

The Effect of CEO Age on CEO Compensation using Accounting Performance as a Benchmark: An Empirical Study on NYSE Index Companies

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Abstract

This research study investigated the effect of CEO age on CEO compensation using accounting performance as an independent variable or benchmark on NYSE companies from 2005 to 2010. The quantitative research and stratified sample methods were selected for this research. The research question for this study was: is there a relationship between CEO compensation and CEO age using accounting performance as a benchmark. It was found that there was a relationship between CEO salary, CEO bonus, CEO total compensation, CEO age, and accounting performance between CEO age groups except for the relationship between: CEO bonus and accounting performance in CEO age group from 40 to 45 years; CEO bonus and accounting performance in CEO age group from 51 to 55 years; and CEO bonus and accounting performance in CEO age group from 61 to 65 years. The correlations between CEO salary, CEO bonus, CEO total compensation, CEO age, return on assets, return on equity, earnings per share, cash flow per share, net profit margin, common stocks outstanding, book and market values of common stocks outstanding were ranged from weak negative to strong positive ratios.

Index Terms: CEO compensation, accounting performance, CEO age, net profit margin, NYSE CEO salary, and NYSE CEO bonus

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Introduction

The purpose of this research is to understand in-depth the effect of CEO age on CEO compensation system using accounting performance as a benchmark in the NYSE companies from 2005 to 2010. This study in executive compensation will reveal some scientific methodologies or trends to understand the nature and extent of the relationship between CEO salary, CEO bonus, CEO total compensation, and CEO age groups. This study, as part of the series of articles on CEO compensation is conducted primarily due to, over the past decade, the United States public has raised concerns of bonuses declared to CEOs by their board of directors. That is, they believed that CEO should only be re-warded based on firm performance. As such, failure to understand the determinants of CEO compensation has led to blame CEOs of rent grabbing, misused of his power towards the board, and his monopolization of the compensation system. Thus, these ever growing concerns bring to foreground conclusion the need to further study CEO compensation system. As such, this article focused on one aspect of executive compensation study, that is, the impact of CEO age on CEO compensation.

The CEOs and the other executives would like to eliminate the risk exposure on their compensation packages by decoupling pay and performance and linking it to a more stable factor, firm size. This strategy indeed deviates from obtaining the optimum results from the principal agent contract. The literature finds to have limited studies on this relationship as such further research need to be conducted to understand in clear terms the nature and extent of the relationship between them. As such, this research will use eight accounting variables to understand the effect of CEO age on CEO compensation, namely: return on assets (ROA), return on equity (ROE), earnings per share (EPS), cash flow per share (CFPS), net profit margin (NPM), book value per common stocks outstanding (BVCSO), and market value per common stocks outstanding (MVCSO).

Literature Review

CEO Compensation and CEO Age

The Deckop (1988) argued that CEO age has little effect on CEO compensation.

However, Finkelstein and Hambrick (1989) find an inverted U-shaped relationship between CEO age and CEO cash compensation, indicating, CEO cash compensation increases until CEO reached the age of 59 years and then it starts to decline. This is consistent with the view that earnings over time is in line with CEO's need for cash, which tends to drop off as he or she gets older due to no major expenditures to incur such as, house and child rearing expenses. This is supported by McKnight et al. (2000), who find that CEO compensation is positively related to a certain age, but it starts to decline afterward. This is further supported by Weir (2000), who finds that the relationship between CEO salaries and CEO age are significantly related but have weakened over time, and the relationship between CEO age and CEO bonus appears nonlinear in nature. That is, at about age 53, the proportion of bonus as a percentage of salary begins to decrease at an increase rate. On the other hand, according to Gibbons and Murphy (1992), who finds that CEO age is a well recognized determinant of compensation and have shown to be significantly related to CEO pay. Overall, previous studies have found the relationship between CEO compensation and CEO age as curvilinear. However, previous studies have lacked detail investigation of this relationship.

Research Methodology

This research is numerical, objective, and statistical as such, has adopted the quantitative research method. The longitudinal study approach has been selected to study the corporate financial records from 2005 to 2010. The random sample method is selected to obtain a total sampling population of one hundred and twenty companies from NYSE index companies. For the statistical tests, CEO compensation is assigned as dependent variable, accounting performance is assigned as independent variable, and CEO age as a control variable. The total of eighteen statistical models were created to address the research question of this study. The survey method is selected to conduct surveys of one hundred and twenty companies. The data of sampled companies are obtained from EDGAR database. The linear regression method is selected and 95% confidence level is assumed for statistical tests.

Data Findings and Conclusions

CEO Compensation And Firm Size

Table 1 (Regression Analysis - ANOVA)

	Salary	Bonus	Total Compensation
CEO Age 40-45 yrs.	F(8,21)=3.090 p=.018 R ² =.541	F(8,21)=1.111 p=.395 R ² =.297	F(8,21)=3.871 p=.006 R ² =.596
CEO Age 46-50 yrs.	F(8,64)=4.232 p=.000 R ² =.346	F(8,64)=3.949 p=.001 R ² =.330	F(8,61)=7.009 p=.000 R ² =.479
CEO Age 51-55 yrs.	F(8,139)=3.283 p=.002 R ² =.159	F(8,149)=1.850 p=.072 R ² =.093	F(8,145)=3.096 p=.003 R ² =.146
CEO Age 56-60 yrs.	F(8,157)=10.924 p=.000 R ² =.358	F(8,157)=2.382 p=.019 R ² =.108	F(8,157)=31.969 p=.000 R ² =.620
CEO Age 61-65 yrs.	F(8,59)=151.465 p=.000 R ² =.954	F(8,54)=1.810 p=.095 R ² =.211	F(8,57)=57.625 p=.000 R ² =.890
CEO Age ≥ 66 yrs.	F(8,79)=21.426 p=.000 R ² =.685	F(8,75)=46.298 p=.000 R ² =.832	F(8,80)=16.299 p=.000 R ² =.620

The analysis of variance (ANOVA) results is based on the linear regression test. It had shown that there was a relationship between CEO salary, CEO bonus, CEO total compensation, CEO age, and accounting performance between CEO age groups except for the relationship between: CEO bonus and accounting performance in CEO age group 40 to 45 years; CEO bonus and accounting performance in CEO age group 51 to 55 years; and CEO bonus and accounting performance in CEO age group 61 to 65 years. The relationships between CEO salary, CEO age, and accounting performance were characterized as weak to strong ratios, indicated model fitness varies with CEO age groups. Similarly, the relationships between CEO bonus, CEO age, and accounting performance were characterized as weak to strong ratios.

The relationships between CEO total compensation, CEO age, and accounting performance were characterized as weak to strong ratios. Overall, short-term salary and total compensation had materially influenced by accounting performance, across all CEO age groups. However, CEO age groups have no influence on the relationships between them. On the other hand, CEO bonus models were weakly influenced by accounting performance yet they have been influenced by CEO age groups.

CEO Salary, CEO Age, and Accounting Performance

Table 2 - Correlations (CEO Salary vs. Accounting Performance)

	CEO AGE(YRS.)					
	40-45	46-50	51-55	56-60	61-65	≥ 66
SALARY	1	1	1	1	1	1
Return on Assets	0.119	-0.11	-0.03	0.036	0.056	0.045
Return on Equity	0.23	0.133	-0	-0.04	-0.01	-0.03
Earnings per Share	0.068	0.259	0.049	0.262	0.92	0.228
Cash flow per Share	0.248	0.034	-0.07	-0.05	0.059	0.205
Net Profit Margin	0.157	0.069	0.074	0.535	0.527	0.246
Common Stocks Outstanding	0.458	0.504	0.167	0.354	0.536	0.529
Book Value per Share	-0.16	0.348	0.074	0.341	0.224	0.413
Market Value per Share	0.552	0.329	0.376	0.482	0.422	0.617

The correlation results between CEO salary and return on assets across all CEO age groups were characterized as weak negative to weak positive ratios. That is, the correlations were .119, -.106, -.026, .036, .056, and .045 respectively, indicated return on assets had negligible impact on CEO salary among all CEO age groups. Similarly, the correlation results between CEO salary and return on equity across all CEO age groups were also characterized as weak negative to weak positive ratios. That is, the correlations were .230, .133, -.004, -.043, -.007, and -.031 respectively, indicated return on equity too had negligible impact on CEO salary among all CEO age groups. However, inconsistencies in correlations indicated that CEO age groups had materially influenced.

In addition, the correlations between them had further weakened as a CEO age group had increased. The correlation results between CEO salary and earnings per share across all CEO age groups were characterized as weak to strong positive ratios. That is, the correlations were .068, .259, .049, .262, .920, and .228 respectively, indicated earnings per share had weak to moderate influence on CEO salary between 40 and 60 years age, and had a strong influence on CEO salary between 61 to 65 years age. However, since all results were positively correlated as such CEO age had a weak to negligible influence on the correlations between them. The correlation results between CEO salary and cash flow per share across all CEO age groups were characterized as weak negative to weak positive ratios. That is, the correlations were .248, .034, -.068, -.046, .059, and .205 respectively, indicated overall that CEO age had significant influenced among them.

The correlation results between CEO salary and net profit margin across all CEO age groups were characterized as weak to good positive ratios. That is, the correlations were .157, .069, .074, .535, .527, and .246 respectively, indicated net profit margin had a weak positive influence on CEO salary between 40 and 55 years age and had good positive influence between 61 to 65 years age. As such, net profit margin too had influenced positively to CEO salary irrespective of CEO age group, indicated CEO age was also irrelevant to CEO salary. The correlation results between CEO salary and common stocks outstanding across all CEO age groups were characterized as weak to good positive ratios. That is, the correlations were .458, .504, .167, .354, .536, and .529 respectively. As such, common stocks outstanding too had influenced positively to CEO salary irrespective of CEO age group, indicated CEO age was also irrelevant between their relationships.

The correlation results between CEO salary and book value per share across all CEO age groups were characterized as weak to good positive ratios. That is, the correlations were -.161, .348, .074, .341, .224, and .413 respectively, indicated common stocks outstanding had weak negative to moderate positive influence on CEO salary. However, since correlations were mixed ratios as such CEO age had a weak influence between their relationships. The correlation results between CEO salary and market value per share across all CEO age groups were characterized as moderate to strong positive ratios. That is, the correlations were .552, .329, .376, .482, .422, and .617 respectively.

As such, market value per share too had influenced positively to CEO salary irrespective of CEO age group, indicated CEO age was also irrelevant between their relationships.

CEO Bonus, Accounting Performance, and CEO Age

Table 3 – Correlations (CEO Bonus vs. Accounting Performance)

	CEO AGE (YRS.)					
	40-45	46-50	51-55	56-60	61-65	≥ 66
BONUS	1	1	1	1	1	1
Return on Assets	-0.04	0.092	0.141	0.135	-0	-0.01
Return on Equity	-0.12	-0.03	0.044	0.067	0.122	0.001
Earnings per Share	-0.08	0.159	-0.07	0.219	-0.11	0.038
Cash Flow per Share	-0.1	-0.04	-0.01	-0.08	-0.26	-0.01
Net Profit Margin	0.061	0.238	0.085	0.094	-0.15	0.128
Common Stocks Outstanding	0.368	0.269	0.116	0.143	-0.31	0.626
Book Value per Share	0.088	0.41	0.192	-0.04	-0.18	0.633
Market Value per Share	0.067	0.146	-0.01	0.01	-0.24	0.565

The correlation results between CEO bonus and return on assets across all CEO age groups were characterized as weak negative to weak positive ratios. That is, the correlations were -.036, .092, .141, .135, -.002, and -.008 respectively, indicated return on assets had negligible impact on CEO bonus among all CEO age groups. Similarly, the correlation results between CEO bonus and return on equity across all CEO age groups were also characterized as weak negative to weak positive ratios. That is, the correlations were -.122, -.032, .044, .067, .122, and .001 respectively, indicated return on equity too had negligible impact on CEO bonus among all CEO age groups. The correlation results between CEO bonus and earnings per share across all CEO age groups were also characterized as a weak negative to weak positive ratios.

That is, the correlations were -.083, .159, -.065, .219, -.106, and .038 respectively, indicated earnings per share too had negligible impact on CEO bonus among all CEO age groups. The correlation results between CEO bonus and cash flow per share across all CEO age groups were characterized as weak negative ratios.

That is, the correlations were -.098, -.038, -.012, -.081, -.264, and -.012 respectively, indicated overall it was irrelevant to CEO bonus. The correlation results between CEO bonus and net profit margin across all CEO age groups were characterized as weak negative to weak positive ratios. That is, the correlations were .061, .238, .085, .094, -.149, and .128 respectively, indicated cash flow per share too had negligible impact on CEO bonus among all CEO age groups. The correlation results between CEO bonus and common stocks outstanding across all CEO age groups were characterized as weak to good positive ratios. That is, the correlations were .368, .269, .116, .143, -.134, and .626 respectively. The correlation results between CEO bonus and book value per share across all CEO age groups were characterized as weak to good positive ratios. That is, the correlations were .088, .410, .192, -.043, -.183, and .633 respectively. The correlation results between CEO bonus and market value per share across all CEO age groups were characterized as moderate to good positive ratios. That is, the correlations were .067, .146, -.013, .010, -.240, and .565 respectively. In addition, CEO age had materially influenced the correlation between CEO bonus and accounting performance.

CEO Total Compensation, Accounting Performance, And CEO Age

Table 4 – Correlations (CEO Total Compensation vs. Accounting Performance)

	CEO AGE (YRS.)					
	40-45	46-50	51-55	56-60	61-65	≥ 66
TOTAL COMPENSATION	1	1	1	1	1	1
Return on Assets	0.168	-0.02	0.067	0.119	0.157	0.21
Return on Equity	0.228	0.293	0.057	-0.02	-0.09	0.09
Earnings per Share	0.232	0.209	0.025	0.296	0.519	0.12
Cash Flow per Share	0.236	0.208	-0.06	-0.08	0.247	0.17
Net Profit Margin	0.444	0.232	0.081	0.737	0.523	0.16
Common Stocks Outstanding	0.384	0.494	0.289	0.56	0.819	0.45
Book Value per Share	-0.13	0.509	0.097	0.508	0.649	0.31
Market Value per Share	0.661	0.407	0.313	0.671	0.804	0.65

The correlation results between CEO total compensation and return on assets

across all CEO age groups were characterized as weak negative to weak positive ratios.

That is, the correlations were .168, -.017, .067, .119, .157, and .209 respectively, indicated return on assets had negligible impact on CEO total compensation among all CEO age groups. Similarly, the correlation results between CEO total compensation and return on equity across all CEO age groups were also characterized as weak negative to moderate positive ratios. That is, the correlations were .228, .293, .057, -.017, -.085, and .091 respectively, indicated CEO age had material influenced on the relationship between them. The correlation results between CEO total compensation and earnings per share across all CEO age groups were characterized as weak to strong positive ratios. That is, the correlations were .232, .209, .025, .296, .519, and .118 respectively, indicated it was also irrelevant to CEO total compensation. As such, earnings per share was irrelevant to all CEO age groups. The correlation results between CEO total compensation and cash flow per share across all CEO age groups were characterized as weak negative to weak positive ratios. That is, the correlations were .236, .208, -.060, -.076, .247, and .174 respectively, indicated that CEO age had material influenced on the relationship between them. The correlation results between CEO total compensation and net profit margin across all CEO age groups were characterized as weak to strong positive ratios.

That is, the correlations were .444, .232, .081, .737, .523, and .158 respectively, indicated common stocks outstanding had weak to good positive influence on CEO total compensation. However, it also had indicated that CEO age had no influence on the relationship between them. The correlation results between CEO total compensation and common stocks outstanding across all CEO age groups were characterized as weak to strong positive ratios. That is, the correlations were .384, .494, .289, .560, .819, and .450 respectively. As such, common stocks outstanding too had influenced positively to CEO total compensation irrespective of CEO age group, indicated CEO age was also irrelevant to CEO total compensation. The correlation results between CEO total compensation and book value per share across all CEO age groups were characterized as weak to good positive ratios. That is, the correlations were -.125, .509, .097, .508, .649, and .313 respectively, indicated common stocks outstanding had weak negative to good positive influence on CEO total compensation. However, it also had indicated that CEO age was irrelevant to CEO total compensation.

The correlation results between CEO total compensation and market value per

share across all CEO age groups were characterized as moderate to strong positive ratios. That is, the correlations were .661, .407, .313. As such, market value per share too had influenced positively to CEO total compensation irrespective of CEO age group, indicated that CEO age was also irrelevant to the relationship between them.

Conclusion

Overall, there was a relationship between CEO salary, CEO bonus, CEO total compensation, CEO age, and accounting performance between CEO age groups except for the relationship between: CEO bonus and accounting performance in CEO age group from 40 to 45 years; CEO bonus and accounting performance in CEO age group from 51 to 55 years; and CEO bonus and accounting performance in CEO age group from 61 to 65 years. The correlations between CEO salary, CEO bonus, CEO age, return on assets, return on equity, earnings per share, cash flow per share, net profit margin, common stocks outstanding, book and market values of common stocks outstanding were ranged from weak negative to strong positive ratios. However, CEO age groups had no influence on the relationships between CEO salary, CEO bonus, CEO total compensation, and accounting performance.

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Appendix

Operational Hypothesis Statement

H₀: There is no relationship between the CEO compensation, CEO age, and accounting performance in NYSE index companies.

H₁: There is a relationship between the CEO compensation, CEO age, and accounting performance in NYSE index companies.

To address this operational hypothesis statement, separate models were developed for each dependent varia

Accounting Performance

For Salary: $Y_3 = c + B_1X_1 + B_2X_2 + B_3X_3 + B_4X_4 + B_5X_5 + B_6X_6 + B_7X_7 + B_8X_8 + \epsilon$

For Bonus: $Y_4 = c + B_1X_1 + B_2X_2 + B_3X_3 + B_4X_4 + B_5X_5 + B_6X_6 + B_7X_7 + B_8X_8 + \epsilon$

(Y₁=Salary; Y₂=Bonus; c=constant predictor; B₁=influential factor for Return on Assets (ROA); B₂=influential factor for Return on Equity (ROE); B₃=influential factor for Earnings per Share (EPS); B₄=influential factor for Cash Flow per Share (CFPS); B₅=influential factor for Net Profit Margin (NPM); B₆=influential factor for Common Shares Outstanding (CSO); B₇=influential factor for Book Value of Common Shares Outstanding (BVCSO); B₈=influential factor for Market Value of Common Share Outstanding (MVCSO); and ϵ =error)

Let X₁=Value of ROA; X₂=Value of ROE; X₃=Value of EPS; X₄=Value of CFPS; X₅=Value of NPM; X₆=Value of CSO; X₇=Value of BVCSO; B₈=Value of MVCSO.

All eighteen models assumed to have a confidence level (α) of 5 percent.