

# PAY FOR PERFORMANCE: AN EMPIRICAL REVIEW

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## Abstract

This study investigated the relationship between the CEO cash compensation and firm performance of the large New York Stock Exchange (NYSE) companies from 2005 to 2010. The quantitative research method was selected for this research study. The forty large companies were selected through a stratified sampling method. The research question for this research study was: among the NYSE companies, what relationship is there between CEO cash compensation and firm performance. The results found that, there was a relationship between CEO salary, bonus, and firm performance, among the NYSE companies. The correlations between CEO salary, CEO bonus, return on assets, return on equity, earnings per share, cash flow per share, net profit margin, common stock outstanding, book value of common stock outstanding, and market value of common stocks outstanding, were characterized as weak ratios respectively.

**Keywords:** Executive Compensation, Firm Performance, NYSE Companies, CEO Cash Compensation, CEO Bonus

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## 1 Introduction

### 1.1 Purpose and CEO compensation system

The purpose of this research is to investigate in clear terms the extent and nature of the relationship between CEO cash compensation and firm performance among the large New York Stock Exchange (NYSE) companies from 2005 to 2010. To educate shareholders, investors, and the public on determinants of CEO cash compensation. That is, compensation factors that involved in rewarding CEOs with salaries and bonuses. In addition, contribute in the field of executive compensation literature with recent findings.

The CEO compensation system has been greatly misunderstood by the public for some time but it has been emerged as a concern during the period of the global credit crunch (2007 to 2009). The general social ethical belief is that CEOs should be rewarded based on the accounting performance and should be penalized if companies perform below market expectations. This belief resulted in numerous single studies conducted in the United States and United Kingdom, yet these studies have failed to arrive at robust conclusions on the relationship between CEO pay and performance. A factor analysis conducted by Tosi, Werner, Katz and Gomez-Mejia (1998), stated that less than 5 percent of CEO pay is explained by performance factors. Dyl (1998) stated that there is a downside hedge of a CEO's pay in management controlled firms, given that it is more strongly related to firm size, not firm performance. Williams (1985) believed that executives themselves set their pay using

outside consultants to legitimize compensation package therefore transparency is minimized within decision making system. Jensen and Murphy (1990) and Hubbard and Palia (1995) favored performance to be measured by the shareholder value. On the other hand, Nyberg, Fulmer, Gerhart and Carpenter (2010) measured firm performance using net income, return on equity, and return on assets. The great scholars in the field of executive compensation such as, Gomez-Mejia, Eugene F. Fama, Michael Jensen, and Kevin Murphy have expressed concerns: why are robust conclusions not achieved; why these studies have arrived at divergent or inconsistent results; and why it has failed to establish defining factors that influenced CEO compensation system. Tosi et al. (2000) have blamed these concerns to different methods of collection, different statistical techniques, different samples, different moderator variables, and differences in how constructs of interest have been used in various studies. As such, these reasons have hampered to reach definite and consistent conclusions among previous studies. In addition, CEO cash compensation has rarely been studied as a separate study despite it is believed to be a strong proxy towards determining CEO total compensation. That is, CEO cash compensation which includes salary and bonus is sufficient to represent CEO total compensation which comprised of salary, bonus, stock options, pensions, and other long-term benefits. Agarwal (1981), Finkelstein & Boyd (1998), and Finkelstein and Hambrick (1989, 1996) concluded that simple measures of cash compensation are an excellent proxy for CEO total pay. Similarly, Mehran (1992) reported that CEOs took 67% of total pay in

the form of salary and a bonus and 22% in the form of equity based incentives.

The literature indicated that most of previous studies have focused on the industry segment for sampling, thus biasing the results. From a firm performance perspective, previous studies have used either return on equity, return on assets, earnings per share, cash flow per share, or market value per share as a proxy for firm performance as such the results are also inconsistent. From a timing perspective, previous studies have ranged from one to ten year period as such has affected the quality and consistency of statistical results. Overall, previous studies have failed to understand the CEO compensation system either due to: the few variables used in their studies; the focus on a distinct population segment; or the use of different statistical methodologies.

### **1.2 CEO compensation system as social issue**

Institutional shareholders, politicians, and the public have blamed boards that executives are paid too much, and that the current incentive-pay schemes are flawed because the connection between executive pay and company performance is mixed at best; and at worst, has led to a series of dysfunctional behaviors. They believed that executive compensation should be based on pay for performance against sector-specific environmental, social and governance criteria, as well as financial performance indicators. The solutions offered for the problems of excessive levels of executive pay and the need to strengthen the link between pay and performance often solution to: strengthen the independence of directors and compensation committees; increase the shareholders' rights to elect directors and to express their views on compensation plans, to discourage manipulation of CEO compensation and align incentives more closely with the aims of the owners. It is believed that these problems can be solved with an effective compensation structure or improved techniques to link CEO pay to stock performance. A 2013 McKinsey survey commissioned by the Canadian Coalition for Good Governance found that an overwhelming majority of directors and investors wished to see factors such as sustainable development and customer satisfaction considered in setting compensation, yet only a minority of the Canadian companies appear to link these factors with the executive compensation.

### **1.3 CEO pay history<sup>21</sup>**

In the past several decades, the difference between the compensation of corporate chief executives and the pay earned by the average employee has increased dramatically. In 1960, the average chief executive earned 40 times as much as the average worker. The CEO compensation grew 78.7 percent between 1965 and 1978, three times the growth of the compensation

of private-sector workers. The CEO compensation grew strongly over the 1980s but exploded in the 1990s and peaked in 2000 at a growth of 1,390 percent, from 1978. This growth in CEO compensation far exceeded the stock market value over the 1980s and 1990s. By 1990, the average CEO earned 107 times as much. In the following decade, this ratio rose to 525:1 before settling back to 301:1 in 2003<sup>22</sup>. In a paper published (2012) by the Economic Policy Institute, a think-tank, calculates that chief executives at the America's 350 biggest companies are paid 231 times, as much as the average private-sector worker in 2011. Overall, CEOs have received far better compensation than typical worker, stock market, or the U.S. economy over the last several decades, without any clear justification towards the reward system which led to the public outcry.

## **2 Literature review**

### **2.1 Pay-performance sensitivity**

According to previous studies conducted in the United States and the United Kingdom, CEO compensation is believed to be weakly related to firm performance. Loomis (1982) argued that pay is unrelated to performance. Henderson and Fredrickson (1996), and Sanders and Carpenter (1998, 2002) argued that CEO total pay may be unrelated to performance but it related to organizational complexity they manage. Likewise, studies conducted by Murphy (1985), Jensen and Murphy (1990), and Joskow and Rose (1994) find similar conclusions. Jensen and Murphy (1990) also believed that CEO bonuses are strongly tied to an unobservable performance measure. They believed that if bonuses depend on performance measures observable only to the board of directors, they could have provided a significant incentive. They believed that one way to detect the existence of such phantom performance measures are to examine the magnitude of year to year fluctuations in CEO compensation. They believed that such fluctuations signify CEO pay is unrelated to accounting performance. In addition, they argued that although bonuses represent 50% of CEO salary, such bonuses are awarded in ways that are not highly sensitive to performance. And the variation in CEO pay can be explained by changes in accounting profits than stock market value. Overall, they believed that pay-performance sensitivity remains insignificant.

Gilson and Vetsuypens (1993) argued that the association between pay and performance is small in economic terms when performance is measured in terms of changes rather than levels. This is supported by Iyengar (2000) who argued that changes in CEOs compensation are unrelated to changes in firms' performance perhaps due to stockholders in poorly performing firms would like to adopt a cautious wait and see attitude, to assess whether a change in performance is permanent before rewarding senior

<sup>21</sup> Mishel, Lawrence and Sabadish, Natalie (2012), 'CEO pay and the top 1%', Issue Brief, Economic Policy Institute, May 2, 12<sup>th</sup> Edition, pp.1-7.

<sup>22</sup> Thompson, Derek (2013), 'What's Behind the Huge (and growing) CEO - Worker Pay Gap?', The Atlantic, April 30.

managers. This is further supported by Antle and Smith (1986), who finds no relation between CEO cash compensation and firm performance. However, these statements are contradicted by Jensen and Zimmerman (1985), who stated that evidences are inconsistent with a view that executive compensation is unrelated to firm performance and enriches managers at the expense of shareholders. This is supported by Gibbons and Murphy (1990), who finds that CEO pay changes by about 1.6% for each 10% of return on common stock. That is, the CEO pay structure is positively and significantly related to firm performance, as measured by the rate of return on common stock. This is supported by Lambert and Larcker (1987) and Sloan (1993), who finds that there is a positive relation between CEO compensation and stock returns. According to Blanchard, Lopez-de-Silanes and Shleifer (1994), Iyengar, Raghavan J. (2000), and Bertrand and Mullainathan (2001), who stated that CEO cash compensation increases when firm profits rise for reasons that have nothing to do with managers' efforts. Murphy (1986) believed that top executives are worth every nickel they get.

## **2.2 CEO compensation system and accounting performance**

Healy (1985), Lambert and Larcker (1987), Pavlick et al. (1983), and Verrechia (1986) believed that incentive scheme based on accounting performance measure appear to influence accounting earnings. Porac and Pollack (1997) finds that when accounting returns are high then firm downplay market returns. However, Lambert and Larcker (1987) argued that firms place relatively more weight on market performance than on accounting performance measure in compensation contracts for situations in which variance of accounting performance measure is high relative to market performance measure, when the firm is experiencing high growth rates or managers holding of the firm's stock is low. However, Gibbons and Murphy (1989) argued that basing compensation on accounting performance distorts CEO incentives. That is, paying executives based on accounting profits rather than changes in shareholder wealth not only manipulates accounting results, but also ignore projects with large net present values in favor of less valuable projects. This is supported by Ronen and Sadan (1981), who argued that corporate managers often engage in income smoothing, taking actions to dampen fluctuations in their firms' publicly reported net incomes. This is supported by Trueman and Titman (1988), who stated that by smoothing income, managers may attempt to reduce estimates of various claimants of the firm therefore, will stabilize net income. Jensen and Murphy (1990) finds in their study that CEO compensation is weakly related to changes in accounting profits and sales, but is unrelated to market and industry performance. That is, the amount of CEO pays at risk for a \$48 million change in accounting profits is \$9,000, or less than 2 percent of compensation for CEOs with median earnings of \$490,000.

Murphy (1999) stated that bonus contracts are usually written based on accounting earnings and not explicitly on stock returns. Bushman et al. (1995, 1996) reported that 40 percent of their sampled CEOs received bonuses based on individual performance evaluation which includes discretionary and subjective bonuses. However, Murphy and Oyer (2002) believed that CEOs are less likely than non CEO executives to receive discretionary bonuses. Ellig (2002) argued that accounting measures are backward looking and pertain to short term firm performance. Shaw and Zhang (2010) finds that when earnings performance is very poor, CEO's bonus is zero. In addition, they find that CEO cash compensation is sensitive to accounting performance. That is, earnings performance improves beyond the lower bound, a linear relation between CEO cash compensation and firm performance is expected in the incentive zone. Similarly, earnings performance improves above the upper bound, cash compensation becomes insensitive to performance and therefore no bonus is further awarded. However, other researchers believed that the relationship between executive pay and performance may be stronger in owner-controlled than management-controlled firms (Simmons and Wright, 1989). This is supported by Gomez-Mejia, Tosi and Hinkin (1987), who stated that management- controlled firms clearly design compensation systems to avoid the vagaries of fluctuating performance. In addition, executives in management-controlled firms may be decoupled from performance through organizational policies and practices such as, widely dispersed equity holdings or managerial control over the board of directors as such, less compensation uncertainty for CEOs (Tosi and Gomez-Mejia, 1989). Murphy (1999) reported that 62% of performance measures used in bonus contracts are accounting based and the rest is based on individual performance measures. In addition, he reported that earnings based bonus contracts often contain lower and upper bounds, suggesting reduced sensitivity of cash payments to earnings when earnings are either very high or very low. Secondly, since accounting earnings exclude unrealized gains and include unrealized losses, CEO pay will react symmetrically to accounting earnings and losses.

Tosi and Gomez-Mejia (1989), one of the authorities in the executive compensation topic, stated that despite the enormous amount of efforts and expenditures in mining these public databases, the results are disappointing and often conflicting. One group of researchers has found no relationship between executive pay and firm performance (Kerr and Bettis, 1987); while another group of researchers has reached the opposite conclusion (Murphy, 1985). These opposing camps are exemplified by the conclusion of Kerr and Bettis (1987), who finds that there is no rational basis of top management compensation. Barkema and Gomez-Mejia (1998) argued that failure to identify a robust relationship between top management compensation and firm performance have led scholars into a blind alley. Tosi et al. (2000) blamed divergent results to the use of

different data collection methods, different statistical techniques, different sample sizes, the presence of different moderator variables, and differences in how constructs of interest have been operationalized in various studies. In addition, they believed that previous studies rely on a traditional narrative approach which critically compares, contrasts, and integrates a large number of studies as such, have reserved the interpretation of the results to the author. Therefore, these synthetic works suffer from the same malady, while some authors concluding that firm performance are an important predictor of CEO pay (e.g., Ehrenberg and Milkovich, 1987); and others concluding that evidences fail to support such a relationship (e.g., Gomez-Mejia, 1994). Overall, previous studies between CEO compensation and accounting performance have not been robust as such the results have ranged from nil to weak positive correlations. These previous three decades of uncertain and often conflicting conclusions leads to this new study as an empirical review of the executive compensation system using NYSE large companies (a new population), introducing first time for the executive compensation literature. This review of literature lead to the development of the research question, as following:

### 2.2.1 Research question

Among the New York Stock Exchange large companies, what relationship is there between CEO cash compensation and firm performance?

### 2.2.2 Hypothesis

H<sub>0</sub>: Among NYSE large companies, there is no relationship between CEO cash compensation and firm performance.

H<sub>1</sub>: Among NYSE large companies, there is a relationship between CEO cash compensation and firm performance.

## 3 Research methodology

This research is an empirical study to understand the nature and extent of the relationship between CEO cash compensation and firm performance among NYSE companies from 2005 to 2010. It is also an empirical review to investigate any changes in the executive compensation structure over the past six decades, as expected due to changes in the market environment, global cooperation, and competition. The NYSE companies will be exclusively focused for this research study, to qualify as a new contribution to the literature. This research study requires collecting,

counting, and classifying data, and performing analyses on statistical findings. It requires a process to include a method of deductive reasoning by the use of the measurement tools to collect the relevant data. In addition, it requires only establishing associations among variables using effect statistics such as correlations. As such, the quantitative research method will be selected for this research study. Bryman (1989) explained that quantitative research method tests hypotheses and identifies patterns in variables whereas qualitative method validates corporate information and informs some of the methodological decisions. With its origins in the scientific empirical tradition, quantitative approach relies on numerical evidence to draw conclusions, to test hypotheses or theory, and is concerned with: measurement, causality, generalization, and replication. Within the quantitative research method framework, longitudinal survey method will be adopted to collect six years of data from 2005 to 2010. According to Zanaida and Fernando (2000), longitudinal design is seldom used in social science research; however, it is typically within financial investigations that have adopted positivist research philosophy. Main & Johnson (1993) believed that companies' annual reports are a common resource tool when examining compensation details. Accordingly, this study will collect financial data of companies from highly credible SEDAR (represents United States Securities and Exchange Commission) database. The stratified sample method will be selected for this research study since it requires forty large companies. The sample will consist of forty large companies based on revenues exceed \$2 billion, and who have performed consistently and have filed all the documents periodically as required by the Securities and Exchange Commission (SEC). The surveys are believed to be useful when a researcher wants to collect data on phenomena that cannot be directly observed. It is a non-experimental, descriptive research method. As such, this research study will use the survey method to collect data from 2005 to 2010. The linear regression method will be adopted in this research study to perform inferential statistical tests, that is, parametric and correlations to obtain, generalizability of the results. The confidence level ( $\alpha$ ) will be set at 5 percent. Overall, this research study is primarily interested in any changes in the executive compensation system from the previous researches through understanding the nature and extent of relationship between CEO cash compensation and firm performance in the NYSE large companies.

### 3.1 Statistical models

$$\text{Salary: } Y_1 = c + B_1 X_1^{23} + B_2 X_2 + B_3 X_3 + B_4 X_4 + B_5 X_5 + B_6 X_6 + B_7 X_7 + B_8 X_8 + \epsilon \quad (1)$$

<sup>23</sup> Y<sub>1</sub>=salary; Y<sub>2</sub>=bonus; c=constant predictor; B<sub>1</sub>=influential factor for return on assets; B<sub>2</sub>=influential factor for return on equity; B<sub>3</sub>=influential factor for earnings per share; B<sub>4</sub>=influential factor for cash flow per share; B<sub>5</sub>=influential factor for net profit margin; B<sub>6</sub>=influential factor for common stocks outstanding; B<sub>7</sub>=influential factor for book value per common stocks outstanding; B<sub>8</sub>=influential factor for market value per common stock outstanding; and  $\epsilon$ =error.

<sup>24</sup> X<sub>1</sub>=value of return on assets; X<sub>2</sub>=value of return on equity; X<sub>3</sub>=value of earnings per share; X<sub>4</sub>=value of common stocks outstanding; X<sub>5</sub>=value of net profit margin; X<sub>6</sub>=value of common stocks outstanding; X<sub>7</sub>=value of the book value of common stocks outstanding; B<sub>8</sub>=value of the market value of common stocks outstanding.

$$\text{Bonus: } Y_2 = c + B_1X_1 + B_2X_2 + B_3X_3 + B_4X_4 + B_5X_5 + B_6X_6 + B_7X_7 + B_8X_8 + \epsilon \quad (2)$$

#### 4 Results

It was found that the two statistical models (Appendix A and C) had a p-value of less than .05, that is, they were statistically significant as such, the null hypotheses were rejected. The study conducted by Mehran (1995) reported that CEO pay structure was positively related to same year performance. This is supported by Gibbons and Murphy (1990), who found

$$\text{CEO Salary: } Y_{1(2005-2010)} = 943897.297 + 10134.677X_1 + 18.262X_2 + 1164.724X_3 + 2963.081X_4 \quad (3)$$

$$\text{CEO Bonus: } Y_{2(2005-2010)} = 588990.533 + 1577426.787X_1 - 337.457X_2 - 335.243X_3 - 1653.070X_4 \quad (4)$$

The regression coefficients (Appendix E, table 7), for the CEO salary, had shown only B<sub>1</sub> (ROA), B<sub>2</sub> (ROE), B<sub>3</sub> (EPS), and B<sub>4</sub> (CFPS) have positive and significant impact to the CEO salary compensation system. However, it was found that B<sub>5</sub> (NPM), B<sub>6</sub> (CSO), B<sub>7</sub> (BVCSO), and B<sub>8</sub> (MVCSO) had zero respective betas as such, they were not part of the CEO salary compensation system. According to Brauer and Westermann (2010), the larger the B, the faster is the reversion to the mean.

The regression coefficients (Appendix F, table 8) for the CEO bonus had also shown only B<sub>1</sub> (ROA) has a positive and significant impact to the CEO bonus compensation system. However, B<sub>2</sub> (ROE), B<sub>3</sub> (EPS), and B<sub>4</sub> (CFPS) have negative impact in particular cash flow per share to the CEO bonus compensation system. This demonstrated that the ROE and EPS have marginal negativity impact relative to significant negative impact of cash flow per share, towards determining the CEO bonus compensation system.

that CEOs salaries and bonuses were positively and significantly related to firm performance. The regressions (R<sup>2</sup>) of .326 and .350 demonstrated the consistency in the complexity of the executive compensation system but it cannot determine the nature of complexity involved towards determining the executive compensation system.

#### 4.1 Regression coefficients

However, it was found that B<sub>5</sub> (NPM), B<sub>6</sub> (CSO), B<sub>7</sub> (BVCSO), and B<sub>8</sub> (MVCSO) had zero respective betas as such, they were not part of the CEO bonus compensation system.

The F-tests results (large numbers characterized statistical model's usefulness) as provided in the Appendix B, table 4, and Appendix D, table 6, had shown that the CEO salary and bonus models had respective values of 13.669 and 14.210, an indication of model's usefulness as such, they are both statistically valid models. were relatively more useful in both statements of operations and statement of financial position approaches. That is, the Canadian regression models had a relatively weaker relationship between independent and independent variables, relative to IFRS regression models, yet both types of regression models were statistically valid to draw conclusions on the accounting quality between the Canadian GAAP and IFRS.

**Table 1.** Correlations (CEO Salary and Firm Performance)

		SALARY	ROA	ROE	EPS	CFPS	NPM	CSO	BVCSO	MVCSO
Pearson Correlation	SALARY	1.000	.108	.012	.207	.158	.159	-.160	.230	.462
	ROA	.108	1.000	.061	.166	.016	.189	-.021	-.010	.128
	ROE	.012	.061	1.000	.009	.078	-.003	-.021	-.030	-.022
	EPS	.207	.166	.009	1.000	-.049	.640	.024	.023	.066
	CFPS	.158	.016	.078	-.049	1.000	-.048	-.035	.073	.134
	NPM	.159	.189	-.003	.640	-.048	1.000	.481	.135	.330
	CSO	-.160	-.021	-.021	.024	-.035	.481	1.000	.294	.220
	BVCSO	.230	-.010	-.030	.023	.073	.135	.294	1.000	.634
	MVCSO	.462	.128	-.022	.066	.134	.330	.220	.634	1.000

**Table 2.** Correlations (CEO Bonus and Firm Performance)

		BONUS	ROA	ROE	EPS	CFPS	NPM	CSO	BVCSO	MVCSO
Pearson Correlation	BONUS	1.000	.199	-.042	.059	-.015	.126	-.070	-.104	.117
	ROA	.199	1.000	.061	.163	-.011	.269	-.017	.002	.159
	ROE	-.042	.061	1.000	.009	.060	.003	-.022	-.029	-.021
	EPS	.059	.163	.009	1.000	-.027	.860	.033	.021	.081
	CFPS	-.015	-.011	.060	-.027	1.000	.055	.008	.072	.118
	NPM	.126	.269	.003	.860	.055	1.000	.060	.117	.389
	CSO	-.070	-.017	-.022	.033	.008	.060	1.000	.356	.252
	BVCSO	-.104	.002	-.029	.021	.072	.117	.356	1.000	.565
	MVCSO	.117	.159	-.021	.081	.118	.389	.252	.565	1.000

The correlation results (table 1 and table 2) had shown there were mixed correlations between CEO salary, CEO bonus, and return on assets. The correlation between CEO salary and ROA<sup>25</sup> was .108<sup>26</sup>. The correlation between CEO bonus and ROA was .199. The study conducted by Werner, Katz and Gomez-Mejia (2000) found that estimated true correlation between CEO pay and ROA was 0.117. Leone et al. (2006) found that there was no difference in CEO pay performance sensitivity to changes in ROA based on positive and negative stock returns. However, Antle and Smith (1986) found a strong correlation between CEO compensation and ROA. They reasoned their finding to direct links between ROA and CEO pay from CEO contract. This was supported by Shaw and Zhang (2010), who found that CEO cash compensation was significantly positively correlated with return on assets and stock returns, indicated that CEOs of better performing firms were rewarded with higher pay.

The correlations between CEO salary, CEO bonus, and ROE<sup>27</sup> were found to be weak mixed ratios. The correlation between CEO salary and ROE was .012. The correlation between CEO bonus and ROE had increased was -.041. The study conducted by Finkelstein and Boyd (1998) found that the correlations between CEO cash compensation and ROE was .13. Johnson (1982) found that the correlation between executive pay and ROE of .003. On the other hand, Belliveau, O'Reilly, and Wade (1996) found the correlation between ROE and CEO pay of .410. This was supported by Mehran (1995), who found that in companies where CEO compensation was relatively sensitive to firm performance tend to produce high returns for shareholders than in companies the correlation was characterized as weak. On the other hand, Finkelstein and Hambrick (1989) found that ROE was unrelated to salary but positively related to bonus.

The correlation results had shown there were weak positive correlations between CEO salary, CEO bonus, and EPS. The correlation between CEO salary and EPS<sup>28</sup> was .207. The correlation between CEO Bonus and EPS was .059. Gaver et al. (1995) and Holthausen et al. (1995a) found that executives manage earnings downward when their reported performance exceeds maximum, but had shown that executives managed earnings upward when below threshold. Conyon et al. (2000) and Murphy (1999, 2000) believed that compensation contracts linking rewards to performance provide executives with direct and potentially powerful incentives to manage reported EPS. Indjejikian and Nanda (2002) believed that executive may also smooth performance in the incentive zone if pay for performance relation was concave above standard but convex below. Gerhart et

al. (2009) believed that earnings were imperfectly related to shareholder return primarily due to the fact that CEO specific wealth was generated via equity positions.

The correlation results had shown that there were mixed correlations between CEO salary, CEO bonus, and CFPS<sup>29</sup>. The correlation between CEO salary and CFPS was .158. The correlation between CEO bonus and CFPS was -.012. The study conducted by Iyengar (2000) found that level of CEO's cash compensation was positively related to the firms' level of operating cash flows but was unrelated to either accounting or market performance. However, Kumar et al. (1993) and Natarajan (1996) didn't find a significant association between cash flows from operations and CEO compensation after controlling for net income. In contrary, Yang et al. (2006) found that cash flows from operations were compensation contract relevant.

The correlation results had shown that there were positive correlations between CEO salary, CEO bonus, and NPM<sup>30</sup>. The correlation between CEO salary and NPM was .159. The correlation between CEO bonus and NPM was .124. The study conducted Tosi, Werner, Katz and Gomez-Mejia (2000) found that the overall ratio of change in CEO pay and change in financial performance is 0.203, an accounting for about 4% of the variance. On the other hand, Lambert and Larcker (1987) argued that firms place relatively more weight on market performance than on accounting performance measures in compensation contracts for situations in which variance of accounting performance was high relative to market performance measures.

The correlation results had shown that there were negative correlations between CEO salary, bonus, and CSO<sup>31</sup>. The correlation between CEO salary and CSO was -.16. The correlation between CEO bonus and CSO was -.07. On the other hand, the correlation results between CEO salary, CEO bonus, and BVCSO were positive. The correlation between CEO salary and BVCSO was .23. The correlation between CEO bonus and BVCSO was .124.

The correlation results had shown that there were positive correlations between CEO salary, CEO bonus, and MVCSO<sup>32</sup>. The correlation between CEO salary and MVCSO was .462. The correlation between CEO bonus and MVCSO was .100. The study conducted by Bickford (1981), Ellig (1984), Rich and Larson (1984), and Decktop (1987) found that stock prices were very sensitive to external events but may have little to do with how efficiently a firm had functioned and controlled by the management. Therefore, they believed that it was more appropriate to use profitability measure as a proxy for firm performance. Jensen and Murphy (1990) and Hubbard and Palia (1995) favored performance to be measured with stockholder value to reflect CEO wealth.

<sup>25</sup> Return on Assets

<sup>26</sup> Weak ratio=+/- .000 to .249; Moderate ratio=+/- .250 to .499; Good ratio=+/- .500 to .749;

Strong ratio=+/- .750 to 1.000.

<sup>27</sup> Return on Equity.

<sup>28</sup> Earnings Per Share.

<sup>29</sup> Cash Flow Per Share.

<sup>30</sup> Net Profit Margin.

<sup>31</sup> Common Stocks Outstanding.

<sup>32</sup> Market Value of Common Stocks Outstanding.

### 4.2 New theories developed

1. The first theory was, there is a weak positive correlation between CEO cash compensation, return on assets, and net profit margin.
2. The second theory was, there is a weak mixed correlation between CEO cash compensation, return on equity, earnings per share, common stocks outstanding, and market value of common stocks outstanding.
3. The third theory was, there is a positive correlation between CEO cash compensation and the book value of common stocks outstanding.

### 4.3 Model validity

A valid model requires a variance of residuals that are homogeneous across predicted values, known as homoscedasticity. If model is well fitted, there should be no pattern to residuals plotted against fitted values. If the variance of residuals is non-constant then residual variance is said to be heteroscedastic. It was found from the statistical results that there wasn't any concern of existence of heteroscedasticity as such, two statistical models were described as homoscedastic.

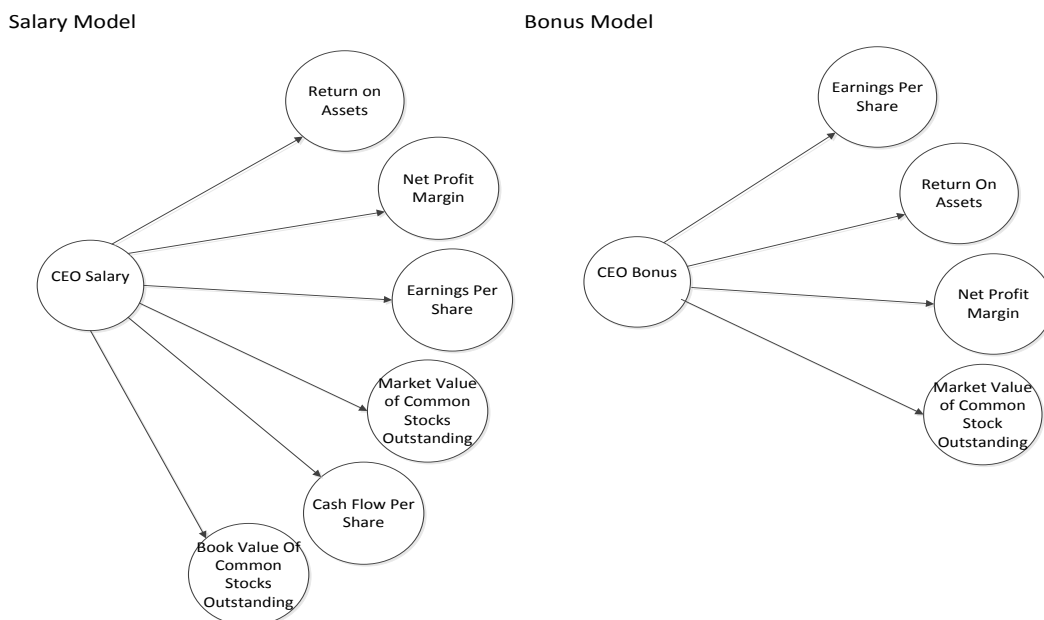
### 4.4 Model linearity

A linear regression test assumes that the relationship between response and predictor variables is linear. It is conducted by drawing a straight line on data points. In this research, linearity assumption was assessed from the normal probability plot of regression-standardized residual. It was found that two statistical results, expected and observed probabilities were not divergent to the extent of showing curved band or a big wave shaped curve as such, relationships between salary, bonus, return on assets, return on equity, earnings per share, cash flow per share, net profit margin, common stocks outstanding, book value of common stocks outstanding, and market value of common stocks outstanding.

### 4.5 Derived statistical models

Based on the statistical results, the two statistical models are developed for the relationship between the CEO cash compensation and firm performance. In the following figure 1, the CEO salary model shows that the salary is related with the return on assets, net profit margin, earnings per share, market value of common stocks outstanding, cash flows per share, and book value of common stocks outstanding. The CEO bonus model shows that the bonus is related with the earnings per share, return on assets, net profit margin, and market value of common stocks outstanding.

Figure 1. CEO salary model



## 5 Conclusion

The two statistical results indicated that there were relationships between CEO salary and firm performance in the NYSE large companies. The regression ( $R^2$ ) models were characterized as medium ratios. The correlations between CEO salary, CEO bonus, return on assets, return on equity, earnings per share, cash flow per share, net profit margin, common stock outstanding, book value of common stock outstanding, and market value of common stocks outstanding were characterized as weak ratios. These results have indicated that executive compensation system is very complex and may include quantitative and qualitative factors that are difficult to determine in general and depended heavily on the nature of the industry, the culture of the market, the company's evaluation system in terms of short-term cash compensation system versus long-term equity compensation system, firm's earnings level and analyst expectations, the nature of the contract of the executives, and firm's equity position and ownership structure. Also, to some extent, the market valuation of the company and industry demand of the particular CEO person. As such, the role of the global credit crunch from 2007 to 2009 have a negligible effect, if any, on the CEO cash compensation system in the NYSE large companies. Through this research findings, the three theories were developed. The first theory was, there is a weak positive correlation between CEO cash compensation, return on assets, and net profit margin. The second theory was, there is a weak mixed correlation between CEO cash compensation, return on equity, earnings per share, common stocks outstanding, and market value of common stocks outstanding. The third theory was, there is a positive correlation between CEO cash compensation and the book value of common stocks outstanding. These research findings as an empirical review again validated and admitted the complexity of the executive compensation system and far deviated from the thrust of achieving robust conclusion, as Gomez-Mejia and Barkema (1998) stated, "after six decades of research, the failure to identify a robust relationship between executive compensation and firm performance has led scholars into a blind alley".

Social implications derived from this research findings are low accountability (pay for performance) of the CEOs in the large NYSE companies, and excessive executive pay without justification which need to be corrected through redesigning executive compensation systems, to strengthen the linear link between pay and performance. That is, pay for performance system could be achieved through strengthening the independence of directors and compensation committees, increase the shareholders' rights to elect directors and to express their views on compensation plans, to discourage manipulation of CEO compensation, and align incentives more closely with the aims of the owners.

This research study admits that there were scope limitations towards the executive compensation

framework. Firstly, the long term CEO compensation system which includes stock options, pensions, and other long term benefits were not the subject of this study; and secondly, it only focuses on the large (revenues exceed \$2 billion) NYSE companies, to collect quality and consistent data, to arrive at relevant conclusions.

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**Appendix A.** Table 3: ANOVA<sup>b</sup>

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	8907566513493.000	8	1113445814186.620	13.669	.000 <sup>a</sup>
Residual	18409624284856.100	226	81458514534.762		
Total	27317190798349.100	234			

a. Predictors: (Constant), MARKET VALUE OF CS OUTSTANDING, EPS, ROE, CFPS, NPM, BOOK VALUE OF CS OUTSTANDING, ROA, CS OUTSTANDING  
 b. Dependent Variable: SALARY

**Appendix B.** Table 4: Model Summary<sup>b</sup>

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.571 <sup>a</sup>	.326	.302	285409.381	.326	13.669	8	226	.000	.909

a. Predictors: (Constant), MARKET VALUE OF CS OUTSTANDING, EPS, ROE, CFPS, NPM, BOOK VALUE OF CS OUTSTANDING, ROA, CS OUTSTANDING  
 b. Dependent Variable: SALARY

**Appendix C.** Table 5: ANOVA<sup>b</sup>

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	19398861641706.900	8	2424857705213.360	2.549	.011 <sup>a</sup>
Residual	199750033891028.000	210	951190637576.324		
Total	219148895532735.000	218			

a. Predictors: (Constant), MARKET VALUE OF CS OUTSTANDING, EPS, ROE, CFPS, NPM, BOOK VALUE OF CS OUTSTANDING, ROA, CS OUTSTANDING  
 b. Dependent Variable: BONUS

**Appendix D.** Table 6: Model Summary<sup>b</sup>

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.592 <sup>a</sup>	.350	.325	813861.366	.350	14.210	8	211	.000	1.334
a. Predictors: (Constant), MARKET VALUE OF CS OUTSTANDING, EPS, ROE, CFPS, NPM, BOOK VALUE OF CS OUTSTANDING, ROA, CS OUTSTANDING										
b. Dependent Variable: BONUS										

**Appendix E.** Table 7: Coefficients<sup>a</sup>

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error			
(Constant)	943897.299	24774.782		38.099	.000
ROA	10134.677	195331.904	.003	.052	.959
ROE	18.262	123.576	.008	.148	.883
EPS	1164.724	557.226	.170	2.090	.038
CFPS	2963.081	1825.578	.090	1.623	.106
NPM	.000	.000	.022	.225	.822
CSO	.000	.000	-.276	-3.767	.000
BVCSO	.000	.000	-.023	-.302	.763
MVCSO	.000	.000	.506	6.399	.000
a. Dependent Variable: SALARY					

**Appendix F.** Table 8: Coefficients<sup>a</sup>

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error			
(Constant)	588990.533	87239.045		6.751	.000
ROA	1577426.787	690563.512	.159	2.284	.023
ROE	-337.457	421.917	-.053	-.800	.425
EPS	-335.243	3049.770	-.018	-.110	.913
CFPS	-1653.070	5135.615	-.022	-.322	.748
NPM	.000	.000	.047	.264	.792
CSO	.000	.000	-.049	-.685	.494
BVCSO	.000	.000	-.210	-2.459	.015
MVCSO	.000	.000	.208	1.983	.049
a. Dependent Variable: BONUS					