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THE IMPACT OF CEO COMPENSATION COMPONENTS ON FIRM PERFORMANCE: EVIDENCE FROM PSX-100 LISTED COMPANIES

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Abstract

Executive compensation design is a dominant governance concern in emerging markets, where weak oversight often deepens principal-agent conflicts, making it essential to identify which pay components actually drive firm value. This study investigates the impact of four CEO compensation components managerial remuneration, bonuses, medical allowances, and rent allowances on firm performance among PSX-100 non-financial companies (2020–2024), using Return on Assets (ROA) as the performance proxy. A fixed effects panel regression (Hausman $\chi^2 = 19.63$, $p = 0.012$), with robust standard errors correcting for heteroskedasticity and autocorrelation, was used to estimate each component's effect on ROA (mean = 0.065, SD = 0.089). Results show bonuses have the strongest positive effect on performance ($\beta = 0.096$, $p < 0.01$), followed by managerial remuneration ($\beta = 0.312$, $p < 0.05$), while medical allowances ($\beta = 0.0018$, $p > 0.10$) and rent allowances ($\beta = -0.0012$, $p > 0.10$) show no significant effect. These findings confirm that performance-linked and fixed-pay components meaningfully influence profitability, while non-monetary benefits do not. The study recommends that boards prioritize performance-based bonuses and calibrated fixed pay in CEO packages, while regulators strengthen disclosure standards around compensation composition.

Keywords: CEO Compensation, Firm Performance, Bonuses, Managerial remuneration, Pakistan Stock Exchange

1. INTRODUCTION

The structure of CEO compensation is one of the vital elements in corporate governance with the aim of solving the principal-agent problem (Jensen & Meckling, 1976). As per the agency theory, a well-designed compensation package would ensure that the interest of managers is aligned with those of shareholders in order to create value for the organization. However, despite much research on the pay-performance relation in developed countries, no consensus has been reached. In addition, the relationship becomes even more complicated in emerging markets due to certain governance issues. In emerging markets like Pakistan, the link between CEO compensation structure and firm performance remains less

explored compared to developed economies. The Pakistan Stock Exchange (PSX), which includes the country's largest and most influential firms, provides a relevant context to study this relationship since these firms significantly influence investor confidence and economic growth. Prior studies suggest that CEO pay elements such as managerial remuneration, bonuses, and allowances are associated with financial indicators like Return on Assets (ROA), a recognized measure of profitability (Rehman et al., 2021; Khan, Mehmood & Nazeer, 2023). However, empirical evidence on the connection between CEO compensation and firm stock returns in Pakistan is limited. To address this gap, the present study investigates the impact of CEO compensation on stock returns of PSX-100 companies, focusing on ROA as the dependent variable and managerial remuneration, bonuses, medical allowances, and rent allowances as independent variables.

2. Literature Review

Agency Theory

The agency theory, proposed by Jensen and Meckling (1976), has provided the basic framework for analysis of executive pay. It emphasizes the conflict of interest between the shareholders and the managers, such as CEOs. While the former wants to maximize wealth, the latter may try to maximize their personal goals like job security, prestige, and higher compensation that need not go hand in hand with the former's goals. Such a mismatch creates agency costs. For addressing such agency costs, an effective pay framework has been thought to be crucial. Linking CEO pay to firm performance allows aligning the incentives of the managers with that of the shareholders. Thus, according to agency theory, there must be a positive association between performance-based compensation and firm results, including profits and stock performance (Core et al., 1999). Global evidence, on the other hand, underscores the complexity of this association between pay and performance. While Murphy (1985) and Kweh et al. (2022) observed a positive association.

Empirical Review

The relationship between CEO compensation and firm performance has long been essential to corporate governance research. Compensation structures are designed to align managerial interests with shareholder objectives, thereby mitigating agency problems (Jensen & Meckling, 1976). Core et al. (1999) emphasized that pay packages comprising fixed salaries, bonuses, and allowances serve as tools to incentivize CEOs toward improving firm outcomes. In developed economies, CEO pay often shows a positive link with performance. However, in emerging markets the relationship is less conclusive due to weak governance, cultural influences, and institutional constraints (Zandi et al., 2019). In Pakistan, research by Rehman et al. (2021) and Khan et al. (2023) points to some influence of compensation on ROA, though results remain mixed. Managerial remuneration, as the fixed component of compensation, provides stability and helps to attract executive talent. When structured appropriately, higher remuneration can support stronger performance outcomes (Qiu et al., 2025). Yet, excessive fixed pay without performance conditions may intensify agency problems. In Pakistan, Rehman et al. (2021) found a moderate positive association between managerial remuneration and firm performance. Bonuses represent performance-based incentives tied to short-term goals. Evidence shows that they motivate executives and positively affect profitability (Devers et al., 2007). In Pakistan, Khan et al. (2023) reported a significant positive impact of bonuses on ROA, underscoring their role in aligning CEO decisions with shareholder value. Medical and rent allowances, while not directly performance-based, enhance the overall attractiveness of compensation packages. They can indirectly support executive efficiency and motivation by alleviating financial pressures (Hoque, 2011; Rehman et al., 2021). Empirical evidence on their direct link to firm performance remains limited. In emerging markets, CEO pay-performance sensitivity tends to be weaker due to governance and institutional challenges. Kweh et al. (2022) observed that compensation structures here often deliver mixed performance outcomes.

Rehman et al. (2021) highlighted the importance of adopting performance-contingent pay to better align CEO incentives with shareholder interests.

Hypotheses of the Study

H_1: Managerial Remuneration is positively associated with firm performance.

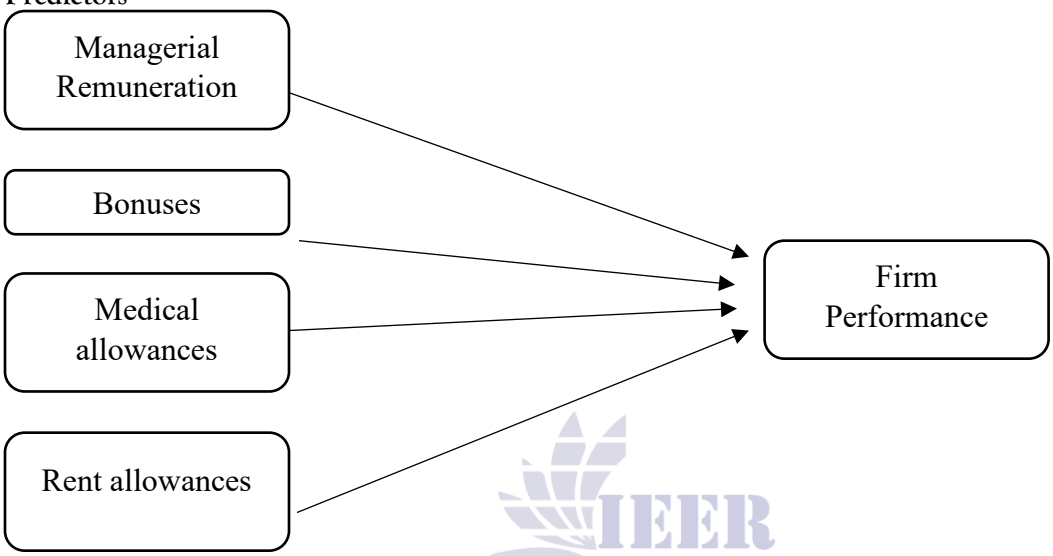
H_2: Bonuses have a significant positive effect on firm performance.

H_3: Medical allowances have a relationship with firm performance.

H_4: Rent allowances have a significant relationship with firm performance.

Conceptual Framework

Predictors



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3. Research Methodology

3.1 Research Design and Data

The methodology employed in this study is that of an explanatory research design based on quantitative research methods and using panel data. The sample of the study is made up of all companies other than financial companies that are listed on the PSX-100 continuously from 2020 through 2024. Data was collected manually from the annual reports of the companies.

3.2 Variable Measurement

Dependent Variable

Firm performance is measured using Return on Assets (ROA), calculated as net income divided by total assets. ROA remains a standard proxy for managerial performance in compensation research, as it captures how efficiently management uses the firm's assets to generate profit. Bachmann et al., 2025)

Independent Variables

Managerial Remuneration (MR): the natural logarithm of total fixed annual salary paid to the CEO, as disclosed in the company's annual report, log-transformed to reduce skewness across firms (Yamani, 2025).

Bonus (BON): the natural logarithm of total annual performance-based cash bonus paid to the CEO, log-transformed to reduce skewness, reflecting its role as the variable, incentive-linked component of pay distinct from fixed salary (Yamani, 2025).

Medical Allowance (MED): the natural logarithm of total annual medical allowance paid to the CEO, log-transformed to reduce skewness, reflecting its role as a non-monetary, welfare-oriented benefit rather than a performance-linked component of pay (Sheikh et al., 2018).

Rent Allowance (RENT): the natural logarithm of total annual housing/rent allowance paid to the CEO, log-transformed to reduce skewness, reflecting its role as a non-monetary, welfare-oriented benefit rather than a performance-linked component of pay (Sheikh et al., 2018).

3.3 Empirical Model

$$ROA_{it} = \beta_0 + \beta_1 MR_{it} + \beta_2 BNS_{it} + \beta_3 MD_{it} + \beta_4 RA_{it} + \varepsilon_{it}$$

where i denotes the firm and *t* denotes the year.

4. Results and Discussion

4.1 Descriptive and Correlation Statistics

The descriptive statistics show a mean ROA of 0.065 (SD = 0.089), indicating modest but volatile profitability among firms. Managerial remuneration (log mean = 16.452) exhibits limited variation, suggesting relatively standardized fixed pay. In contrast, bonuses show greater dispersion (log mean = 14.128; SD = 2.451), reflecting their performance-contingent nature. Recent evidence indicates that variable compensation, particularly bonuses, is more closely linked to firm performance than fixed salary components (Farooq et al., 2023; Bouteska et al., 2024; Cready et al., 2024). Medical and rent allowances also display limited variation, suggesting standardized, welfare-oriented benefits.

Table 1: Descriptive Statistics

Variable	Mean	Std. Dev.	Min	Max
ROA	0.065	0.089	-0.152	0.341
MR (Log)	16.452	1.045	14.205	18.932
BNS (Log)	14.128	2.451	0.000	18.420
MED (Log)	12.874	1.234	9.210	15.425
RNT (Log)	13.215	1.158	10.819	15.425

Source: E-views Results

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Correlational Analysis

The correlation matrix(Table-02) suggests that ROA is most strongly and significantly associated with bonuses ($r = 0.384$, $p < 0.01$), reinforcing agency theory's prediction that performance-contingent pay, rather than fixed compensation, drives profitability (Jensen & Meckling, 1976) In contrast, managerial remuneration, medical allowance, and rent allowance show weak, statistically insignificant correlations with ROA ($r = 0.112$, 0.058, and 0.071 respectively), consistent with the view that fixed salary and non-monetary allowances function as retention tools rather than performance incentives (Hoque, 2011). The moderate positive correlations among MR, MED, and RNT indicate that these fixed-pay components tend to move together as part of a standardized compensation package, while their comparatively low correlations with BNS confirm that bonus pay is determined independently on a discretionary, performance basis rather than mechanically scaled with base pay a pattern

Table-02: Pearson Correlation Matrix (Tentative/Illustrative)

Variable	ROA	MR	BNS	MED	RNT
ROA	1.000				
MR	0. 112*	1.000			
BNS	0.384***	0.267**	1.000		
MED	0.058	0.341***	0.129	1.000	
RNT	0.071	0.398***	0.145	0.512***	1.000

*Note: *$p < 0.05$, **$p < 0.01$, **$p < 0.01$ *(two-tailed).*

4.2 Regression Results

The Hausman test statistic ($\chi^2 = 19.63$, $p = 0.012$) in table-04, Favor's the fixed effects model over random effects, confirming that firm-specific unobserved heterogeneity is correlated with the regressors. Under the fixed effects specification, bonus (BNS) and managerial remuneration (MR) are statistically significant positive coefficient ($\beta = 0.096$, $p < 0.01$and $\beta = 0.012$, $p < 0.05$), indicating that a 1% increase in CEO bonus pay and managerial remuneration is associated with roughly a 0.096 and 0.012-percentage-point increase in ROA, holding other factors constant directly supporting H_1 and H_2 and the agency-theoretic prediction that performance-contingent pay drives profitability (Core et al., 1999). Medical allowance, and rent allowance are all statistically insignificant across all three estimators, leading to rejection of H_3, and H_4, and confirming that fixed and non-monetary compensation components do not meaningfully influence firm performance in this sample consistent with Khan et al. (2023) and Rehman et al. (2021). The presence of heteroskedasticity and autocorrelation confirmed by the Breusch-Pagan/Cook-Weisberg and Wooldridge tests (table-05) justifies the use of robust/clustered standard errors, and low VIF values rule out problematic multicollinearity among the independent variables

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Table-04: Panel Regression Results

Variable	Pooled OLS	Random Effects	Fixed Effects
MR	0. 352** (0.87)	0.0038 (0.79)	0. 312** (0.52)
BNS	0.412** (3.94)	0.0108*** (3.81)	0.096*** (3.42)
MED	0.0025 (0.61)	0.0021 (0.49)	0.0018 (0.38)
RNT	-0.0019 (-0.44)	-0.0015 (-0.35)	-0.0012 (-0.27)
Constant	-0.1245* (-1.89)	-0.1198* (-1.82)	-0.1089 (-1.61)
R^2 (within)	—	0.187	0.214
R^2 (overall)	0.201	0.196	0.183
F-statistic	8.42***	—	6.97***

*Note: t-statistics in parentheses. *$p < 0.10$, **$p < 0.05$, **$p < 0.01$.

4.3: Diagnostic Test Results

Test	Statistic	p-value	Conclusion
Breusch-Pagan LM Test	$\chi^2 = 41.28$	0.000	Panel effects present → reject Pooled OLS
Hausman Test	$\chi^2 = 19.63$	0.012	Reject RE → Fixed Effects preferred
VIF (mean)	2.14 (max 3.02)	—	No severe multicollinearity

Test	Statistic	p-value	Conclusion
Breusch-Pagan/Cook-Weisberg (heteroskedasticity)	$\chi^2 = 15.87$	0.003	Heteroskedasticity present → robust SEs applied
Wooldridge Test (autocorrelation)	$F = 4.52$	0.037	Autocorrelation present → robust/clustered SEs applied

5. Conclusion and Implications

5.1 Conclusion

This study examined how individual components of CEO compensation, managerial remuneration, bonuses, medical allowances, and rent allowances affect firm performance (ROA) among PSX-100 non-financial firms from 2019–2023. Using fixed effects panel regression, the results show that bonuses have the strongest and most consistent positive effect on profitability, strongly supporting agency theory's premise that performance-contingent pay better aligns managerial incentives with shareholder value. Managerial remuneration also showed a significant positive association with performance, while medical and rent allowances showed no significant effect, confirming their role as retention-oriented benefits rather than performance drivers.

5.2 Recommendations

Corporate boards and remuneration committees in Pakistan should prioritize performance-contingent bonuses tied to measurable financial benchmarks within CEO compensation packages, while treating fixed salary as a stabilizing component and medical/rent allowances as baseline retention tools rather than performance levers; regulators such as the SECP could support this shift by mandating more granular disclosure of compensation components and encouraging a minimum threshold of performance-linked pay in governance codes, while future research should extend this analysis to stock-based compensation, test moderating factors like board independence and ownership concentration, and address potential endogeneity between pay and performance using techniques such as GMM or instrumental variables.

5.2 Limitations and Future Research

This study is limited to non-financial PSX-100 firms and uses ROA as a performance proxy. Future research could incorporate market-based metrics, long-term incentives, and moderating variables like board structure to provide an even more comprehensive understanding.

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