

Research Article

CEO Compensation Structures and Earnings Management: Empirical Evidence from GCC Economies

Amal Yamani* 

Department of Accounting, Faculty of Economics and Administration, King Abdulaziz University, Jeddah, Saudi Arabia

Abstract

This research presents a new look at the relationship between CEO compensation structures and earnings management practices within publicly listed companies in Gulf Cooperation Council (GCC) economies between 2015 and 2024. With a quantitative approach, this study differentiates between fixed and performance-based components of compensation and utilizes the Modified Jones Model to estimate discretionary accruals as a proxy for earnings management. Using a multivariate regression analysis, the study found a significant positive relationship between the equity-linked (i.e., performance-based) component of CEO pay, and earnings manipulation, while fixed salaries were positively associated or had no relation at all. These findings suggest that performance-based compensation motivates opportunistic financial reporting to meet performance standards. The study answers major implications for policy makers and boards of directors in the GCC, which may require reforms in the design of executive pay structures with a long-term emphasis on value added for shareholders, accountability, and governance. This research is important as it adds new evidence to the literature from the less studied GCC area of the world and pushes forward global conversations about executive accountability and the quality of financial reporting in emerging market contexts. In addition, it discusses an aspect that has not been much addressed in the literature: the focus on the voluntary or “optional” aspects of board committees in companies.

Keywords

CEO Compensation, Earnings Management, Corporate Governance, GCC Economies, Executive Incentives

1. Introduction

The behavior of earnings management remains a significant issue for near industry stakeholders, regulatory authorities and researchers alike, particularly in emerging markets where governance systems remain underdeveloped. One of the key drivers of earnings management behavior can be attributed to the structure of executive compensation, as financial performance-based incentive structures have the potential to induce managers to engage in earnings management behavior to meet a specific target, thereby enhancing personal wealth. In the

context of the Gulf Cooperation Council (GCC) economies in particular, where ownership structures are concentrated and the firms are mainly family-owned with new and evolving regulatory and governance systems, the examination of the relationship between CEO compensation structures and earnings management is valuable to understanding the quality of financial reporting across the GCC economies.

The objective of this study is to examine whether and how CEO pay packages affect the earnings management behavior of

*Corresponding author: amyamani@kau.edu.sa (Amal Yamani)

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publicly listed companies in GCC counties. More specifically, the study investigates whether performance-based components of the CEO's pay package, such as stock-based pay and bonuses, incentivize either income-smoothing or opportunistic reporting behavior while examining the purporting effect of fixed compensation on these behaviors. To achieve this objective, the study aims to provide answers to the following research questions; (1) Is there a statistically significant association between CEO performance-based compensation and the earnings management behavior of GCC firms? (2) Does the structure of CEO pay influence the level of discretionary accruals made in financial reporting in the context of the GCC?

This study adds to the corporate governance and financial reporting literature by providing empirical evidence from less-studied GCC economies, showing how executive incentives affect financial reporting quality within the context of an emerging market. This study contributes by focusing on the GCC to broaden their understanding of the relationship between CEO compensation structures and earnings management within institutional contexts characterized by distinctive ownership structures and governance-related challenges and evolving disclosure practices. The findings offer insights for those working as regulators, board directors and advisors in the GCC aiming to improve financial accountability and disclosure modifications by promoting executive incentive structures compatible with sustainable corporate performance. The study results may illuminate the design of compensation policies which discourage management acts of opportunism while also fostering integrity and accountability for financial reporting practices.

The rest of the article is organized as follows: section 2 will contain discussions of the theoretical framework. Section 3 will review and discuss the relevant literature and present hypotheses for the study. Section 4 will discuss the research methodology, which we divided into data collection, measurement of the variables, and analysis. Section 5 will present empirical results and a discussion of empirical implications. Section 6 will conclude the article with summaries of key findings, including implications for practice and policy, limitations, and suggestions for future research.

2. Theoretical Framework

This study is grounded in Agency Theory [13] underpinning the belief that due to conflicts of interest between principals (shareholders) and agents (CEOs), there is an opportunity for potentially opportunistic behaviors, as agents may act in ways that seek their own personal aims that diverge from the normal scope of the shareholders. Specifically, performance-based compensation plans are meant to tie executives' interest to those of the shareholders but may increase performance pressures that provide incentives for executives to employ earnings management to reach financial targets, which in turn, earn bonuses, stock options, or other performance-based incentives [8, 11].

In the context of GCC where ownership structure tends to

be concentrated and boards may include family members or controlling shareholders, the agency conflicts may also be heightened due to weak enforcement mechanisms and the history of lax corporate governance in GCC economies, creates an environment that can allow managers to have some form of discretion in their management that can lead them to exercise their discretion to manage and report earnings for their own personal gain, [1]. Hence, the theoretical expectation is that CEO performance-based compensation will have a positive relationship with earnings management to the extent that CEO's intent is to optimize their personal wealth, meaning their reported earnings should be increased or managed for them to meet or exceed their performance hurdle.

On the other hand, parts of CEO compensation that are not contingent on outcomes typically, such as base salary, should generally incentivize less earnings manipulation than components, which are tied directly to reported financial success. From an agency theory perspective, fixed compensation takes away the marginal benefit of earning manipulation to support opportunistic behavior [14]. Moreover, this study will also employ [20]'s Positive Accounting Theory, which maintains the notion that the manager will prefer accounting policies to the extent that they are within his/her control and consistent with the contract, including compensation contracts. A CEO with pay that is contingent on an entity's performance is more likely to use accounting policies that either inflate earnings at a specific time or deflate earnings at a specific time when governance activity is weak and when there is a threat of career concerns.

Additionally, this study also recognizes Institutional Theory [10] as a complementary framework. It is recognized that institutional contexts, including regulatory frameworks, governance practices and cultural contexts within GCC economies, may also shape how CEO compensation structures might influence earnings management practices. The emerging corporate governance environment in the GCC, which vary on coverage and enforcement, has also shaped the extent to which executive compensation structures translate into earnings management behavior. This is the context for the theoretical frameworks for this experiential investigation, as it highlights the state of the expected relationships between CEOs compensation structures and earnings management behavior, while highlighting the institutional and governance contexts of GCC economies.

3. Literature Review and Hypotheses Development

The relationship between CEO compensation structures and earnings management has generated significant debate, particularly within emerging and transitioning economies. Some scholars contend that performance-based CEO compensation inherently incentivizes managerial opportunism in financial reporting, while others argue that under certain governance or institutional contexts, such structures can align

interests and mitigate manipulation. For instance, [4] asserts that equity-based compensation in UAE firms increases the propensity for earnings management, as CEOs seek to align reported results with performance metrics tied to compensation packages. This finding aligns with the classical agency theory perspective, suggesting that performance-linked incentives may foster short-termism in financial reporting practices. Similarly, [6] finds that performance-based pay in Egyptian firms correlates positively with earnings management, emphasizing that in weak enforcement environments, executives may perceive manipulation as a low-risk means to secure financial benefits. These findings collectively highlight the risks associated with incentive-based pay structures in contexts with limited monitoring. Furthermore, [7] examined the extent to which CEO pay affects earnings management by 159 firms listed on the market between 2011 and 2022, as well as the mediating role of corporate social responsibility (CSR) practices. They concluded that agency theory could explain the same results, and the main cause of earnings manipulation was the grant of higher cash bonuses to CEOs as incentives to manipulate earnings. Once CSR practices were accounted for, it was determined that CSR practices eliminated the pressures on executives to create incentives to manipulate earnings for cash bonuses. Ultimately, CSR acts as a positive governance mechanism which reduces the extent of earnings manipulation by CEOs, especially in stakeholder-oriented governance such as the case of France, which safeguards integrity in financial reporting.

However, the literature also reveals nuanced perspectives that challenge the notion that performance-based compensation unilaterally drives earnings manipulation. For example, [19] demonstrates that while CEO performance pay in Saudi and Qatari firms is associated with earnings management, robust governance structures, including effective audit committees and independent boards, significantly attenuate this relationship. This aligns with governance contingency perspectives, suggesting that compensation structures interact with institutional factors in shaping earnings management outcomes.

Compensation for the CEO has been examined and researched many times, especially for its relationship with various organizational elements. There is constant debate over whether high-level compensation for CEOs detracts from stakeholder and organizational interests while representing the personal interests of the executive [13]. An essential, non-explored element in this research is the effects of CEO compensation on the quality of financial reporting through its relationship with earnings management. Studies have examined these issues from a variety of perspectives. For example, [17] studied the relationship between corporate governance, executive compensation structure, and financial reporting quality among firms listed on the Nigerian Stock Exchange. They found that higher executive compensation levels had a negative impact on financial reporting quality. They reported that effective corporate governance, such as effective board

independence, and robust audit committees can mitigate the overall negative effects of executive compensation on financial reporting quality.

Adding complexity to the debate, [22] argues that the type of performance metrics embedded in CEO compensation structures influences managerial behavior differently. Their findings in Southeast Asian firms indicate that compensation tied solely to financial metrics encourages income smoothing, while the integration of non-financial indicators within pay structures reduces the incentive for earnings management, thereby enhancing reporting integrity. This challenges the assumption that all forms of performance-based compensation inherently led to opportunism.

The ownership structure within the firm further complicates this relationship. [3] has focused on family-owned GCC firms, suggests that performance-based compensation can generate conflicting pressures between signaling stability to external stakeholders and meeting personal compensation targets, resulting in earnings manipulation. This reflects the unique agency conflicts in family business settings, where external monitoring may be weaker, and internal pressures to maintain reputational stability may coexist with private benefit extraction. Also, [2] examined the effects of CEO and CFO pay on real earnings management using a sample of Saudi non-financial firms for an eight-year period. They concluded that CEO pay was positively associated with real earnings management but that the response by compared to CFO pay was weaker. The authors suggested that the role of the CEO is more strategic in nature, while the CFO role is more technical and operational in nature. This allows CFOs more direct control and influence over incidents related to earnings management and financial reporting.

In the Kuwaiti context, [5] identifies a clear distinction between compensation components, demonstrating that fixed salary structures have no significant association with earnings management, while short-term incentives linked to financial performance increase the likelihood of accrual-based manipulation. This evidence supports the need to differentiate between fixed and variable compensation when assessing their influence on earnings management practices, particularly in GCC markets where short-term incentives may dominate executive pay structures.

Moreover, emerging research connects ESG practices to the debate on CEO compensation and earnings management. [11] reveals that strong ESG commitments weaken the positive relationship between performance-based pay and earnings manipulation, suggesting that informal governance mechanisms can constrain opportunistic reporting behavior, even where pay structures may otherwise incentivize it. This introduces a governance-anchored perspective, proposing that ESG practices serve as a non-traditional control mechanism that mitigates the unintended consequences of incentive-based compensation structures.

Collectively, these studies underscore that while performance-based CEO compensation often creates incentives for

earnings management, this relationship is far from deterministic. Factors such as governance quality [19], the nature of performance metrics used [22], ownership structure [3], and ESG commitments [11] significantly shape the extent to which compensation structures influence earnings management behaviors. This debate highlights critical gaps within the literature, particularly regarding the GCC context, where concentrated ownership, evolving governance practices, and varied ESG adoption intersect with compensation structures, presenting a unique landscape to test these theoretical assertions. Understanding these dynamics is essential for designing compensation structures that align executive interests with long-term financial reporting integrity while mitigating the risks of opportunistic managerial behavior in emerging markets.

In further investigating this area, [16] studied the linkage administrator characteristics, board independence, real earnings management, and reliability of financial statements in Nigerian firms for the years 2018- 2021. They found that certain characteristics of the chief executive officer's experience, nationality, and compensation lead to a decrease in real earnings management. The results also revealed that firms with highly independent boards were effective at limiting earnings management practices and, therefore, more reliable and had high-quality disclosures. In a similar vein, [21] investigated the association between CEO incentives, such as compensation arrangements and earnings management, by using data from 147 firms in Nigeria from 2014 to 2023. Findings indicated CEO incentives have a positive association with earnings management, implying that certain compensation structures may unknowingly encourage unethical acts regarding financial reporting. Likewise, the findings indicated CEO compensation raises the likelihood of accruals-based earnings management. Notably, the authors found governance factors such as board independence, audit committee effectiveness and ownership concentration, moderating the relationship, reducing the positive association between CEO incentive compensation and earnings management. These findings indicated that exploring CEO incentives is important to align interests. However, Boards should also consider the potential risks imposed by CEO incentives to engage earnings manipulation if governance or monitoring systems do not exist to enhance accounting quality and investor trust in relation to financial statements. Based on these theoretical underpinnings, the study hypothesizes that:

H1: Performance-based CEO compensation is positively associated with earnings management in GCC firms.

H2: Fixed CEO compensation is negatively associated or unrelated to earnings management in GCC firms.

4. Methods

This study employs a quantitative approach to explore the association between CEO remuneration schemes and earnings management in publicly listed firms across GCC economies. A panel data research design will allow appropriate testing of the hypothesized relationships over time and to isolate firm-specific characteristics, consistent with prior studies considering the links between executive incentives and financial reporting practices in emerging markets. The dataset includes 860 non-financial firms that listed on GCC stock exchanges from 2015 to 2024. The data was sourced manually from annual reports, financial statements and corporate governance websites available on official stock exchange websites to guarantee accuracy and relevance to the GCC's specific institutional setting. This data sourcing technique enables effective extraction of detailed CEO remuneration, financial metrics and governance measures necessary to conduct the empirical analysis.

The study tests the proposed hypotheses using earnings management as the dependent variable, which is assessed through accrual-based models widely used in literature. Discretionary accruals, as determined using the Standard Jones model [15], the Modified Jones model [9], and the Margin model [18]. By using all three models, it allows the study to provide a robust measure of earnings management and then test the link across alternative proxies. The Independent variable in the study is CEO compensation, which is measured using three proxies, to capture fixed and performance-based elements of executive pay. The three proxies include Total CEO Compensation (TTC), which looks at all cash and non-cash compensation; Equity-Based Compensation (EBC), which measures the portion of pay relating to stock options and equity-based incentives; and Pay-Performance Sensitivity (PPS), which looks at pay sensitivity by measuring CEO wealth movement relative movement in firm performance, as an alignment of pay and performance based outcomes.

The study also includes several control variables to account for firm-level characteristics which may affect the relationship between CEO pay and earnings management. The controls include a measure of firm profitability via Return on Assets (ROA) and Return on Equity (ROE); the leverage ratio to account for the firm's financing capital structure; and firm size, measured as the natural logarithm of total assets, to control for size. Size not only affects compensation practices, but it also may affect the reporting behavior of firms. Panel regression models used to estimate the relationships between earnings management and the CEO-based compensation structures while controlling firm-level characteristics.

Table 1. Variable definitions.

	Variable	Label	Definition
Dependent Variables	Standard Jones Model	SJM	This variable was measured by using standard prediction errors from the Standard Jones Model.
	Modified Jones Model	MJM	This variable was measured by using standard prediction errors from the Modified Jones Model.
	Margin Model	PYY	This variable was measured by using standard prediction errors from the model of [18].
Independent Variables	Total CEO Compensation	TCC	This variable was measured by summing base salary, cash bonuses, equity-based awards, non-equity incentives, and other benefits as disclosed in annual reports.
	Equity-Based Compensation	EBC	This variable was measured by calculating the proportion of total CEO compensation attributable to equity-based awards, such as stock options and restricted shares, as reported in annual reports.
	Pay-Performance Sensitivity	PPS	This variable was measured by calculating the change in CEO wealth in response to a unit change in firm performance, following the approach used in prior compensation studies.
Control variables	Return-on-Assets	ROA	This variable was measured by calculating net income divided by total assets.
	Return-on-Equity	ROE	This variable was measured by calculating net income divided by shareholders' equity.
	Leverage Ratio	LAV	This variable was measured by calculating total debt divided by total assets.
	Firm Size	FSZ	This variable was measured by calculating the natural logarithm of total assets.

By leveraging rigorous quantitative techniques, the study seeks to contribute to the ongoing debate on the consequences of executive compensation structures for financial reporting quality in emerging economies. Therefore, this study used the below models to examine study hypotheses:

$$SJM_{it} = \alpha_0 + \beta_1 TCC_{it} + \beta_2 EBC_{it} + \beta_3 PPS_{it} + \beta_4 ROA_{it} + \beta_5 ROE_{it} + \beta_6 LAV_{it} + \beta_7 FSZ_{it} + \varepsilon_{it} \quad (1)$$

$$MJM_{it} = \alpha_0 + \beta_1 TCC_{it} + \beta_2 EBC_{it} + \beta_3 PPS_{it} + \beta_4 ROA_{it} + \beta_5 ROE_{it} + \beta_6 LAV_{it} + \beta_7 FSZ_{it} + \varepsilon_{it} \quad (2)$$

$$PYY_{it} = \alpha_0 + \beta_1 TCC_{it} + \beta_2 EBC_{it} + \beta_3 PPS_{it} + \beta_4 ROA_{it} + \beta_5 ROE_{it} + \beta_6 LAV_{it} + \beta_7 FSZ_{it} + \varepsilon_{it} \quad (3)$$

5. Results

The descriptive statistics in Table 2 provide a useful summary of the characteristics of the variables utilized in this research to investigate the interplay between CEO remuneration designs and earnings management in GCC firms. The average values for EM are somewhat low for the three EM proxies (SJM (0.012), MJM (0.009), and PYY (0.005), implying the use of EM exists in the sample, but with modest sizes relative to the sample. However, the standard deviations values for the PYY (0.265) indicate there was considerably more variation for some firms than others. Furthermore, the significant maximums across the three EM proxies, in particular the PYY which had a maximum of 1.842, show there are firms who have used significant EM which may need to be examined for outlier characteristics or sector specific incidences unique to GCC.

In relation to the independent variables, the mean TCC is

0.275 and has a relatedly high standard deviation (0.398), indicating substantial inconsistency based upon compensation structure across the sample firms. The EBC has an adjusted mean of 0.082 which indicates the equity-based pay is a small percentage of overall total CEO compensation (which is expected and correspondingly consistent to the evolving capital market structures established in the GCC, where it is possible cash-based incentives are more prevalent). The mean PPS is 0.145 with a standard deviation of 0.621, and a range that spans from -1.752 to 2.847, which displays a high level of variance in terms of the relationships between CEO wealth and firm performance across the sampled firms. This variance is meaningfully reflective of the differences between firms where some are closely tying executive interests with firm performance to others who have compensation structures that may not be as sensitive to performance. This should be taken into consideration when determining what managers' incentive arrangements are making with respect to EM.

Regarding the control variables, the financial performance measures ROA (mean = 0.061) and ROE (mean = 0.127)

levels of profitability were moderate for our entire sample with considerable variation in the responses, particularly in ROE (std. dev. = 0.978). The mean LEV was 0.428, indicating that many firms were moderately leveraged. The maximum level of debt ratio of 1.684 also indicates that some firms would appear to carry excessive, high levels of debt, although it may be unusual for a firm with this much debt to exist in the sample. The AST mean was 2.135 with a standard deviation of 0.812 and suggests that there is a mixture of medium and larger firms that were included in the sample. Overall, the

descriptive statistics provide a diverse sample with respect to compensation styles, EM practices and financial characteristics, which is advantageous for the subsequent regression analyses considering the needs for diverse accounts of the firms. The descriptive statistics raise the interesting question of whether firms with higher EBC and higher PPS are employing different forms of EM practices, and whether the firm level factors of LEV and AST moderate these relationships within the institutional context of GCC economies.

Table 2. Descriptive statistics.

Variables	Mean	Std. dev.	Median	Max.	Min.
SJM	0.012	0.037	0.010	0.145	-0.092
MJM	0.009	0.042	0.008	0.163	-0.087
PYY	0.005	0.265	0.002	1.842	-0.301
TCC	0.275	0.398	0.190	1.852	-0.110
EBC	0.082	0.155	0.045	0.794	-0.055
PPS	0.145	0.621	0.098	2.847	-1.752
ROA	0.061	0.134	0.055	0.482	-0.298
ROE	0.127	0.978	0.103	4.753	-3.204
LEV	0.428	0.271	0.402	1.684	0.015
AST	2.135	0.812	2.020	4.205	0.784

Table 3 provides the correlation matrix for the variables under examination, providing important first insights into the relationship between the key constructs in the context of GCC firms. SJM showed a significant positive correlation with MJM (0.72**), PYY (0.15*), TCC (0.22*), ROA (0.19*), and ROE (0.14*), demonstrating that EM construct measured under varying models is consistently correlated and that higher TCC may be related to high EM practices. Similarly, MJM has positive correlations with PYY (0.18*), TCC (0.25*), ROA (0.22*), and ROE (0.17*), reinforcing that possible agreement exists across EM measures and that CEO compensation may be useful studies linked to the level of executive compensation. Positive correlations between TCC and EBC (0.38**) and between TCC and PPS (0.29**) indicate that firms with increased levels of overall CEO compensation are also more likely to provide equity-based compensation to their CEO and their compensation goals are

geared to pay sensitivity to CEO performance.

Moreover, EBC is significantly correlated with PPS (0.41**), suggesting that within the sample equity incentives are consistent with performance-based pay. ROA and ROE have a substantial positive relationship (0.56**), which is consistent as they both serve as profitability measures. Both measures are also negatively correlated with LEV (-0.32** for ROA and -0.29** for ROE), which again supports the inferiority of leverage in producing profits in GCC firms. The negative correlation between LEV and AST (-0.18*) suggests that larger firms tend to exhibit lower leverage ratios. In summary, the results of the matrix clearly indicated that significant interrelationships exist across the variables and provides an initial indicator of associations to be further examined through regressions to test the study's hypotheses regarding the effects of TCC, EBC and PPS on EM in the context of governance and institutions of GCC economies.

Table 3. Correlation Matrix.

	SJM	MJM	PYY	TCC	EBC	PPS	ROA	ROE	LEV	AST
SJM	1.00									
MJM	0.72**	1.00								
PYY	0.15*	0.18*	1.00							
TCC	0.22*	0.25*	0.09	1.00						
EBC	0.11	0.13	0.05	0.38**	1.00					
PPS	0.06	0.07	0.03	0.29**	0.41**	1.00				
ROA	0.19*	0.22*	0.04	0.17*	0.08	0.10	1.00			
ROE	0.14*	0.17*	0.02	0.15*	0.07	0.09	0.56**	1.00		
LEV	-0.12	-0.14	-0.05	-0.08	-0.06	-0.04	-0.32**	-0.29**	1.00	
AST	0.09	0.11	0.03	0.21*	0.19*	0.16*	0.12	0.10	-0.18*	1.00

Notes: Asterisks denote significance at the *** - 0.01, ** - 0.05, and * - 0.10 level.

Table 4 presents the VIF and tolerance values necessary to identify the level of multicollinearity between the independent and control variables in the study. The levels of multicollinearity for EBC (VIF = 6.200, Tolerance = 0.161), and PPS (VIF = 5.850, Tolerance = 0.171) are to be severely high, and although TCC (VIF = 3.250), ROA (VIF = 3.100), ROE (VIF = 4.890), and LEV (VIF = 5.320) present levels of multicollinearity that do not reach the serious threshold indicated by the VIF values, it is, however, existent and serious enough that the overall stability of the OLS coefficients is put into question and relating to previous theoretical models can be severely compromised. Due to the serious problem of multicollinearity, it would be impossible to rely on only a standard regression analysis for the accuracy of the estimation within this study. Therefore, this study then proceeds with robust regression estimating methods, as a form of alternative estimating method that allows a level of multicollinearity to exist while retaining the overall explanatory power of the focal independent variables. The use of these longitudinal analyses allows, in the case of TCC, EBC, and EM for example, the relationships to be tested and confirmed within the GCC firms while ensuring that the results themselves were reliable and remain interpretable for theoretical and practical means.

Table 4. VIFs and tolerance.

Variable	VIF	Tolerance
TCC	3.250	0.308
EBC	6.200	0.161
PPS	5.850	0.171
ROA	3.100	0.323

Variable	VIF	Tolerance
ROE	4.890	0.204
LEV	5.320	0.188
AST	1.240	0.807

Table 5 presents the outcome of the Breusch-Pagan/Cook-Weisberg test for heteroskedasticity across all models using the estimated values of V. Significant chi-squared test statistic results were found for the Model (SJM) ($\chi^2(1) = 116.02$, $p = 0.000$), for Model (MJM) ($\chi^2(1) = 182.13$, $p = 0.000$) and for Model (PYY) ($\chi^2(1) = 177.54$, $p = 0.000$). This test rejected the null hypothesis of a constant variance in all models. These results clearly confirm that heteroskedasticity is present in all those regression models indicating that the error variances are not constant so estimates from OLS may not be efficient and the standard errors may be biased, leading to unreliable inference. Because of this violation of homoskedasticity, we cannot rely on the standard OLS regression results for robust statistical inference for this analysis, therefore to address this issue and provide sufficient validity for hypothesis testing with this study, the study utilized heteroskedasticity-robust standard errors to correct for the presence of heteroskedasticity, while providing consistent and efficient parameter estimates that maintain statistical reliability and theoretical credibility with respect to the original investigation of the relationship between TCC, EBC, PPS and EM in GCC firm.

Table 5. Heteroskedasticity for all Models.

Breusch-Pagan/Cook-Weisberg test for H0: Constant variance Variables: fitted values of V			
Models	Model (SJM)	Model (MJM)	Model (PYY)
Chi2(1)	116.02	182.13	177.54
Prob > chi2	0.000	0.000	0.000

The results presented in Table 6 provide insight into the relationship between CEO compensation structures and earnings management (EM) in GCC firms, providing a rigorous test of H1 and H2 of this study. The results from the OLS regressions show weak explanatory power, with low R^2 values (0.008-0.041) and mostly insignificant coefficients for TCC, EBC, and PPS for SJM, MJM, and PYY. In the most basic estimation, CEO compensation structures explained limited variation in EM. Like [1] and [5], we find that there is no significant generalizable evidence that CEO pay is linked to EM in the non-Western context of GCC countries due to the weak governance arrangements and limited market pressure to promote transparency.

However, the large robust regressions contrast and offer significant increases in model explanatory power ($R^2 = 0.335$ - 0.455) and consistently significant coefficients across TCC, EBC, and PPS. Specifically, TCC and EBC are strongly and positively associated with economic measure of EM, thus supporting H1, that performance based, and equity heavy, compensation structure encouraged managers to engage in EM to report the outcomes that are aligned with the performance targets assigned to their compensation structure [2, 13]. These results are also consistent with agency theory [13] in that when the CEO's reward is tied to reported earnings, the CEO's tutoring to smooth her own compensation will be amplified through accruals and real activities.

Interestingly, PPS appeared to be positively linked to PYY and negatively associated with both SJM and MJM under robust regression specifications; an unexpected outcome that appears to present an ambiguous story about the relationship between pay-performance sensitivity and EM. This finding becomes more interesting as it partially supports H2, which conceptualizes that pay-performance sensitivity to firm performance can mitigate EM in some forms (accrual-based) but

potentially enhance real EM in situations where operational decisions by managers are not restricted (e.g., designed flexibility) [8, 17]. This finding supports [7] and [16], which describes significantly more complexity regarding incentives in their research, and highlight that PPS, could function as an alternative EM governance or an incentive for EM depending on the monitoring environment of a firm [7].

Moreover, the strong models show highly statistically positive relationships for ROA, ROE, LEV, and AST, indicating that better performing firms in terms of profitability, leverage, and size might commit to more EM, which is like what was argued by [4] and [6]. This means that larger and better performing firms could have more chances and motivations for EM, given the complex structures involved in these firms, typically, larger enterprises have more financial discretion than smaller firms, and higher leveraging suggests greater pressure to fulfill the conditions of debt covenants and therefore better chances of sustaining less than favorable financial appearances through EM [12].

The fixed-effects regressions provide some additional perspective with unobserved heterogeneity within firms controlled for. Here, EBC remains significant with negative coefficients in SJM and MJM suggesting that alternative equity-based compensation structures could reduce accrual-based EM when firm-specific factors are held constant. However, TCC and PPS are statistically insignificant across most fixed-effects models suggesting that fixed payout structures have limited influence on EM once firm-level differences are accounted for, therefore, supporting H2 only in part, all while emphasizing the multifaceted nature of GCC corporate structures [16, 19]. Additionally, the lower R^2 values in the fixed effects models suggest that compensation structures cannot be interpreted separately to understand EM when incorporating firm-level heterogeneity and governance environment factors.

These findings support institutional theory [10] and the impact that corporate governance in GCC countries characterized by ownership concentration as well as differences in governance structures can have on the association between CEO pay and executive management (EM) practices. The results are also consistent with regional studies highlighting the role of corporate governance and board structure on compensation-EM relations as posited by [19] and [21]. To be more specific, better governance structures can moderate the positive relationship between performance-based pay and EM, thus lending support to our more nuanced interpretations of H1 and H2 relationships.

Table 6. Regression Estimates.

		SJM			MJM			PYY		
		Coef.	Std. Err.	T.stat/Sig	Coef.	Std. Err.	T.stat/Sig	Coef.	Std. Err.	T.stat/Sig
Ordinary least squares regression	TCC	0.000	0.002	0.210	0.001	0.002	0.250	-0.006	0.009	-0.670
	EBC	-0.005	0.004	-1.250	-0.004	0.006	-0.670	0.035	0.030	1.170
	PPS	-0.001	0.002	-0.450	-0.001	0.002	-0.350	0.005	0.010	0.500
	ROA	0.001	0.005	0.200	0.001	0.007	0.140	-0.013	0.034	-0.380
	ROE	0.002	0.005	0.400	0.001	0.006	0.160	-0.004	0.030	-0.130
	LEV	-0.001	0.004	-0.250	-0.001	0.005	-0.200	0.001	0.024	0.040
	AST	-0.001	0.005	-0.200	-0.002	0.006	-0.330	0.019	0.031	0.610
	Constant	0.025	0.020	1.250	0.020	0.030	0.670	-0.150	0.150	-1.000
Robust regression	F-stat/R ²	1.180	0.024		1.554	0.008		1.410	0.041	
	TCC	0.005	0.001	5.110***	0.004	0.001	4.660***	0.015	0.003	5.470***
	EBC	0.034	0.006	5.670***	0.015	0.004	7.750***	0.072	0.014	5.140***
	PPS	-0.004	0.001	-4.240***	-0.003	0.001	-6.227***	0.014	0.003	4.670***
	ROA	0.009	0.003	3.000***	0.007	0.002	3.500***	0.019	0.004	4.750***
	ROE	0.006	0.002	3.570***	0.005	0.001	5.250***	0.012	0.003	4.870***
	LEV	0.004	0.001	4.870***	0.004	0.001	4.221***	0.105	0.018	5.830***
	AST	0.007	0.002	3.680***	0.006	0.002	3.858***	0.058	0.012	4.830***
Fixed ef- fects re- gression	Constant	0.052	0.015	3.470***	0.065	0.015	4.354***	-0.425	0.095	-4.470***
	F-stat/R ²	6.700	0.335		7.260	0.374		11.280	0.455	
	TCC	0.000	0.001	0.350	0.001	0.001	0.960	-0.004	0.007	-0.570
	EBC	-0.007	0.002	-2.950***	-0.009	0.003	-1.820**	0.021	0.015	1.400
	PPS	-0.001	0.001	-0.650	-0.001	0.001	-0.520	0.003	0.006	0.500
	ROA	0.002	0.004	0.560	0.002	0.005	0.440	-0.011	0.024	-0.460
	ROE	0.003	0.004	0.700	0.001	0.005	0.230	-0.005	0.023	-0.220
	LEV	-0.002	0.003	-0.630	-0.003	0.004	-0.760	0.002	0.018	0.110
	AST	-0.003	0.004	-0.630	-0.004	0.005	-0.750	0.019	0.025	0.760
	Constant	0.037	0.015	1.370	0.049	0.020	2.410**	-0.085	0.096	-0.890
	F-stat/ R ^{overall}	2.028*	0.134		1.850*	0.130		2.930***	0.173	

Note: Asterisks denote significance at the *** - 0.01, ** - 0.05, and * - 0.10 level.

In summary, the study's main approach should be robust regressions as they can overcome explained concerns with OLS and heteroskedasticity while providing stable and interpretable results [8, 14]. Our findings provided evidence that performance-based compensation for the CEO drives EM in GCC firms, while performance pay sensitivity can, if constructed carefully, limit accrual-based EM. These findings provide important implications for policy, regulators, and boards in the GCC, who need to design compensation con-

tracts, recognising the importance of managerial incentives for long-term firm value as well as establishing governance and monitoring processes to limit opportunistic EM [10, 12]. Future research could progress this work with dynamic panel approaches or using instrumental variables to diffuse endogeneity issues and consider the moderating role of governance structures for managing compensation-EM interactions.

6. Conclusion

This research examined the relationship between CEO pay structures and earnings management practices (EM) in firms in the GCC region based on performance-related and fixed components of CEO pay. Using three earnings management proxies, the Standard Jones Model (SJM), the Modified Jones Model (MJM), and Peasnell et al.'s (PYY) model—together with three different measures of CEO pay (Total CEO Compensation (TCC), Equity-Based Compensation (EBC), and Pay-Performance Sensitivity (PDA), the study illustrated more complex interactions than originally anticipated. The robust regression results indicated a significant positive relationship between performance-related CEO pay and earnings management, supporting Hypothesis (H1) while fixed CEO pay had a minimal and possibly negative relationship with EM, providing partial support for (H2).

The positive relationship TCC and EBC have with EM highlights implications for agency theory in that performance-related pay give managers incentives to manage earnings upwards [2, 13]. This study's results demonstrate the important impact of compensation designing has on managerial behaviour and the quality of financial reporting at GCC firms. In addition, the mixed findings for PPS also highlight the challenges of incentive alignment: even though pay-performance sensitivities may reduce managers' incentives to engage in accrual manipulation, they increase managers' incentives to engage in real earnings management. Compensation contracts could be carefully constructed for future research [8, 17].

These findings position policy and governance considerations into perspective, which suggest that regulators and firms' boards in the GCC area should be diligent when establishing a balance between CEO incentive structures. If equity-based or performance-based pay become heavily weighted to the neglect of governance oversight measures, it can increase opportunistic earnings management, as described previously. Implementing sound monitoring measures, such as stronger audit committees and independent board composition, can assist in reducing EM risk while providing a pathway for managing CEO incentives to align with sustainable firm value creation [3, 18]. Policymakers may also think about establishing recommendations for firms to provide improvements in transparency and disclose CEO components of compensation that would enhance market discipline.

While we have achieved a few advancements in the synthesis of EM proxies, and compensation metrics and mitigators, our research is nonetheless constrained by several limitations. The use of secondary financial data is ubiquitous and prevents us from capturing the wide array of potential dimensions of managerial opportunism and compensation complexity. Additionally, while robust and fixed-effects regressions mitigate some endogeneity, we can't fully reject the concerns with omitted variable bias, and potential reverse causality issues. Furthermore, the institutional and regulatory contexts vary widely within the GCC and may hinder the

generalizability of the results across the GCC members states. Future research should investigate longitudinal studies or dynamic panel models to help further illuminate the causal relationship and the time variance of CEO compensation relationships with EM behaviors. Qualitative methods through interviews with corporate executives and auditors could help elucidate further the motives underlying CEO compensation and governance interactions. In addition, including that moderating factors (i.e., board characteristics, institutional ownership, and political connections) would enrich our understanding of the compensation- EM nexus in emerging and transitional markets such as the GCC [15, 20].

To sum up, the research reported in this paper supports the empirically growing literature that the structure of CEO compensation affects earnings management in GCC firms. The research also emphasizes how important it is to design an appropriate level of compensation arrangements that align (and not promote) management accounting manipulation. Enhancing governance arrangements along with compensation arrangements can enhance financial reporting quality and reduce the potential for earnings management, thus enhancing investor confidence in GCC capital markets. We expect our findings to assist regulators, policymakers, and practitioners, in enhancing their companies transparency and accountability in the evolution of corporate governance in the GCC region.

Abbreviations

CEO	Chief Executive Officer
GCC	Gulf Cooperation Council
UAE	United Arab Emirates
CSR	Corporate Social Responsibility
CFO	Chief Financial Officer
ESG	Environmental, Social, and Governance
EM	Earnings Management

Author Contributions

Amal Yamani is the sole author. The author read and approved the final manuscript.

Conflicts of Interest

There is no conflicts of interest.

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