

The Empirical Study of the Relationship between CEO Cash Compensation and CEO Power in American Companies

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Abstract

This research study was conducted to understand the relationship between CEO cash compensation and CEO power in NYSE index companies. The study period selected was from 2005 to 2010. The quantitative research method was used in this research study. The total of one hundred and twenty companies were selected for sampling. The research question for this study was: is there a relationship between CEO cash compensation and CEO power?. Overall, most of the statistical results found to have the relationship between them. The correlations between CEO salary, bonus, CEO age, CEO shares outstanding, CEO shares value, CEO tenure, CEO turnover, 5 percent management ownership, and 5 percent individual/institutional, were found to be ranged from weak negative to weak positive ratios. In addition, group firm-sized effect have a positive effect on salary in contrary, negative effect on bonus.

Keywords: Executive compensation, NYSE compensation, CEO power, Corporate governance, and Ownership Structure, CEO age, CEO tenure, and CEO stock ownership.

Introduction

Over the past decade in the United States, the American public had raised concerns over the quantum bonuses declared to CEOs by their board of directors.

The failure to understand the determinants of CEO cash compensation from the public had led to blame CEOs for rent grabbing (misused of his power towards the board to manipulate the CEO compensation system). Thus, this ever growing concern has brought to the foreground conclusion, the need to further study in depth the primary relationship and the resulting dynamics between CEO cash compensation and CEO power. As such, this research study had selected seven independent variables: CEO age, CEO shares outstanding, CEO shares value, CEO tenure, CEO turnover, 5 percent management ownership, and 5 percent individual/ institutional ownership to test with CEO salary and bonus. The purpose of using seven independent predictors was to understand which predictors had more influence towards CEO cash compensation. In addition, this research study will try to understand on firm size (small, medium, and large) basis the correlations between CEO cash compensation and CEO power.

The problem of CEO compensation whether it was focused on short-term compensation basis such as salary and bonus, or it was focused on total compensation which includes stock options, pension, health, insurance, and other long-term benefits, the nature and extent of the relationship with CEO power had not been extensively studied as such, previous results were inconclusive towards understanding such relationship.

According to previous studies, the relationship between CEO compensation and CEO power was not examined extensively. In fact, only few credible researched papers were available for study. That is, CEO power only has been the subject of the recent focus among researchers, primarily due to the effect of researchers failed to find the strong relationship between CEO compensation, firm size, and firm performance. The variables used in previous studies as a proxy for CEO power was: CEO age and CEO tenure, and were found to have no monotonic results. In addition, third party data collection, sampling population differences, and the use of different statistical methods, all had led to divergent in the results.

Literature Review

1.1 CEO Cash Compensation and CEO Stock Ownership

The CEO's voting power includes CEO's shares ownership in the company, the CEO's immediate beneficially owned, and percentage of shares over which CEO's have a sale or shared power to direct the voting. It was believed that CEO in large firms tends to own less stock and have less compensation-based incentives than CEOs in small firms. This is supported by Jensen and Murphy (1989) who stated that estimated pay-performance sensitivity for CEOs in the top half of the sample (ranked by market value) firms was \$1.85 per \$1,000, compared to \$8.05 per \$1,000 for CEOs in the bottom half sample firms.

In addition, they (1990) argued that as a percentage of the total corporate value, CEO share ownership had never been very high. The median CEO of one of the nation's 250 largest public companies own shares worth just over \$2.4 million, again, less than 0.07% of the company's market value. Also, 9 out of 10 CEOs who own less than 1% of their company's stock, while fewer than 1 in 20 owns more than 5% of the company's outstanding shares.

Jensen and Murphy (1990) found in their study that the most powerful link between shareholder wealth and executive wealth was direct ownership of shares by CEO.

They found, on average, the CEOs receive about 50% of their base pay in the form of bonuses. They argued that most experts assessed CEO stock ownership in terms of dollar value of the CEO's holdings or value of his shares as a percentage of his annual cash compensation. However, they also argued that neither of these measures were relevant in the CEO incentive determination. They believed that percentage of the company's outstanding shares of CEO ownership influences the CEO's pay. However, they found no correlation between CEO stock ownership and pay-performance sensitivity in CEO cash compensation.

That is, the board of directors ignore CEO stock ownership when structuring incentive plans. This was supported Cyert, Kang, and Kumar (2002) who also argued that CEO pay is negatively related to the share ownership of the board's compensation committee; and doubling compensation committee ownership reduces non-salary compensation by 4 to 5 percent. In addition, many other studies also failed to find any relationship between the firm value and the executives' equity stakes (e.g., Agrawal & Knoeber 1996, Himmelberg et al. 1999, Demsetz & Villalonga 2001), primarily due to the equity holdings were the decision of the managers and the boards, none of these correlations can be interpreted as causal.

Murphy and Jensen (1990) who found that there was a small and insignificant positive coefficient of ownership interaction variable exist, which implied that the relation between compensation and performance was independent of an executive's stock holdings.

However, these findings were challenged by Mehran (1995) who found a positive relationship between percentage of total compensation in cash (salary and bonus) and percentage of shares held by managers. Ungson and Steers (1984) believed that in firms where the CEO had large shareholdings, long tenure, control of top management team, or other means, a CEO can largely shape his or her pay. Similarly, Finkelstein and Hambrick (1988) believed that the relative power of a CEO may affect the height of the hurdles that are set to qualify for the contingent pay. In addition, they also believed that executives who own significant portions of their firms are likely to control not only operating decisions but the board decisions as well. As such, executives would be in a position to essentially set their own compensation. In addition, they believed that stronger family's position in the firm, the stronger will be the executive's position, despite the family shareholders may not be as active as the independent directors might be. They also found that CEO compensation and shareholdings are related in an inverted-U manner, with compensation highest in situations of moderate CEO ownership.

That is, the point of inflection happened when CEO shareholdings reached about 9 percent. Up to that point, increased in CEO ownership seemed to bring increased salaries, due to increase in CEO power and CEO tenure for the first 18 years, and beyond that ownership level, salaries dropped, due to tax preference of incurring capital gains over current income.

Jensen and Murphy (1989) found that executive inside stock ownership can provide incentives, but these holdings were not generally controlled by a corporate board, and the majority of top executives has small personal equity ownership. Bertrand and Mullainathan (2000) found that CEOs in the firms that lacks 5 percent (or larger) external shareholder tend to receive more luck based pay, pay associated with profit increases that are entirely generated by external factors rather than by managers' efforts. They also found that in firms lacking large external shareholders, cash compensation of CEOs was reduced less when their option-based compensation was increased.

1.2 CEO Cash Compensation and CEO Tenure

Murphy (1986) argued that previous research had shown CEO tenure had an influence CEO performance. The increased CEO tenure may promote a principal's trust of an agent and the assumption that actions will be taken in the principal's interest. Sigler (2011) argued that CEO tenure appears to be one of the significant variables in determining the level of CEO compensation. His examination was based on 280 firms listed on the New York Stock Exchange for a period from 2006 to 2009. Finkelstein and Hambrick (1989) believed that CEO tenure was thought to have a positive link with compensation, with pay steadily increased as CEO solidifies power over-time.

However, in their findings such a pattern was not observed for any of the measures of CEO compensation. Since a monotonic relationship was not found between CEO tenure and CEO pay, the existence of a curvilinear association was investigated. In addition, the average tenure of CEOs was significantly lower in externally-controlled firms (2.96 years) than management-controlled firms (5.92 years). Thus, they believed that the boards of externally-controlled firms may not need to pay from profitability because CEO tenure was dependent on the owner's satisfaction (CEO performance).

For the total pay, this finding was relatively strong with the inflation adjusted pay starting to decline at about 18 years of tenure.

According to them there were two possible explanations for this curvilinear pattern.

The first was that the power accrues for a while and then diminishes due to the CEO's reduced mobility in the managerial labor market, or due to his evolution into a figurehead with one or two younger high priced executives who carry the actual weight of the CEO's job. The second possibility was that executive reach a point where they prefer other forms of compensation over cash.

This could occur because of the changes in family and financial circumstances, or due to a switch to reliance on the stock appreciation and dividends, as the CEO's shareholdings increase over time. This supposition was supported when two sub samples were examined ($p < 0.01$) greater shareholdings than a short tenure low pay group. Hence, it was not that long tenured CEOs were paid less, but rather that pay mix shifts from cash to stock earnings over-time, supporting the notion that personal circumstances influence pay.

They also argued that long CEO's tenure, the board will consist of his or her own, often sympathetic appointees. In addition, management-controlled firms where CEOs were relatively powerful, CEO tenure was likely to be important to pay determinants. However, Pfeffer (1981) supported Finkelstein and Hambrick (1989) findings that the creation of a personal mystique which may induce unquestioned deference or loyalty, can be expected to occur when CEO power becomes institutionalized in the organization. A second source of power that was expected to affect compensation was the executive's shareholdings in the firm.

1.3 CEO Cash Compensation and CEO Age

Deckop (1988) argued that the CEO's age had little effect on CEO compensation.

However, Finkelstein and Hambrick (1989) found an inverted U-shaped relationship between CEO age and CEO cash compensation. The cash compensation increased with an age up to a point at 59 years,

beyond which real cash earnings decreased. They also believed that this pattern of the earnings over-time was in line with the 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.

Research Methodology

This research had adopted the quantitative research method as it is the method to be used for the historical data collection and for the descriptive studies. The longitudinal study approach had been selected under the quantitative research methodology to study the corporate financial records from 2005 to 2010. The stratified sampling method had been selected to obtain a total sample population of one hundred and twenty companies from NYSE index. Each group will have a sample size of forty to ensure statistical testing results are comparable between these groups. The total population had been divided into three groups by firm size: small, medium, and large. The firm sizes had been measured based on total revenues.

The small firm size had a total revenues up to \$500 million. The medium firm size had a total revenues over \$500 million to \$2 billion. The large firm size had a total revenues over over \$2 billion. For statistical tests, CEO cash compensation was assigned as dependent variable, firm size was assigned as independent and control variables, and CEO power was assigned as independent variables. The total of eight statistical models was developed. The survey method had been adopted as it is the most appropriate approach to collect the historical data. The historical data of the sampled companies had been obtained from TMX Group Inc. and CDS Inc.

The inferential statistics-based methodology, which is very instrumental in this quantitative research, had been used to obtain statistical results, that is, the linear regression method had been used for statistical tests. The 95 percent confidence level had been assumed for all statistical model tests.

Data Analysis

1.1 CEO Cash Compensation and CEO Power

Table 1: ANVOVA (CEO Cash Compensation vs. CEO Power)

	Small	Medium	Large	Total Population
Salary vs. CEO Power	$F_{(7,230)}=8.844$	$F_{(7,225)}=10.053$	$F_{(7,227)}=5.497$	$F_{(7,588)}=19.549$
	$p=.000$	$p=.000$	$p=.000$	$p=.000$
	$R^2=0.212$	$R^2=0.238$	$R^2=0.145$	$R^2=0.163$
	Small	Medium	Large	Total Population
Bonus vs. CEO Power	$F_{(7,227)}=1.838$	$F_{(7,227)}=1.482$	$F_{(7,215)}=2.681$	$F_{(7,588)}=3.505$
	$p=.081$	$p=.174$	$p=.011$	$p=.001$
	$R^2=0.054$	$R^2=0.044$	$R^2=0.08$	$R^2=0.04$

The above table 1 summarized ANOVA results. It had indicated that fourteen of the sixteen statistical model tests had resulted in rejecting the null hypotheses, indicated that, there is a relationship between CEO cash compensation and CEO power. That is, they all have p-value of less than 5 percent. The model fitness ratios were characterized as weak.

The two accepted (p-value greater than 5 percent) null hypotheses were related to between CEO bonus and CEO power of small and medium-sized firms, which cannot be explained scientifically without any statistics or data collections issues, as were not the case in this research findings.

2.2 CEO Cash Compensation and CEO Age

The correlation results between CEO salary, bonus, and CEO age are provided below:

Table 2: Correlations (CEO Cash Compensation and CEO Age)

	Small	Medium	Large	Total Population
	CEO AGE	CEO AGE	CEO AGE	CEO AGE
Salary	0.096	0.367	0.136	0.059
Bonus	-0.004	-0.102	-0.051	-0.070

The above table 2 correlation results had shown that overall there is a weak mixed relationship between CEO salary, bonus, and CEO age. The correlation between CEO salary and CEO age had increased from .096 to .367 and then had decreased to .136, as the size of the population group changed from small, to medium, and to large.

The correlations between CEO bonus and CEO age had decreased from -.004 to -.102 and then had increased to -.051, as the size of the population group changed from small, to medium, and to large.

As such, overall, the moderator variable, group firm-size, had a positive impact on the correlation between CEO salary and CEO age. In contrary, group firm-sized had a negative impact on the correlation between CEO bonus and CEO age. Therefore, the above conclusions led to a development of a first new theory in this research that CEO salary has a weak positive correlation with CEO age. That is, CEO salary increases based on the level of experience with the firm. On the other hand, CEO bonus has a weak negative correlation with CEO age, indicated it is based on other factors such as performance.

In addition, group firm-sized has a negative effect on the correlation between CEO salary, CEO bonus, and CEO age. That is, in large firms, CEO age has a lesser impact on CEO cash compensation than small companies.

2.3 CEO Cash Compensation and CEO Shares

The CEO shares includes: CEO shares owned in the company, the CEO's immediate beneficially shares ownership, and shares of the trust over which CEO's have a sale or shared power to direct the voting. The correlation results between CEO salary, CEO bonus, and CEO shares are provided below:

Table 3: Correlations (CEO Cash Compensation and CEO Shares)

	Small	Medium	Large	Total Population
	CEO Shares	CEO Shares	CEO Shares	CEO Shares
Salary	-0.162	0.111	0.033	-0.049
Bonus	-0.178	-0.155	-0.012	-0.127

The above table 3 correlation results had shown that overall there is a mixed relationship between CEO salary, CEO bonus, and CEO shares. The correlations between CEO salary and CEO shares had increased from -.162 to .111 and then had decreased to .033, as the size of the population group changed from small, to medium, and to large. The correlations between the CEO bonus and CEO shares had increased from -.178 to -.155 and then had increased further to -.012, as the size of the population group changed from small, to medium, and to large.

In addition, the group firm-sized had played an important role towards influencing the relationship between CEO salary, bonus, and CEO shares. That is, the larger the firm size, CEO shares ownership had an increased positive influence towards CEO salary and CEO bonus. Therefore, the above conclusions led to a development of the second new theory in this research that there is a weak mixed correlation between CEO salary, bonus, and CEO shares. The extent of correlation would subject to board declaration of cash reward over the stock options. That is, the higher the distribution of cash compensation the stronger would be the correlation between CEO salary, bonus, and CEO shares. In addition, group firm size will have a positive influence towards the correlation between CEO salary, bonus, and CEO shares.

2.4 CEO Cash Compensation and CEO Shares Value

The correlation results between CEO salary, bonus, and CEO shares value are provided below:

Table 4: Correlations (CEO Cash Compensation and CEO Shares Value)

	Small	Medium	Large	Total Population
	CEO Shares Value	CEO Shares Value	CEO Shares Value	CEO Shares Value
Salary	-0.236	-0.041	0.154	0.124
Bonus	-0.134	-0.137	0.060	-0.120

The above table 4 correlation results had shown that overall there is a weak mixed relationship between CEO salary, bonus, and CEO shares value. The correlation between CEO salary and CEO shares value had increased from -.236 to -.041 and then had further increased to .154, as the size of the population group changed from small, to medium, and to large.

The correlation between CEO bonus and CEO shares value had decreased from -.134 to -.137 and then had increased to .06, as the size of the population group changed from small, to medium, and to large.

In addition, the larger the firm size, there was a positive influence on the correlation between CEO salary, bonus, and CEO shares value. Therefore, the above conclusions led to the development of third new theory in this research that there is a weak mixed correlation between CEO salary, bonus, and CEO shares value, and the nature and extent of this correlation is influenced by market price of the stock and also by the size of the firm. In addition, the larger the firm size, the greater will have a positive influence towards the correlation between CEO salary, bonus, and CEO shares value.

2.5 CEO Cash Compensation and CEO Tenure

The correlation results between CEO salary, CEO bonus, and CEO tenure are provided below:

Table 5: Correlations (CEO Cash Compensation and CEO Tenure)

	Small	Medium	Large	Total Population
	CEO Tenure	CEO Tenure	CEO Tenure	CEO Tenure
Salary	0.074	0.232	0.178	-0.046
Bonus	-0.086	-0.064	-0.019	-0.062

The above correlation results had shown that overall there is a weak mixed correlation between CEO salary, CEO bonus, and CEO tenure. The correlations between CEO salary and CEO tenure had increased from .074 to .232 and then had decreased to .178, as the size of the population group changed from small, to medium, and to large.

The correlations between CEO bonus and CEO tenure had increased from -.086 to -.064 and then had further increased to -.019, as the size of the population group changed from small, to medium, and to large. In addition, the larger the firm size, there was a positive influence on the correlation between CEO salary, bonus, and CEO tenure. Therefore, these conclusions led to a development of fourth new theory in this research that there is a weak positive correlation between CEO salary and CEO tenure;

and there is a weak negative correlation between CEO bonus and CEO tenure. That is, the nature and extent of positive correlation between CEO salary and CEO tenure is based on duration of CEO service; and the nature and extent of correlation between CEO bonus and CEO tenure is based on the particular contract of the CEO and the goodwill of the board. In addition, group firm size will have a positive effect on the relationship between CEO cash, bonus, and CEO tenure.

2.6 CEO Cash Compensation and CEO Turnover

The correlation results between CEO salary, CEO bonus, and CEO turnoverⁱ are provided below:

Table 6: Correlations (CEO Cash Compensation and CEO Turnover)

	Small	Medium	Large	Total Population
	CEO Turnover	CEO Turnover	CEO Turnover	CEO Turnover
Salary	-0.132	-0.225	-0.166	-0.091
Bonus	0.090	0.020	-0.002	0.056

The above table 6 correlation results had shown that overall there is a weak mixed correlation between CEO salary, bonus, and CEO turnover in the NYSE index companies. The correlation between CEO salary and CEO turnover had increased from -.132 to -.225 and then had decreased to .166, as the size of the population group changed from small, to medium, and to large. The correlation between CEO bonus and CEO turnover had decreased from .09 to .02 and then had further decreased to -.002, as the size of the population group changed from small, to medium, and to large.

Therefore, the above conclusions had led to a development of fifth new theory in this research that there is a weak negative correlation between CEO salary, bonus, and CEO turnover. This negative correlation was perhaps due to new CEO started with low compensation relative to former CEO whom had been compensated based on his tenure and performance. In addition, the larger the firm size, the weaker will be the correlation between them.

2.7 CEO Cash Compensation and 5 percent Management Ownership

The management ownership is defined as the total of all management individuals owning at least 5 percent of the company's equity and had formed a majority group among the shareholders. The correlation results between CEO salary, bonus, and 5 percent management ownership are provided below:

Table 7: Correlations (CEO Cash Compensation and 5% Management Ownership)

	Small	Medium	Large	Total Population
	5% Mgmt. Ownership	5% Mgmt. Ownership	5% Mgmt. Ownership	5% Mgmt. Ownership
Salary	0.079	-0.238	-0.050	-0.298
Bonus	-0.090	-0.047	0.143	0.034

The above table 7 correlation results had shown that there was an overall mixed correlation between CEO salary, bonus, and 5 percent management ownership. The correlations between CEO salary and 5 percent management ownership had decreased from $-.079$ to $-.238$ and then had increased to $-.05$, as the size of the population group changed from small, to medium, and to large. The correlations between CEO bonus and 5 percent management ownership had increased from $-.09$ to $-.047$ and then had increased further to $.143$, as the size of the population group changed from small, to medium, and to large. In addition, the larger the firm size, there was a positive influence on the correlation between CEO salary, bonus, and 5 percent management ownership. Therefore, the above conclusions led to a development of the sixth new theory in this research that there is a weak correlation between CEO salary, bonus, and 5 percent management ownership, and the extent of the relationship is based on the level of cash compensation awarded over stock options and the type of control of the organization. In addition, the larger the firm size the stronger is the correlation between them. That is, in the large firms, management ownership will have a stronger influence on CEO cash compensation relative to small firms.

1.8 CEO Cash Compensation and 5 percent Individual/Institutional Ownership

The owner-controlled company is defined as the total of all the individual/institutional owning at least 5 percent of the company's equity and had formed a majority group among the shareholders. The correlation results between CEO salary, bonus, and 5 percent individual/institutional ownership are provided below:

Table 8: Correlations (CEO Cash Compensation and 5% Individuals/Institutions Ownership)

	Small	Medium	Large	Total Population
	5% INDV./INST.	5% INDV./INST.	5% INDV./INST.	5% INDV./INST.
Salary	0.159	-0.030	-0.176	0.142
Bonus	0.067	-0.001	-0.157	0.034

The above table 8 correlation results had shown that overall there is a mixed relationship between CEO salary, bonus, and 5 percent individual/institutional ownership. The correlation between CEO salary and 5 percent individual/institutional ownership had decreased from $.096$ to $-.03$ and then had decreased further to $-.176$, as the size of the population group changed from small, to medium, and to large.

The correlations between CEO bonus and 5 percent individual/institutional ownership had decreased from $-.067$ to $-.001$ and then had decreased further to $-.0157$.

In addition, these results had shown that the group firm size, had a negative influence on the correlation between CEO salary, bonus, and 5 percent individual/institutional ownership. This may perhaps due to large companies compensate their CEOs with more stock options than with cash compensation. Therefore, these conclusions led to a development of seventh new theory in this overall research that there is an overall weak negative relationship between CEO salary, bonus, and 5 percent individual/institutional ownership. That is, stock-based compensation is more emphasized in the non-management controlled companies. In addition, the larger the firm size the weaker would be the correlation between them.

Future Study

This study had focused on CEO cash compensation aspects to understand the influence of CEO power. However, further understanding of the influence of CEO power in particular, non-cash components such as stock options and long-term benefits, need to be studied. Additional separate study between the role of board, nature of the board representation, and CEO compensation would enhance in understanding CEO compensation.

Conclusion

Overall, there is a relationship between CEO cash compensation and CEO power. To arrive at this conclusion eight statistical models were tested between sub variables of CEO cash compensation and CEO power of NYSE index companies. Since this research was based on the stratified sample method relative to the random sample method as was used primarily in previous studies, as such, this research study results were more precise and systematic. The totaled of seven new theories were developed based on research findings.

Overall, there was a mixed correlation result between CEO salary, bonus, CEO age, CEO shares, CEO shares value, CEO tenure, CEO turnover, 5 percent management ownership, and 5 percent individual/institutional ownership. The moderator variable, the group firm-sized had mixed influence. That is, CEO turnover, 5 percent management-controlled, and 5 percent owner-managed, had a negative group firm-sized effect on CEO cash compensation. In contrary, CEO shares, CEO shares value, and CEO tenure had a positive group firm-sized effect on CEO cash compensation. However, CEO age had a mixed group firm-sized effect on CEO cash compensation.

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Appendix

Operational Hypothesis Statement

- H₀: There is no relationship between CEO cash compensation and CEO power among NYSE index companies
- H₁: There is a relationship between CEO cash compensation and CEO power among NYSE index companies.

To address this Operational Hypothesis Statement, the separate models were developed for each dependent variable:

$$\text{Salary: } Y_1 = c + B_1X_1 + B_2X_2 + B_3X_3 + B_4X_4 + B_5X_5 + B_6X_6 + B_7X_7 + \epsilon$$

$$\text{Bonus: } Y_2 = c + B_1X_1 + B_2X_2 + B_3X_3 + B_4X_4 + B_5X_5 + B_6X_6 + B_7X_7 + \epsilon$$

Y₁=Salary; Y₂=Bonus; c=constant predictor; B₁=influential factor for the CEO Age; B₂=influential factor for the CEO Shares Outstanding; B₃=influential factor for CEO Shares Value; B₄=influential factor for CEO Tenure; B₅=influential factor for CEO Turnover; B₆=influential factor for 5 percent Management Shares Ownership; B₇= 5 percent Individual/Institutional Ownership; and ϵ =error.

X₁=Value of CEO Age; X₂=Value of CEO Shares Outstanding; X₃=Value of CEO Shares Value; X₄=Value of CEO Tenure; X₅=Value of CEO Turnover; X₆=Value of Management 5 percent Shares Ownership; and X₇=Value of 5 percent Individual/Institutional Ownership.

Confidence level (α) was set at 5 percent.

ⁱ The CEO turnover is defined as the direct firing; the planned retirement or the normal succession; or separating the position of CEO and Chairman. The year CEO turnover happened it was assigned as "1" otherwise "0" was assigned to that particular year.