Corporate Governance Mechanism and Firm Performance as Determinants of CEO Compensation: A Panel Data Analysis of Pakistani Listed Companies

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Introduction

CEO compensation is the topic of hot debate of current century. Across the globe many CEOs have been criticized for their excessive compensations and perks due to which determinants of CEO compensation and perks is still a persuasive field of research. Agency theory and Managerial power theory cover the domain of CEO compensation. Agency theory asserts that conflict of interest between principal and agent could be reduced by paying the incentive based compensation to CEO which will ultimately reduce the agency cost. While Managerial Power theory affirms that incentive based CEO pay is not a right mechanism of dealing with agency problem but it may cause agency problem (Bebchuk and Fried, 2003).

Although the impact of firm performance on CEO compensation is widely probed by prominent authors, the results are still inconsistent. For example, Jensen and Murphy (1990) observed a positive and significant relationship between CEO

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compensation and firm performance. Nevertheless, the results obtained in Kato and Kubo (2003) are somewhat consistent with the agency theory. Using the ROA (return on asset) as a measurement of performance, they observed firm performance has positive and significant relationship with the CEO compensation. While, using the stock performance as a measurement of performance Kato and Kubo (2003) observed insignificant relationship between performance and CEO compensation. However, the study conducted by Duffhues and Kabir (2007) and Randov and Nielson (2002) did not observe any relationship between firm performance and CEO compensation. Which elucidate Managerial Power Theory of Bebchuk and Fried (2003) may also embrace. And thus pay for performance issue is still unresolved which is one of the objectives of study.

The impact of different variables of corporate governance on CEO compensation is the second objective of study. In literature existing on corporate governance study of Yermack (1996) argues, board size is more effective mechanism of corporate governance and discovered firms with the small board are better governed and shows better financial performance. Moreover, CEOs of firms with the small board also get more pay. The study opposite to this is of Core *et al*,(1999) which suggest CEOs of firms with the larger board get more pay which is consistent to human capital theory. Moreover, the study of Randoy and Nielson (2002) observed positive relationship between CEOs compensation and board size. These inconsistent results available in previous literature steer us that, there is a need of further research and fill the gap in existing literature on CEO compensation.

According to our limited review of literature, the previous studies[5] just linked the relationship between CEO compensation and firm performance and did not consider any variable on corporate governance as a determinant of CEO compensation. Moreover, in Pakistan studies conducted by (Shah et al, 2009) on CEO compensation just observed contemporaneous relationship between CEO compensation and firm performance, which is not exact estimation. Since the study of Kerr and Bettis (1987) asserts CEO compensation depends upon past performance of firm i.e. (t-1). Realizing these dynamics we considered the lagged values in order to assess pay performance relationship.

[5] (Randoy and Nielson, 2002)

In this study, to observe the impact of corporate governance on CEO compensation, we used the board size and audit expenditure as a mechanism of corporate governance. In the previous literature on CEO compensation and corporate governance audit expenditure is not used as a mechanism of corporate governance. Due to which, this study is a contribution in the existing literature available on CEO compensation and corporate governance.

Proposition

P_A: There exist a positive relationship between CEO compensation and firm performance & corporate governance.

To assess this hypothesis the following methodology is used which is followed by results.

Data and Methodology

The data used in this research is panel data and comprised of 151 Pakistani companies listed on Karachi stock exchange. The data is consisting of annual observations for the period 2006-2009. In order to keep homogeneity in data and get the robust results only manufacturing concerns are considered. Because of different nature of business the financial sector is ignored. The information on all variables has been collected from the annual reports of the companies and Karachi stock exchange.

In order to observe validity of proposed hypothesis and investigate the relationship between CEO compensation, firm performance and corporate governance, following OLS multivariate regression model is used:

$CEOC_t = f (BDSZ_{t-1}, AUDT_{t-1}, FPER_{t-1}, FSIZE_{t-1}, DR_{t-1}, FAGE_{t-1})$

Mathematically it would appear as follows:

$$CEOC_t = \gamma_i + \varphi_t + \beta_1 BDSZ_{i,t-1} + \beta_2 AUDT_{i,t-1} + \beta_3 FPER_{i,t-1} + \beta_4 FSIZE_{i,t-1} + \beta_5 DR_{i,t-1} + \beta_6 FAGE_{i,t-1} + \varepsilon_{i,t}$$

$i = 1, 2, \ldots, N$ and $t = 1, 2, \ldots, T_i$.

Where N is the number of countries involved in the analysis; and T_i is the number of observations over time for country 'i' in the panel. While γ_i and φ_t capture are the

unobserved country-specific effect and time-specific effect, respectively, and $\varepsilon_{i,t}$ is the error term.[6]

The selection of fixed effects (FE) or random effects (RE) estimation is dependent upon the Hausman tests results. The Hausman specification test compares the FE and RE, and the test statistic ξ_H can be described as follows:

$$\xi_H = \left(\hat{\beta}_{FE} - \hat{\beta}_{RE}\right)' \left[Cov\{\hat{\beta}_{FE}\} - Cov\{\hat{\beta}_{RE}\}\right]^{-1} \left(\hat{\beta}_{FE} - \hat{\beta}_{RE}\right)$$

This statistic ξ_H is distributed asymptotically as Chi-squared with K degrees of freedom, where K is the number of coefficients in $\hat{\beta}_{FE}$ and $\hat{\beta}_{RE}$. The test assumes that the FE and RE estimates should not differ systematically {i.e. H_o:$\left(\hat{\beta}_{FE} - \hat{\beta}_{RE}\right) = 0$}. If the null hypothesis is not rejected the RE estimator is more appropriate otherwise the FE estimator (Verbeek, 2000, & Greene, 2003).

Explanation of Variables

CEO Compensation

In this study CEO compensation is used as dependent variable ($CEOC_t$). In the previous studies CEO compensation has been determined by considering the different factors. For example (Leonard, 1990; Kato and Kubo, 2003) used sum of salary and bonus as the remuneration of CEO. While (Allen, 1981) used the CEO compensation as a sum of direct and total compensation and aggregated income. This study measured the CEO compensation as a sum of salary, bonus, cash allowances and stock options[7].

Board Size

To assess the impact of corporate governance on CEO compensation, board size is used as a dependent variable and as a mechanism of corporate governance. In the above model it is indicated by$BDSZ_{t,-1}$.We used this variable like Core *et al.*(1999) and Randoy and Nielson(2002). The board size of firm is measured by considering the total number of members in board of directors. Since corporate governance variable does not affect CEO compensation immediately and CEO compensation in current

[6] Summary of descriptive statistics is appended.
[7] Stock options are measured at market value at year end.

year depends upon the board view of firm performance in previous year, thus we lagged this variable with respect to dependent variable like Oxelheim and Randoy (2005). This approach seems to be more practical as compare to the previous study of Shah *et al.* (2009) done on CEO compensation in Pakistan who did not lag the independent variable with respect to the CEO compensation. Due to which this study seems to be more practical while finding the determinants of CEO compensation in perspective of Pakistan. The expected sign of CEO compensation with the dependent variable is positive.

Audit Expenditure

Similarly to see the impact of corporate governance on CEO compensation in this study, we also used audit expenditure ($Audt_{t-1}$) as a mechanism of corporate governance. Audit expenditures as a mechanism of corporate governance seems to be missing in previous study of Shah et al. (2009) conducted in Pakistan on CEO compensation. The previous study of Wysocki (2009) asserts those companies which pay higher audit fees their CEOs also get higher pay. In order to measure the audit expenditure we considered audit fee[8] paid by the company. The expected sign of audit expenditure with CEO compensation is positive. Like the board size the audit expenditure is also lagged with respect to CEO compensation variable.

Firm Performance

Firm performance is always considered a key determinant of CEO compensation and different researchers measured it differently to assess the pay for performance phenomenon. The previous study of Ozkan (2007) measured firm performance as a percentage change in stock price of the company over the years. While shah *et al*, (2009) used the sum of regular and capital gain on the stock of company as a measurement of its performance. In this study firm performance has been measured by calculating ROA (Return on Asset)[9] like previous studies of Wysocki (2009) and Melman (2009). Moreover, in existing fore more practical approach firm performance is lagged with respect to CEO compensation. This phenomenon seems to be missing in

[8] Information on audit fee is obtained from income statement of company provided in annual report.

[9] Return on asset is calculated by dividing the net income to total assets. In total assets we included current assets, noncurrent assets and fixed assets.

the previous study of shah *et al.* (2009) done in Pakistan on CEO compensation. In the above model it is indicated by ($PER_{t,-1}$). And its expected sign with CEO compensation is positive.

Firm Size

In order to investigate the relationship between firm performance and CEO compensation Kostiuk (1990) used firm size ($FSZ_{t,-1}$) as a control variable and observed that association between CEO compensation and firm size is consistent over the time. Similarly another noteworthy research is of Tosi *et al*, (2000) who observed that firm size causes more than 40 percent of variation in CEO compensation. In past firm size has been measured by variety of ways. For example Hobson (2004), Ozkan (2007) and Shah *et al.*(2009) measured firm size as a log of total sales. However, in existing study, firm size is measured by total assets possessed by firm like Wysocki (2009). The expected sign of this variable with CEO compensation is positive.

Debt Ratio

In previous literature on CEO compensation study of Jensen (1989) revealed that, those companies which use the debt to meet their operating need and have capital structure with more composition of debt have to face heavy interest cost and thus left with less cash flows to pay CEO compensation. So, it implies that firms with more debt ratio pays lower CEO compensation. In this study debt ratio (DR_i) is measured as a percentage of total liabilities to total assets. Moreover, expected sign of debt ratio with CEO compensation is negative.

Firm Age

Firm age is one of the control variable used in this study. The previous study of (Brown and Medoff, 2003) indicates that older firms pay more compensation to CEO. Age of firm ($FAGE_i$) is measured by counting the no of years from its listing year to up till 2009. Expected sign of this variable with CEO compensation is positive.

Panel Analysis Results

Panel data model actually allows for the estimation of fixed effect and random effect models. F-statistics of some post-estimation tests determines the selection out of these models. After estimating the fixed effect model, a post-estimation test

(Redundant fixed effects – likelihood ratio) was applied and on the basis of its F-statistics and its p-value, presence of fixed effects was examined.[10]

Since the test supported the existence of fixed effects, random effects model was estimated which was followed by Hausman test. Hausman test supported the suitability of fixed effects as compared to random effects (Green, 1993).[11]

Test for Multi-Collinearity

As a general rule, if the variance inflation factor (VIF) of a variable exceeds 10, which usually happens when R^2 exceeds 0.90, it shows the existence of severe multi-collinearity. VIF of the explanatory variables reported in the Table 1 are lower (less than 2.0) than the threshold level and thus it is less likely to have multi-collinearity in our estimation.

Table 1 Test for Multi-Collinearity: Variance Inflation Factor

Variables	VIF	Tolerance = (1/VIF)
DR_{t-1}	1.50	0.664
$BDSZ_{t-1}$	1.30	0.772
FSZ_{t-1}	1.70	0.587
$FPER_{t-1}$	1.28	0.784
$FAGE_{t-1}$	1.73	0.577
$AUDT_{t-1}$	1.54	0.650
Mean VIF	1.51	0.672

The results in table 2 shows there is significant and negative association between lagged performance and CEO compensation. But this negative association is not uncommon in previous literature, Duffhues and Kabir (2007) observed negative relationship between CEO compensation in their few of regression results. Moreover, this negative and inconsistent association between CEO compensation and lagged performance may be indication of Managerial Power theory of Bebchuk and Fried

[10]Results of Redundant fixed effects – Likelihood ratio are not reported here for space sake.
[11] To choose between fixed or random effects in panel models, Hausman test is applied.

(2003). In which they asserted that managerial power and rent extraction play an important role in compensation.

Among the variables used as a mechanism of corporate governance, board size showed a positive and significant relationship with CEO compensation which is consistent with human capital theory and study of Core et al (1999). Nevertheless, these results are inconsistent with the study of Oxelheim and Randoy (2005). Similarly using the audit expenditure as a mechanism of corporate governance a positive relationship is observed between audit expenditure and CEO compensation. These results are consistent with the study of Wysocki (2009).From these results we can assert corporate governance is an impetus for CEOs compensation rather than harm.

Table 2 Panel Data Fixed Effects Model Estimation Results

Variables	**Coefficient**	**t-value**	**p-value**
DR_{t-1}	189987.1	0.035114	0.9720
$BDSZ_{t-1}$	-235225.98	-0.392108	0.6955
FSZ_{t-1}	-2.67E-05	-0.270934	0.7868
$FPER_{t-1}$	-6912891.0	-0.855333	0.3938
$FAGE_{t-1}$	1441134.0	3.701029	0.0003
$AUDT_{t-1}$	0.844717	0.990797	0.3234
R-Squared	0.8990		
Adjusted R-Squared	0.8605		
F-Statistic	23.3681		
Prob (F-Statistic)	0.0000		
Wald Test (p-value)*	0.0000		

Durbin-Watson stat	1.7072
Hausman Test	22.9630
	(0.0008)

Note: * Wald-test for joint significance.

Similarly, among the control variables debt ratio is significant in right direction as it was expected. However, firm size and firm age are also significantly related with the CEO compensation, but surprisingly in opposite direction. Which may be the indication of less bargaining power available to the CEOs of largest and oldest firm in their compensation, because board members of larger and oldest firm are more powerful and experienced in management. Nevertheless a positive and significant result may be observed between CEO compensation and firm performance in future, by decomposing the CEO compensation into its various components like salary, bonus and other benefits.

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