053	4.33	0.000		0.191	7.94	0.000
$(BSO/S)^2$					-0.146	-6.66	0.000
RD/S	0.31	21.73	0.000		0.303	21.25	0.000
TCC/S	-0.053	-4.29	0.000		-0.07	-5.53	0.000
Adj. R^2 without dummies	0.101				0.109		
Adj. R^2 overall	0.268				0.273		
Panel B: {with previous performance}							
TA/S	-0.22	-16.5	0.000		-0.221	-16.62	0.000
BSO/S	0.05	4.17	0.000		0.176	7.47	0.000
$(BSO/S)^2$					-0.133	-6.21	0.000
RD/S	0.258	18.02	0.000		0.252	17.63	0.000
TCC/S	-0.041	-3.36	0.001		-0.056	-4.52	0.000
$(PMGD)_{t-1}/S$	0.212	17.42	0.000		0.209	17.25	0.000
Adj. R^2 without dummies	0.169				0.175		
Adj. R^2 overall	0.3				0.304		

Panel C: Economic effects sensitivity of various BSO distribution {without previous performance}

		LINEAR			NONLINEAR	
Distribution Cutoff	BSO/S	Effect on PMGD1/S	Implied Sensitivity	BSO/S	Effect on PMGD1/S	Implied Sensitivity
FIRST	0.0002	0.0000	0.05	0.0002	0.0000	0.19
MEDIAN	0.0016	0.0000	0.05	0.0016	0.0001	0.19
THIRD	0.0015	0.0001		0.0015	0.0003	
Panel D: Economic effects sensitivity of various BSO distribution {with previous performance}						
FIRST	0.0002	0.0000	0.05	0.0002	0.0000	0.18
MEDIAN	0.0016	0.0000	0.05	0.0016	0.0001	0.18
THIRD	0.0015	0.0001		0.0015	0.0002	

Notes on Panels A & B: *The 'forward-looking' design model {SumYear + 1 + 2} is estimated using 6,666 firm-year observations for a total of 1,476 firms with no missing data. Firm years span through 1992 to 2001. PMGD1 is sum of premanaged earnings for two years following the grant year{the dependent measure}; PMGD is premanaged earnings, Sales is annual sales, BSO is Black-Scholes value of options grants to top 5 corporate executives as per Execucomp, ASSETS is year-end balance sheet value of total assets (TA), TCC is cash compensation for top 5 corporate executives as per Execucomp and R&D is research and development expenditure. Missing values of R&D are set to zero. All variables are scaled by sales. Years are indexed by t and firms by i, time and industry dummies are suppressed for expositional convenience. Panel A is with respect to estimates without previous performance while Panel B covers estimates with previous performance. Columns 1 to 3 and columns 4 to 6 are for linear and nonlinear models respectively in both panels.*

Note on Panel C and D: *Implied sensitivity analyses in panel C and D refer to the change in PMGD1/S scaled by change in BSO/S.*

The controlled variables substantially show the anticipated coefficient characteristics. Research and Development coefficients are all positive and highly significant. This means that even after controlling for investment expenditure in R&D, BSO/S still possesses incremental

earning performance value. With (without) previous earnings, R&D/S are 0.294 (0.269), 0.252 (0.303) and 0.314 (0.420) respectively for Year + 1, SumYear + 1 + 2, SumYear + 1 + 2 + 3 model specifications. In the same pattern, TA/S coefficients display -0.239 (-0.200), -0.221 (-0.146) and -0.043 (0.045). I must mention that caution should be exercised interpreting TA/S coefficients as I believe that the negative coefficients show asset turnover features.

Table 8: {Forward Looking Design} {Sumyear + 1 + 2 + 3}Estimation Of Payoffs Using Black-Scholes Values Of BSO Grants {N = 5,357; F = 1,283}

Panel A: {Regression Coefficients without Previous Performance}						
	1	2	3	4	5	6
Variable **{Dependent: PMGD2/S}**	Coefficients	t-statistic	p-value	Coefficients	t-statistic	p-value
TA/S	0.045	3.51	0.000	0.045	3.51	0.000
BSO/S	0.064	5.35	0.000	0.149	7.34	0.000
$(BSO/S)^2$				-0.096	-5.18	0.000
RD/S	0.43	29.75	0.000	0.42	28.92	0.000
TCC/S	-0.093	-7.64	0.000	-0.105	-8.51	0.000
Adj. R^2 without dummies	0.272			0.275		
Adj. R^2 overall	0.39			0.393		
Panel B: {with previous performance}						
TA/S	-0.044	-3.52	0.000	-0.043	-3.46	0.001
BSO/S	0.067	6	0.000	0.129	6.72	0.000
$(BSO/S)^2$				-0.069	-3.95	0.000
RD/S	0.319	22.21	0.000	0.314	21.72	0.000
TCC/S	-0.071	-6.17	0.000	-0.08	-6.84	0.000
$(PMGD)_{t-1}/S$	0.309	24.8	0.000	0.306	24.54	0.000
Adj. R^2 without dummies	0.371			0.373		
Adj. R^2 overall	0.453			0.455		

Panel C: Economic effects sensitivity of various BSO distribution {without previous performance}						
	LINEAR			**NONLINEAR**		
Distribution Cutoff	BSO/S	Effect on PMGD2/S	Implied Sensitivity	BSO/S	Effect on PMGD2/S	Implied Sensitivity
FIRST	0.0002	0.0000	0.06	0.0002	0.0000	0.15
MEDIAN	0.0004	0.0000	0.06	0.0004	0.0001	0.15
THIRD	0.0011	0.0001		0.0011	0.0002	
Panel D: Economic effects sensitivity of various BSO distribution {with previous performance}						
FIRST	0.0002	0.0000	0.07	0.0002	0.0000	0.13
MEDIAN	0.0004	0.0000	0.07	0.0004	0.0001	0.13
THIRD	0.0011	0.0001		0.0011	0.0001	

Notes on Panels A & B: *The 'forward-looking' design model {SumYear + 1 + 2 + 3} is estimated using 5,357 firm-year observations for a total of 1,283 firms with no missing data. Firm years span through 1992 to 2001. PMGD2 is sum of premanaged earnings for three years following the grant year {the dependent measure}; PMGD is premanaged earnings, Sales is annual sales, BSO is Black-Scholes value of options grants to top 5 corporate executives as per Execucomp, ASSETS is year-end balance sheet value of total assets (TA), TCC is cash compensation for top 5 corporate executives as per Execucomp and R&D is research and development expenditure. Missing values of R&D are set to zero. All variables are scaled by sales. Years are indexed by t and firms by i, time and industry dummies are suppressed for expositional convenience. Panel A is with respect to estimates without previous performance while Panel B covers estimates with previous performance. Columns 1 to 3 and columns 4 to 6 are for linear and nonlinear models respectively in both panels.*
Note on Panel C and D: *Implied sensitivity analyses in panel C and D refer to the change in PMGD2/S scaled by change in BSO/S.*

Following the analytical position of Tian (2004) on cash-options substitution effect, I use TCC/S to control for total cash compensation in the overall compensation of the target executives.

Tian suggests that cash compensation and options are mutually exclusive. The TCC/S coefficients empirically reflect the analytical argument of Tian cash-option mutual exclusivity. For example, TCC/S coefficients are consistently negative across all models while BSO/S coefficients are consistently positive. With (without) previous earnings, TCC/S are -0.051 (-0.06), -0.056 (-0.070) and -0.080 (-0.105) respectively for Year + 1, SumYear + 1 + 2, SumYear + 1 + 2 + 3 Also, if interpreted in relation to dependent measure (PMGD/S), TCC/S coefficients show that cash compensation actually depress future earnings performance implying that cash compensation de-motivates top executives while stock options motives them to improved performance.

Overall, my results provide evidence consistent with incentive alignment hypothesis and thus maintain that using executive stock options to remunerate top 5 corporate executives improve future earnings performance although at a materially diminishing amount over the future years.

Additional Analysis

Knowing that some constraints could potentially confound the interpretations of my findings, I performed some sensitivity analyses to test the robustness of the results. Recall, that I assign zero to missing R&D values in the Compustat Database. In order to address this self selection bias, I re-run the analysis using R&D only firms. In addition, I use alternative scalar variables to scale the variables. For parsimony, I do not show the results since the results are substantially similar both quantitatively and qualitatively. Hence, the overall tenor of the findings remains that using executive stock options to remunerate top 5 corporate executives is value relevant to shareholders as future performances are improved.

I must mention that my study possesses some limitations. For example, the sampling technique reflects survival bias. The Black-Scholes option pricing model has its own inherent limitations. Also, the model specifications may possess measurement errors such as correlated omitted variable bias as well as concerns for endogeneity effects[8], such that inferences from my results may change if perfect instrumental variables are available. Further, the generalizability of my findings may be impaired given the relatively short sample period, in addition to the fact that my study excludes regulatory and financial institutions. These industries no doubt constitute a viable segment of the US economic landscape. I must also note that there is the real potential concern of expectation problem regarding the implementation of FAS 123 revised and reissued in December, 2004. There has been voluntary adoption by firms prior to the effective commencement date of this standard, even though I will argue that voluntary adoption firms did not do so on a consistent basis. I challenge future research in these contexts.

CONCLUSION

Larcker (2003) emphasizes the "…performance consequences of managerial choices…", the choice of which include using stock options as a remuneration package for top corporate

executives by compensation committees. Notwithstanding the earlier limitations mentioned earlier, overall, this study reveals that in sum, using stock options continue to provide incentives for executives to improve future corporate performance and thus improve shareholders wealth. Executive compensation continues to be significant part of overall global corporate narratives especially in the US. The conversation intensified in the wake of corporate bailouts and overall top corporate executive compensation package comes under increased scrutiny both by the public and the regulators. No doubt, stock options remain substantial portion of such compensation package. Academic and scholarly findings in the compensation literature have not helped the debate in that such findings are at best inconclusive and controversial. While some believe in the incentive alignment hypothesis, others document rent extraction. In this study, my findings could not reject the incentive alignment hypothesis. In fact, its empirical evidence strongly supports the hypothesis. Using alternative earnings measure (premanaged earnings); my sample during the sample period (1992-2004) finds strong results for improved future corporate performance when top 5 corporate executives are remunerated by stock options.

ENDNOTES

1. Premanaged earnings is derived consistent with Baker et al (2003) which is computed by "removing an estimate of the effect of earnings management from income before extraordinary items." In other words, it is earnings before earnings management.
2. In the context of the current study, the core difference, among others, from Baker et al are: (1) the authors examined this earning measure in earnings smoothening context, thus making the measure a predictor variable versus a dependent measure in this current study; (2) the research methodology employed in the current study is tailored on Hanlon et al methodology which is substantially different from Baker et al.; (3) Baker et al, find results consistent with rent extraction hypothesis as opposed to the current study, i.e. incentive alignment.
3. My choice of accounting-based measure is consistent with the argument of Murphy (2000) that these measures are directly influenced by executives actions and that market-based measures are generally noisy (Wiseman & Gomez-Mejia, 1998).
4. The above statistics compare with those reported in related research (see Hanlon et al and Akindayomi & Warsame, for example).
5. This will be the trend for the remaining part of this paper.
6. In econometric terms, the inferences from this specification is that the sum of coefficients vis-à-vis the second order term (i.e. the square term) is expected to be zero, if and only if, the specified relation is linear as assumed.
7. Also note that Akindayomi & Warsame could not find a progressively consistent lower amount of dollar contributions across these three models, i.e. Year + 1, SumYear + 1 + 2 and SumYear + 1 + 2 + 3 vis-à-vis their earnings measure (Nondiscretionary Earnings). Specifically, they report $1.15, $1.16 and $1.15 respectively. One may be tempted to assume that the one cent difference is not material. On one hand, the direction is important. On the other hand, it is more telling if one considers that during the sample period, on the average, as high as $5 million worth of executive stock options were granted by the sampled firms in the FLD.

8. Larcker (2003) clearly expresses econometric challenges that studies like mine faces. He states that "any research study that has some type of managerial choice as the predictor (or right-hand-side) variable confronts the econometric problems caused by endogeneity. …"

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