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DO CEO AND EXECUTIVE COMPENSATION INFLUENCE BANK PROFITABILITY? COMPARATIVE EVIDENCE FROM ISLAMIC AND CONVENTIONAL BANKS

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ABSTRACT

This study examines the relationship between CEO compensation, executive compensation, and profitability in Pakistani conventional and Islamic banks. Using 156 bank-year observations from 32 banks during 2021–2025, the study employs pooled OLS, random effects, fixed effects, and two-step System GMM estimators. Profitability is measured through ROA, ROE, and NIM. The findings indicate that CEO compensation is positively associated with profitability in conventional banks but negatively associated with profitability in Islamic banks. Conversely, non-CEO executive compensation exhibits consistently negative associations with conventional-bank profitability and predominantly positive associations with Islamic-bank profitability. These findings highlight institutional differences in managerial remuneration and offer implications for bank governance and compensation policies.

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Introduction

The profitability of banking institutions is fundamental to financial stability, efficient financial intermediation, and sustainable economic development. As major intermediaries, banks mobilize savings, allocate financial resources, facilitate investment, and support economic activity. Consequently, identifying the determinants of bank profitability has remained a central concern in financial economics. Early studies establish the importance of bank-specific characteristics, market structure, and macroeconomic conditions in explaining profitability (Molyneux and Thornton, 1992; Berger, 1995; Miller and Noulas, 1997; Demirgüç-Kunt and Huizinga, 1999). Subsequent research identifies capitalization, asset quality, liquidity, operational efficiency, competition, and economic

conditions as important profitability determinants across different banking systems (Athanasoglou et al., 2008; García-Herrero et al., 2009; Dietrich and Wanzenried, 2011; Trujillo-Ponce, 2013; Djalilov and Piesse, 2016; Saona, 2016; Sinha and Sharma, 2016; Tan, 2016). Furthermore, interest margins, inflation, and macroeconomic uncertainty influence bank earnings through changes in intermediation costs, lending conditions, and financial risks (Ho and Saunders, 1981; Perry, 1992; Tan and Floros, 2012). Although these studies provide substantial insights into conventional profitability determinants, the role of managerial compensation as an internal governance mechanism warrants further investigation.

Managerial compensation represents an important corporate governance instrument because remuneration arrangements influence executive incentives, strategic decisions, operational efficiency, and risk-taking behavior. Agency theory suggests that appropriately structured compensation can mitigate conflicts between shareholders and managers by aligning managerial interests with organizational objectives (Jensen and Meckling, 1976; Murphy, 1999). Conversely, managerial power theory argues that executives may influence remuneration decisions and obtain compensation that is not adequately justified by organizational performance (Bebchuk and Fried, 2003). Human capital theory and upper echelons theory provide complementary explanations, emphasizing that remuneration may reflect managerial expertise, professional competencies, and strategic decision-making capabilities (Becker, 1964; Hambrick and Mason, 1984). Empirical studies nevertheless offer mixed evidence. Houston and James (1995) examine CEO compensation and banking risk-taking incentives, while Hubbard and Palia (1995) demonstrate the importance of market discipline in executive pay–performance relationships. Ang et al. (2001, 2002) highlight the role of internal monitoring and identify differences between CEO compensation and remuneration received by other senior executives. Similarly, Demsetz and Saidenberg (1999) examine executive remuneration beyond the CEO position, while Matousek and Tzeremes (2016) investigate the relationship between CEO compensation and bank efficiency. More recently, Watto et al. (2023) report an insignificant compensation–performance relationship among Pakistani banks, whereas Castiglionesi and Zhao (2024) demonstrate that certain incentive arrangements may encourage excessive risk-taking and systemic vulnerability. These findings suggest that the relationship between managerial compensation and profitability remains theoretically and empirically inconclusive.

The coexistence of conventional and Islamic banking systems introduces an additional institutional dimension to compensation–profitability relationships. Although both systems undertake financial intermediation, they differ in financing mechanisms, governance requirements, and institutional objectives. Stakeholder theory emphasizes the importance of balancing shareholder interests with broader organizational responsibilities (Freeman, 1984), a perspective particularly relevant to Islamic banking institutions operating under Shariah-compliant principles. Beck et al. (2013) identify differences in the business models, efficiency, and stability of Islamic and conventional banks, while Moualhi et al. (2016) and Sun et al. (2017) demonstrate that profitability determinants may differ across banking systems. Recent compensation studies further reinforce the importance of institutional characteristics. Aljughaiman et al. (2024) examine CEO equity-based compensation, board structures, and financial performance in Middle Eastern and North African banks,

emphasizing the relevance of governance arrangements. Mamun et al. (2026) document heterogeneous relationships between CEO compensation and bank performance, including differences associated with banking models and economic conditions. Similarly, Risfandy and Hassan (2026) identify distinct associations between remuneration among different governance participants and risk-taking in Islamic banks. However, evidence directly distinguishing the profitability implications of CEO compensation from those of broader executive management remuneration across conventional and Islamic banks remains limited.

Pakistan provides a particularly relevant institutional setting for examining these relationships because conventional and Islamic banks operate within the same national regulatory and macroeconomic environment while maintaining distinct business models and governance requirements. Previous studies demonstrate that profitability in Pakistan's banking sector is influenced by bank-specific characteristics, credit risk, and macroeconomic conditions (Yao et al., 2018). Extending this evidence, Haris et al. (2019), using data from 26 Pakistani banks over 2007–2016, examine the relationships between corporate governance, political connections, and bank profitability. Their findings reveal that director compensation, board independence, and board composition are positively associated with profitability, whereas politically connected directors are associated with weaker financial performance. These findings establish the importance of remuneration and governance mechanisms in Pakistani banking institutions. Nevertheless, director compensation differs conceptually from CEO remuneration and aggregate non-CEO executive compensation, as directors primarily undertake governance and oversight responsibilities while executive management performs operational and strategic functions. Furthermore, Watto et al. (2023) investigate executive compensation in Pakistani banks but report an insignificant relationship with performance. Taken together, these studies leave unresolved whether CEO and non-CEO executive compensation exhibit distinct profitability relationships and whether these relationships differ between conventional and Islamic banking institutions.

This study contributes to the banking and corporate governance literature by distinguishing CEO compensation from aggregate non-CEO executive compensation and examining their respective associations with profitability across conventional and Islamic banks. Unlike studies focusing on general profitability determinants, director remuneration, or aggregate managerial compensation, the present research evaluates two distinct remuneration categories within a comparative banking framework. The analysis covers 32 Pakistani banks, comprising 26 conventional and six Islamic banks, over 2021–2025, yielding 156 bank-year observations. Using pooled ordinary least squares, random effects, fixed effects, and two-step System GMM estimators, the study examines profitability through return on assets (ROA), return on equity (ROE), and net interest margin (NIM). This approach extends earlier Pakistani evidence on corporate governance and remuneration (Haris et al., 2019; Watto et al., 2023) while contributing to the broader debate on managerial incentives and institutional differences in banking.

The empirical findings reveal contrasting compensation–profitability relationships across banking systems. CEO compensation is positively and predominantly significantly associated with ROA, ROE, and NIM in conventional banks but negatively associated with these profitability measures in

Islamic banks. Conversely, aggregate non-CEO executive compensation exhibits consistently negative associations with conventional-bank profitability and predominantly positive associations with Islamic-bank profitability. The combined-sample analysis generally reinforces the conventional-bank findings, although some estimates vary across specifications. These findings suggest that the financial implications of managerial remuneration depend on executive position and banking model, providing evidence relevant to agency theory, managerial power theory, and human capital perspectives. They also highlight the importance of considering institutional characteristics when designing and evaluating remuneration arrangements.

The remainder of this paper is organized as follows. Section 2 reviews the theoretical and empirical literature and develops the research hypotheses. Section 3 presents the sample, data sources, variable measurements, and estimation techniques. Section 4 reports the empirical findings, including descriptive statistics, diagnostic tests, regression estimates, and robustness analyses. Section 5 discusses the results in relation to existing literature and theoretical perspectives. Finally, Section 6 concludes the paper by outlining its practical implications, limitations, and directions for future research.

Literature review and hypotheses development

Theoretical Foundations of Managerial Compensation and Bank Profitability

The relationship between managerial compensation and bank profitability has attracted considerable scholarly attention because remuneration arrangements influence managerial incentives, organizational decision-making, risk-taking, and financial performance. Agency theory (Jensen and Meckling, 1976) provides a fundamental explanation of this relationship by emphasizing conflicts of interest between shareholders and managers arising from the separation of ownership and control. According to this perspective, appropriately designed compensation contracts can reduce agency costs by aligning managerial interests with shareholders' objectives. Murphy (1999) further argues that performance-sensitive remuneration can encourage executives to pursue organizational objectives, thereby strengthening managerial accountability and financial outcomes. However, the effectiveness of compensation depends not merely on remuneration levels but also on incentive structures, performance measurement, monitoring mechanisms, and institutional characteristics.

An alternative explanation emerges from managerial power theory, which suggests that executives may influence remuneration decisions and obtain compensation exceeding their contribution to organizational performance (Bebchuk and Fried, 2003). Under such circumstances, higher compensation may increase operating costs, encourage managerial entrenchment, and weaken financial performance. This perspective is particularly relevant to banking institutions, where information asymmetry, complex financial products, and risk-taking incentives complicate the assessment of managerial contributions. Castiglionesi and Zhao (2024) demonstrate theoretically that incentive compensation based excessively on relative performance evaluation can encourage inefficient diversification, leverage, and systemic risk. Their findings challenge the assumption that incentive-based remuneration necessarily promotes desirable banking outcomes. Consequently,

agency theory and managerial power theory offer competing predictions regarding the relationship between managerial compensation and profitability.

Human capital theory (Becker, 1964) and upper echelons theory (Hambrick and Mason, 1984) provide additional explanations for compensation–performance relationships. Human capital theory suggests that higher remuneration may reflect executives' accumulated knowledge, managerial expertise, and specialized competencies, which contribute to organizational productivity. Similarly, upper echelons theory emphasizes that organizational outcomes partly reflect the experiences, values, and cognitive characteristics of senior executives. These perspectives suggest that compensation may be positively associated with profitability when it reflects the recruitment and retention of capable managers. Nevertheless, compensation levels may also capture organizational size, managerial hierarchy, and institutional complexity rather than managerial effectiveness alone.

The institutional characteristics of conventional and Islamic banks further complicate these relationships. Conventional banks generally operate within interest-based financial intermediation frameworks, whereas Islamic banks follow Shariah-compliant financing principles and additional governance requirements. Stakeholder theory (Freeman, 1984) suggests that organizational decisions should accommodate the interests of multiple stakeholders rather than exclusively maximizing shareholder returns. This perspective is particularly relevant to Islamic banking, where contractual fairness, ethical considerations, and Shariah compliance are integral to institutional governance. Beck et al. (2013) document important differences in the business models, efficiency, and stability of Islamic and conventional banks, suggesting that institutional characteristics may influence the effectiveness of managerial incentives. Therefore, compensation–profitability relationships should be evaluated separately for conventional and Islamic banking institutions rather than assumed to be uniform across banking systems.

CEO Compensation and Bank Profitability

CEO compensation represents an important corporate governance mechanism because chief executives exercise substantial influence over strategic decisions, resource allocation, financial policies, and risk management. From an agency-theoretical perspective, competitive and performance-linked CEO remuneration can strengthen managerial motivation and align executive decisions with organizational objectives. Conversely, managerial power theory predicts that excessive or poorly structured remuneration may encourage opportunistic behavior, weaken accountability, and adversely affect profitability. These competing explanations suggest that the relationship between CEO compensation and bank performance is theoretically ambiguous and may depend on institutional conditions.

Early empirical studies provide substantial evidence concerning CEO compensation and banking performance. Hubbard and Palia (1995), examining 147 US banks, find that CEO remuneration and pay–performance sensitivity are stronger in more competitive markets for corporate control, suggesting that market discipline influences compensation arrangements. Houston and James (1995) investigate CEO compensation and risk-taking incentives in banking, emphasizing the importance

of remuneration structures in understanding managerial behavior. Ang et al. (2002), using data from 166 US banks, document substantial differences between CEO compensation and remuneration for other senior executives. Their findings indicate that CEOs receive higher compensation and exhibit greater pay–performance sensitivity, reinforcing the importance of distinguishing CEO remuneration from broader executive compensation. Collectively, these studies support the argument that CEO compensation can function as an incentive-alignment mechanism, although its effectiveness depends on governance arrangements and compensation design. Mamun et al. (2026), examining 28 listed banks with 420 firm-year observations, find a negative relationship between CEO compensation and accounting- and market-based performance. However, the relationship becomes positive during the COVID-19 period, suggesting that economic conditions influence compensation effectiveness. The authors also identify differences in board compensation outcomes between conventional and Islamic banks. Their findings provide direct support for investigating institutional heterogeneity in compensation–performance relationships.

Aljughaiman et al. (2024), examining 65 conventional and Islamic banks across 11 Middle Eastern and North African countries, find that effective board structures can strengthen the relationship between CEO equity-based incentives and financial performance. They also report differences in CEO compensation arrangements between Islamic and conventional banks, supporting the importance of governance and institutional context. More recent research questions whether stronger managerial incentives consistently produce favorable banking outcomes. Watto et al. (2023), examining 20 Pakistani banks over 2011–2021, find no statistically significant relationship between aggregate compensation and bank performance or risk. Although their study does not isolate CEO compensation in the same manner as the present analysis, its findings challenge the assumption that greater managerial remuneration necessarily translates into improved financial performance. Castiglionesi and Zhao (2024) further demonstrate that incentive contracts may encourage excessive leverage and systemic risk when relative performance evaluation receives disproportionate emphasis. These findings indicate that compensation incentives can generate unintended consequences, particularly when short-term performance objectives conflict with long-term financial stability.

Recent evidence also highlights the importance of institutional governance. Risfandy and Hassan (2026) investigate excess remuneration among CEOs, executives, directors, and Shariah supervisory board members in Islamic banks. Their findings indicate that excess remuneration among directors and Shariah supervisory board members is associated with lower risk-taking, whereas excess remuneration among CEOs and executives does not exhibit a significant risk-related effect. Although their dependent variable concerns risk-taking rather than profitability, the study demonstrates that remuneration outcomes differ across governance positions and that Islamic banking institutions operate within distinctive incentive and monitoring structures. This evidence strengthens the argument that CEO compensation should be examined independently from other managerial remuneration and that its relationship with financial outcomes may vary across banking systems.

The contrasting theoretical predictions and empirical findings reveal that CEO compensation may either improve profitability through stronger incentive alignment and managerial effectiveness or undermine profitability through excessive remuneration, agency conflicts, and inappropriate risk-taking. Furthermore, institutional differences between conventional and Islamic banks may influence the direction and magnitude of these relationships. Accordingly, the first hypothesis is formulated as follows:

H1: CEO compensation (CEOC) is significantly associated with bank profitability in conventional and Islamic banking institutions.

Executive Compensation and Bank Profitability

Executive compensation, excluding CEO remuneration, constitutes another important dimension of managerial incentive arrangements. Senior executives are responsible for implementing organizational strategies, managing operational activities, monitoring financial risks, and coordinating departmental decisions. Consequently, their remuneration may influence profitability through managerial effort, organizational efficiency, and the effectiveness of strategic implementation. Agency theory suggests that appropriately structured executive compensation can reduce conflicts between shareholders and management by rewarding performance-oriented behavior (Jensen and Meckling, 1976). Similarly, human capital theory (Becker, 1964) suggests that higher remuneration may facilitate the recruitment and retention of experienced executives whose specialized capabilities contribute to organizational performance.

Upper echelons theory (Hambrick and Mason, 1984) further emphasizes that organizational outcomes reflect the collective characteristics and decisions of senior management. From this perspective, executive compensation may be positively associated with profitability when it reflects managerial competence, effective coordination, and organizational productivity. However, managerial power theory (Bebchuk and Fried, 2003) provides an alternative explanation, suggesting that remuneration may reflect executive influence, weak oversight, or inefficient compensation arrangements. Excessive executive remuneration can increase administrative expenditure without generating corresponding improvements in profitability. Therefore, the theoretical relationship between executive compensation and financial performance remains conditional on compensation design, governance quality, and managerial effectiveness.

Empirical research highlights the importance of examining executive remuneration beyond the CEO position. Ang et al. (2002) identify a two-tier compensation structure in US banks, distinguishing CEOs from other senior executives. Their findings indicate that non-CEO executives exhibit relatively similar compensation arrangements and pay–performance sensitivities, whereas CEOs receive substantially greater performance-contingent remuneration. This distinction suggests that aggregating CEO and non-CEO remuneration may conceal differences in managerial responsibilities, incentive structures, and financial outcomes. Ang et al. (2001) also demonstrate theoretically that incentive compensation can strengthen mutual monitoring among senior executives, while banking regulation can constrain the extent of incentive-based remuneration.

These studies provide an important foundation for examining executive compensation separately from CEO compensation.

Evidence from emerging banking markets remains inconclusive. Watto et al. (2023) report an insignificant relationship between aggregate compensation and profitability among Pakistani banks, suggesting that remuneration expenditure does not automatically translate into superior financial outcomes. Their findings also raise questions about whether compensation arrangements adequately reflect individual managerial contributions or institutional performance. Castiglionesi and Zhao (2024) offer a complementary theoretical explanation by demonstrating that managerial incentives can encourage excessive risk-taking when compensation contracts emphasize relative performance. Although their analysis focuses on financial stability rather than accounting profitability, it highlights the possibility that remuneration arrangements may create organizational costs that offset potential productivity gains.

The institutional environment of Islamic banking provides further reasons to expect heterogeneous executive compensation outcomes. Islamic banks require managerial expertise in Shariah-compliant financial products, financing structures, regulatory requirements, and risk management. From human capital and upper echelons perspectives, remuneration that attracts and retains executives with these competencies may support operational effectiveness and profitability. However, stakeholder theory suggests that remuneration decisions should also remain consistent with broader governance responsibilities and institutional objectives. Risfandy and Hassan (2026) find that excess remuneration among Islamic-bank executives is not significantly associated with risk-taking, whereas remuneration among directors and Shariah supervisory board members exhibits different effects. These findings indicate that the consequences of compensation vary across managerial and supervisory positions, reinforcing the importance of distinguishing executive remuneration from other governance-related payments.

An additional measurement consideration arises because aggregate executive compensation reflects both remuneration levels and the number of executives receiving compensation. Higher aggregate expenditure may therefore indicate greater managerial expertise and organizational capacity, but it may also capture larger management teams, administrative complexity, and higher operating costs. Consequently, a positive compensation–profitability relationship would be consistent with human capital accumulation and effective incentive alignment, whereas a negative relationship could reflect managerial inefficiency, excessive remuneration, or weak governance. Given these competing explanations and the institutional differences between conventional and Islamic banks, the second hypothesis is developed as follows:

H2: Non-CEO executive compensation (EXC) is significantly associated with bank profitability in conventional and Islamic banking institutions.

Data and Methodology

Sample and Data

This study examines the relationship between managerial compensation and bank profitability in Pakistan from 2021 to 2025. The sample comprises 32 banks, including 26 conventional and six Islamic banks, yielding 156 bank-year observations. Bank-specific financial data were obtained from the State Bank of Pakistan (SBP), while CEO compensation (CEOC) and executive compensation (EXC) data were manually collected from the notes to the financial statements disclosed in annual reports available on the respective banks' official websites. Macroeconomic data, including economic growth and inflation, were retrieved from the Pakistan Economic Survey, published by the Ministry of Finance, Government of Pakistan. The resulting unbalanced panel comprises 126 observations for conventional banks and 30 observations for Islamic banks, enabling a comparative assessment of compensation–profitability relationships across the two banking systems.

Variables Measurement

The study employs three widely recognized indicators of bank profitability as dependent variables: return on assets (ROA), return on equity (ROE), and net interest margin (NIM). The selection of these indicators follows established empirical studies examining the determinants of banking profitability across developed and emerging economies (Demirgüç-Kunt and Huizinga, 1999; Athanasoglou et al., 2008; Dietrich and Wanzenried, 2011; Trujillo-Ponce, 2013; Tan, 2016; Yao et al., 2018). ROA is measured as profit after tax divided by total assets, reflecting the efficiency with which banks utilize their assets to generate earnings (Dietrich and Wanzenried, 2011; Tan, 2016; Yao et al., 2018). ROE is calculated as profit after tax relative to total shareholders' equity, capturing the returns generated on shareholders' invested capital (Trujillo-Ponce, 2013; Tan, 2016; Yao et al., 2018). NIM is measured as net interest income divided by average earning assets, indicating the profitability of banks' core financial intermediation activities (Ho and Saunders, 1981; Demirgüç-Kunt and Huizinga, 1999; Saona, 2016; Yao et al., 2018). For Islamic banks, the corresponding net income generated from Shariah-compliant financing and investment activities is employed to facilitate comparability with conventional banks. The inclusion of Islamic and conventional banking institutions is supported by previous comparative investigations highlighting differences in banking business models, financial intermediation, and profitability determinants (Beck et al., 2013; Moualhi et al., 2016; Sun et al., 2017).

The primary independent variables are CEO compensation (CEOC) and executive compensation (EXC). Executive remuneration constitutes an important corporate governance mechanism through which managerial incentives, strategic decision-making, and organizational performance may be influenced (Houston and James, 1995; Ang et al., 2002; Matousek and Tzeremes, 2016; Watto et al., 2023). CEOC is measured as the natural logarithm of total annual remuneration paid to the chief executive officer, including basic salary, bonuses, allowances, and other monetary benefits. EXC is measured as the natural logarithm of total annual remuneration paid to executive management, excluding the CEO. The distinction between CEO remuneration and compensation paid to other senior executives is consistent with the broader banking compensation literature, particularly Ang et al. (2002), which examines remuneration arrangements across top management teams. The logarithmic transformation is applied to reduce distributional skewness and the influence of extreme remuneration values while accommodating differences in compensation levels across banking

institutions. Both CEO compensation (CEOC) and executive compensation (EXC) are incorporated simultaneously into the econometric specifications to examine their respective associations with bank profitability while controlling for each other's influence. This joint specification enables the analysis to distinguish the relationship between CEO remuneration and profitability from that of aggregate non-CEO executive compensation, thereby providing a more comprehensive assessment of managerial remuneration within banking institutions.

To account for differences in bank characteristics and financial risk exposure, the study incorporates five bank-specific control variables: bank size (SIZE), solvency (SOLV), liquidity (LIQ), financial structure (FS), and credit risk (CR). The inclusion of these determinants is consistent with previous investigations of bank profitability (Athanasoglou et al., 2008; García-Herrero et al., 2009; Dietrich and Wanzenried, 2011; Trujillo-Ponce, 2013; Djalilov and Piesse, 2016; Tan, 2016; Yao et al., 2018). Bank size (SIZE) is measured as the natural logarithm of total assets, capturing differences in operational scale, market presence, and potential economies of scale (Molyneux and Thornton, 1992; Athanasoglou et al., 2008; Tan, 2016; Yao et al., 2018). Solvency (SOLV) is calculated as total shareholders' equity divided by total assets, reflecting bank capitalization and the capacity to absorb financial losses (Berger, 1995; Trujillo-Ponce, 2013; Tan, 2016; Yao et al., 2018). Well-capitalized banks may benefit from lower funding costs and greater financial resilience, although the relationship between capitalization and profitability may vary across banking environments.

Liquidity (LIQ) is measured as net advances after provisions divided by total assets, with equivalent financing assets considered for Islamic banks. This measurement follows the operationalization adopted by Yao et al. (2018) and is related to the lending and asset-allocation measures examined in earlier banking studies (Demirgüç-Kunt and Huizinga, 1999; Trujillo-Ponce, 2013). A higher ratio indicates that a greater proportion of bank assets is allocated to lending or financing activities, potentially increasing income generation while reducing the proportion of assets available in more liquid forms. Accordingly, although the variable retains the notation LIQ, its empirical interpretation reflects lending intensity rather than a direct measure of liquid asset holdings. Financial structure (FS) is measured as total customer deposits divided by total shareholders' equity, consistent with the measurement employed by Yao et al. (2018). This ratio captures the relative importance of deposit-based funding compared with equity financing and reflects differences in banks' funding composition. The inclusion of funding-related characteristics is also supported by García-Herrero et al. (2009) and Dietrich and Wanzenried (2011).

Credit risk (CR) is measured as total loan-loss provisions divided by gross advances, reflecting the extent of provisioning relative to the lending portfolio. This indicator is closely related to the loan-loss provisioning measures employed in previous studies of bank profitability (Miller and Noulas, 1997; Dietrich and Wanzenried, 2011; Lee et al., 2015; Yao et al., 2018). Higher provisioning ratios may indicate greater exposure to deteriorating asset quality and expected credit losses, potentially constraining bank profitability. For Islamic banks, corresponding financing impairment provisions and financing receivables are employed to maintain measurement consistency across banking systems. The adopted denominator is total advances, whereas some earlier studies, including Yao et al. (2018), use net advances; this distinction is maintained in constructing the study variables.

Furthermore, two macroeconomic variables, economic growth (ECG) and inflation (INF), are incorporated to control for changes in the external economic environment. The importance of macroeconomic conditions in explaining bank profitability is well documented in the banking literature (Demirgüç-Kunt and Huizinga, 1999; Athanasoglou et al., 2008; Dietrich and Wanzenried, 2011; Trujillo-Ponce, 2013; Djalilov and Piesse, 2016; Yao et al., 2018). Economic growth (ECG) is measured as the annual percentage growth rate of real gross domestic product, capturing changes in economic activity, financing demand, and borrowers' repayment capacity (Athanasoglou et al., 2008; Sinha and Sharma, 2016; Tan, 2016; Yao et al., 2018). Inflation (INF) is measured as the annual percentage change in the Consumer Price Index, reflecting variations in the general price level that may influence operating expenses, financing costs, and interest margins (Perry, 1992; Tan and Floros, 2012; Djalilov and Piesse, 2016; Yao et al., 2018). The operational definitions and measurements of all variables are summarized in Table 1.

Table 1: Measurements of variables.

Dependent variables		
Return on assets	ROA	Profit after tax divided by total assets
Return on equity	ROE	Profit after tax divided by total shareholders' equity
Net Interest Margin	NIM	Net interest income divided by average earning assets. For Islamic banks, the equivalent net financing/investment income measure is used.
Independent variables		
CEO Compensation	CEOC	Natural logarithm of the total annual remuneration paid to the CEO, including basic salary, bonuses, allowances, and other monetary benefits.
Executive Compensation	EXC	Natural logarithm of the total annual remuneration paid to executive management, excluding the CEO.
Control variables		
Bank size	SIZE	Natural log of total assets
Solvency	SOLV	Total equity divided by total assets
Liquidity	LIQ	Advances net of provisions divided by total assets. For Islamic banks, financing receivables and equivalent financing assets are included.
Financial Structure	FS	Total customer deposits divided by total equity
Credit Risk	CR	Total loan loss provisions divided by gross advances
Economic Growth	ECG	Annual percentage growth rate of real gross domestic product
Inflation	INF	Annual percentage change in the Consumer Price Index

Econometric model and methodology

This study investigates the relationship between managerial compensation and bank profitability in conventional and Islamic banking institutions. Bank profitability is measured using return on assets (ROA), return on equity (ROE), and net interest margin (NIM). CEO compensation (CEOC) and executive compensation (EXC) constitute the principal explanatory variables and are measured as the natural logarithms of their respective annual remuneration. Both compensation variables are incorporated simultaneously into each econometric specification to estimate their individual associations with profitability while controlling for the other remuneration category. This approach enables the identification of distinct relationships between CEO remuneration, broader executive compensation, and bank profitability. The models further incorporate bank size (SIZE), solvency (SOLV), liquidity (LIQ), financial structure (FS), and credit risk (CR) as bank-specific control variables, while economic growth (ECG) and inflation (INF) account for macroeconomic conditions.

The baseline econometric specifications is expressed as follows:

$$PROF_{it} = \beta_0 + \beta_1 CEOC_{it} + \beta_2 EXC_{it} + \beta_3 SIZE_{it} + \beta_4 SOLV_{it} + \beta_5 LIQ_{it} + \beta_6 FS_{it} + \beta_7 CR_{it} + \beta_8 ECG_t + \beta_9 INF_t + \mu_i + \varepsilon_{it} \quad (01)$$

In Equation (1), PROF represents bank profitability, measured alternatively by ROA, ROE, and NIM, for bank i in year t. CEOC denotes the natural logarithm of CEO remuneration, while EXC represents the natural logarithm of aggregate executive management remuneration excluding the CEO. SIZE is the natural logarithm of total assets, SOLV represents total equity relative to total assets, LIQ measures net advances after provisions relative to total assets, FS denotes customer deposits relative to total equity, and CR represents loan-loss provisions relative to gross advances. ECG and INF capture annual real GDP growth and consumer price inflation, respectively. The term μ_i represents unobserved bank-specific effects, while ε_{it} denotes the idiosyncratic error term. Both compensation variables enter each regression simultaneously, and the model is estimated separately for each profitability indicator and banking subsample.

Furthermore, a dynamic panel specification estimated using Two-Step System Generalized Method of Moments (System GMM) is employed to account for profitability persistence and address potential endogeneity under the relevant moment conditions and instrument validity assumptions. The System GMM estimator is applied to the conventional-bank and combined-bank samples, whereas the Islamic-bank subsample is analyzed using pooled OLS, random effects, and fixed effects estimators because its limited cross-sectional dimension of six banks makes dynamic GMM estimation unsuitable. To explore differences in compensation–profitability relationships across banking systems, the study estimates separate models for conventional and Islamic banks and conducts supplementary estimations using the combined sample. These specifications facilitate a comparison of coefficient directions, magnitudes, and statistical significance across banking institutions. However, differences between subsample coefficients are interpreted descriptively rather than as formal statistical evidence of heterogeneous effects. Appropriate diagnostic tests are performed to evaluate model specification, instrument validity, serial correlation, and the robustness of the empirical findings.

The empirical investigation employs pooled ordinary least squares (POLS), random effects (RE), fixed effects (FE), and two-step system generalized method of moments (System GMM). POLS provides preliminary estimates of the compensation–profitability relationship by pooling observations across banks and years. However, the estimator does not explicitly control for unobserved bank-specific heterogeneity, potentially generating biased estimates when omitted institutional characteristics are correlated with the explanatory variables. Accordingly, RE and FE estimators are employed to account for differences across banking institutions. The RE estimator assumes that unobserved bank-specific effects are uncorrelated with the regressors, whereas FE permits correlation between time-invariant bank characteristics and the explanatory variables. The Breusch–Pagan Lagrange multiplier test is used to assess the relevance of random effects relative to pooled OLS, while the Hausman specification test, or a suitable robust alternative, is employed to evaluate the RE orthogonality assumption. Bank-clustered robust standard errors are considered to account for heteroskedasticity and within-bank serial correlation.

Despite their advantages, conventional panel estimators may not adequately address endogeneity arising from reverse causality, simultaneity, and omitted time-varying factors. Executive compensation and bank profitability may be jointly determined, as remuneration arrangements can shape managerial incentives and strategic decisions, while more profitable banks may offer higher compensation packages. Furthermore, bank profitability may exhibit dynamic persistence because current performance is influenced by previous financial outcomes. To accommodate these concerns, the analysis extends the static specifications using two-step System GMM, developed by Arellano and Bover (1995) and Blundell and Bond (1998), building on the dynamic panel framework of Arellano and Bond (1991).

The dynamic specifications are formulated as follows:

$$PROF_{it} = \beta_0 + \alpha PROF_{i,t-1} + \beta_1 CEOC_{it} + \beta_2 EXC_{it} + \beta_3 SIZE_{it} + \beta_4 SOLV_{it} + \beta_5 LIQ_{it} + \beta_6 FS_{it} + \beta_7 CR_{it} + \beta_8 ECG_t + \beta_9 INF_t + \mu_i + \varepsilon_{it} \quad (02)$$

In Equation (2), $PROF_{i,t-1}$ represents the one-period lagged profitability measure, while ρ denotes its estimated coefficient and captures the degree of profitability persistence. The inclusion of lagged profitability accounts for the dynamic adjustment of bank performance, while the System GMM framework permits the use of appropriately lagged variables as internal instruments for regressors classified as endogenous or predetermined. By combining equations in first differences and levels, System GMM can improve estimation efficiency relative to difference GMM under the additional moment restrictions required for the levels equation. Nevertheless, its consistency depends on the validity of the instrument set and the underlying assumptions concerning the error process and initial conditions.

The two-step estimator is implemented using finite-sample-corrected robust standard errors following Windmeijer (2005). To mitigate instrument proliferation, the instrument matrix is restricted using appropriate lag limits and collapsed instruments where necessary. The classification of regressors as endogenous, predetermined, or strictly exogenous is guided by economic reasoning

and the assumed timing of the relationships. The suitability of System GMM is assessed in relation to the panel dimensions, particularly the number of cross-sectional units relative to the time dimension.

Findings

Descriptive statistics

Table 2 presents the descriptive statistics for the study variables based on 156 bank-year observations. The profitability indicators exhibit considerable variation, with ROA recording a mean of −1.669 and a standard deviation of 29.823, while ROE and NIM report mean values of 16.174 and 0.043, respectively. CEO compensation (CEOC) and executive compensation (EXC) have mean values of 9.827 and 12.553, with standard deviations of 1.212 and 1.624, indicating greater dispersion in aggregate executive remuneration. Among the bank-specific characteristics, bank size (SIZE) records a mean of 20.191, while solvency (SOLV) exhibits substantial variability. Liquidity (LIQ), financial structure (FS), and credit risk (CR) also vary across the sampled institutions, reflecting differences in lending intensity, funding composition, and provisioning exposure. The macroeconomic variables, economic growth (ECG) and inflation (INF), report mean values of 0.078 and 0.159, respectively. The substantial dispersion in ROA and SOLV reflects extreme but verified observations in the original banking data. These observations are retained to preserve the financial characteristics of the sampled institutions, including episodes of exceptionally weak profitability and capitalization. Nevertheless, their potential influence on the estimated relationships should be considered when interpreting the regression results. Overall, the descriptive statistics reveal substantial heterogeneity across the sampled banks and support the inclusion of bank-specific and macroeconomic controls in the subsequent empirical analysis.

Table 2: Summary of descriptive statistics.

	Obs.	Mean	SD	Min	Max
ROA	156	-1.669	29.823	-370.7	5.00
ROE	156	16.174	23.163	-129.8	92.5
NIM	156	0.043	0.033	-0.050	0.153
CEOC	156	9.827	1.212	6.400	12.415
EXC	156	12.553	1.624	9.720	16.167
SIZE	156	20.191	1.600	13.999	23.259
SOLV	156	1.429	66.714	-816.9	42.400
LIQ	156	28.574	12.280	0	64.100
FS	156	10.886	6.817	-9.4	46.200
CR	156	11.572	15.886	0	91.400
ECG	156	0.078	0.097	-0.021	0.262
INF	156	0.159	0.091	0.049	0.292

Pre-estimation tests

Table 3 reports the panel unit-root test results for the study variables. The reported statistics reject the unit-root null hypothesis at conventional significance levels for ROA, ROE, NIM, CEOC, EXC, SIZE, SOLV, LIQ, FS, CR, and ECG. In contrast, the test does not reject the unit-root null for inflation (INF) at levels ($p = 0.399$), although the first-difference result is statistically significant. These findings suggest differences in the reported stationarity properties of the variables. However, given the relatively short sample period of 2021–2025, the results should be interpreted cautiously. In particular, ECG and INF represent national macroeconomic series that take the same value for every bank in a given year; therefore, their stationarity cannot be established reliably by treating repeated bank-level observations as independent macroeconomic time-series information.

Table 3: Unit root test.

	Level: χ^2	P-values	First Diff.: χ^2	P-values	Stationarity
ROA	143.294	0.000	130.798	0.000	I(0)
ROE	213.273	0.000	201.895	0.000	I(0)
NIM	87.339	0.028	185.271	0.000	I(0)
CEOC	367.390	0.000	334.765	0.000	I(0)
EXC	160.073	0.000	310.650	0.000	I(0)
SIZE	291.994	0.000	262.372	0.000	I(0)
SOLV	212.115	0.000	270.287	0.000	I(0)
LIQ	381.945	0.000	448.750	0.000	I(0)
FS	175.148	0.000	221.791	0.000	I(0)
CR	125.565	0.000	341.337	0.000	I(0)
ECG	192.327	0.000	213.170	0.000	I(0)
INF	209.247	0.399	178.403	0.000	I(1)

Table 4 presents the Pearson correlation matrix and variance inflation factors (VIFs) for the study variables. CEO compensation (CEOC) exhibits a positive and statistically significant correlation with return on equity (ROE) ($r = 0.175$), whereas executive compensation (EXC) is negatively and significantly correlated with net interest margin (NIM) ($r = -0.248$). The correlation between CEOC and EXC is positive and moderate ($r = 0.481$), indicating that CEO and non-CEO executive remuneration tend to move in the same direction without exhibiting an excessively strong linear relationship. Among the control variables, credit risk (CR) is negatively and significantly correlated with ROA, ROE, and NIM, consistent with the importance of asset quality in determining bank profitability (Athanasoglou et al., 2008; Yao et al., 2018). Furthermore, ROA exhibits a moderate positive correlation with solvency (SOLV) ($r = 0.592$), suggesting that better-capitalized banks tend to report higher asset profitability. The remaining correlations among explanatory variables do not indicate exceptionally strong pairwise relationships. The VIF values range from 1.05 to 3.20, remaining below commonly used diagnostic thresholds and suggesting that severe multicollinearity is unlikely to undermine the joint estimation of CEO and executive compensation (O'Brien, 2007). Overall, the correlation analysis provides preliminary support for the inclusion of both remuneration variables in the same econometric specifications.

Table 4: Correlation matrix.

	ROA	ROE	NIM	CEOC	EXC	SIZE	SOLV	LIQ	FS	CR	ECG	INF	VIF
ROA	1.000												
ROE	-0.066	1.000											
NIM	0.273***	0.302***	1.000										
CEOC	-0.006	0.175**	-0.046	1.000									2.89
EXC	-0.032	0.067	-0.248***	0.481***	1.000								3.20
SIZE	0.339***	0.291***	-0.008	0.158**	0.243***	1.000							1.88
SOLV	0.592***	-0.124	0.301***	-0.027	-0.053	0.294***	1.000						1.48
LIQ	-0.076	0.091	0.088	-0.117	-0.098	0.216***	-0.094	1.000					1.31
FS	0.147*	-0.079	-0.112	0.156*	0.057	0.472***	0.113	0.263***	1.000				1.39
CR	-0.456***	-0.324***	-0.567***	0.022	0.141*	-0.490***	-0.479***	-0.342***	-0.307***	1.000			2.09
ECG	0.086	-0.060	0.066	0.010	0.037	0.061	0.085	-0.029	0.065	-0.010	1.000		1.05
INF	-0.105	0.113	0.176**	0.031	0.063	0.016	-0.112	-0.092	-0.058	0.080	0.162**	1.000	1.07

Note: Values in parentheses represent standard errors. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Main findings

Table 5 reports the effects of CEO compensation (CEOC) and executive compensation (EXC) on conventional-bank profitability using pooled OLS, random effects, fixed effects, and System GMM estimators. The results indicate that CEOC is positively associated with return on assets (ROA), with statistically significant coefficients across all four estimators (β = 0.298–0.872). Similarly, CEOC exhibits positive and significant coefficients for return on equity (ROE) in the POLS, RE, and GMM models (β = 0.445–0.605), while its coefficient remains positive but insignificant in the FE model. For net interest margin (NIM), CEOC demonstrates a consistently positive and statistically significant association across all specifications (β = 0.004–0.009). In contrast, EXC exhibits negative and statistically significant coefficients across all twelve specifications, indicating an inverse relationship between aggregate executive remuneration and conventional-bank profitability. Regarding the control variables, bank size (SIZE) and solvency (SOLV) generally exhibit positive and significant associations with ROA and ROE, whereas financial structure (FS) is positively associated with ROA but negatively associated with NIM. Credit risk (CR) predominantly exhibits negative coefficients, particularly in the ROE and NIM models. Inflation (INF) is positively associated with ROE and NIM in several specifications, while the effects of liquidity (LIQ) and economic growth (ECG) vary across estimators. The System GMM results indicate significant persistence in profitability, with lagged dependent-variable coefficients of 0.674, 0.962, and 0.957 for ROA, ROE, and NIM, respectively. The AR(2) test p-values (0.210, 0.549, and 0.507) indicate no evidence of second-order serial correlation, while the Hansen and Sargan tests do not reject the overidentifying restrictions. Overall, the findings reveal a predominantly positive association between CEO compensation and conventional-bank profitability, whereas executive compensation exhibits a consistently negative relationship across the profitability measures.

Table 5: Association of CEOC and EXC with profitability (conventional banks).

	ROA				ROE				GMM			
	POLS	OLS(RE)	OLS(FE)	GMM	POLS	OLS(RE)	OLS(FE)	GMM	POLS	OLS(RE)	OLS(FE)	GMM
				0.674***				0.962***				0.957***
				(0.148)				(0.118)				(0.068)
CEOC	0.298***	0.584***	0.872*	0.365***	0.465**	0.605*	0.026	0.445***	0.009***	0.008***	0.008***	0.004**
	(0.084)	(0.175)	(0.491)	(0.027)	(0.098)	(0.327)	(0.076)	(0.031)	(0.003)	(0.003)	(0.002)	(0.002)
EXC	-0.219***	-0.324***	-0.465*	-0.141**	-0.236**	-0.756*	-0.124***	-0.088***	-0.007***	-0.008***	-0.007**	-0.006***
	(0.038)	(0.091)	(0.240)	(0.057)	(0.109)	(0.460)	(0.034)	(0.012)	(0.002)	(0.002)	(0.003)	(0.001)
SIZE	0.844***	0.956**	1.776**	0.502	0.697**	0.706**	1.899***	-0.196	-0.004*	0.001	0.016**	-0.001
	(0.225)	(0.427)	(0.813)	(0.483)	(0.328)	(0.292)	(0.594)	(1.216)	(0.002)	(0.004)	(0.006)	(0.001)
SOLV	0.450***	0.464***	0.465**	0.431***	0.138***	0.066**	0.067***	-0.004	0.024	0.030	0.004**	0.006***
	(0.008)	(0.008)	(0.002)	(0.021)	(0.035)	(0.029)	(0.013)	(0.013)	(0.036)	(0.076)	(0.002)	(0.001)
LIQ	-0.009***	0.013	-0.016	-0.028	-0.246	0.014	-0.907**	-0.242	0.000	-0.004**	0.000	-0.000
	(0.003)	(0.043)	(0.046)	(0.105)	(0.185)	(0.301)	(0.454)	(0.368)	(0.000)	(0.002)	(0.000)	(0.000)
FS	0.205***	0.165***	0.103***	0.236*	-0.339	0.081	0.422	0.131	-0.002***	-0.001**	-0.001**	-0.004**
	(0.053)	(0.041)	(0.031)	(0.136)	(0.305)	(0.293)	(0.438)	(0.245)	(0.000)	(0.000)	(0.000)	(0.002)
CR	0.125	0.160	-0.063**	-0.072***	-0.654*	-0.225***	0.513	-0.044***	-0.002***	-0.001**	-0.001	-0.001***
	(0.078)	(0.113)	(0.031)	(0.019)	(0.336)	(0.037)	(0.488)	(0.005)	(0.000)	(0.000)	(0.001)	(0.000)
ECG	0.092	0.049	0.225	0.935***	2.393	0.470***	0.545***	-0.645	-0.001	-0.002	-0.010	-0.276
	(2.345)	(0.589)	(0.660)	(0.281)	(6.453)	(0.020)	(0.146)	(0.846)	(0.022)	(0.005)	(0.006)	(0.242)
INF	0.679	1.977	2.673**	3.027	0.258	0.318***	1.871***	0.626***	0.061**	0.062***	0.058***	0.107
	(2.680)	(1.309)	(0.694)	(3.610)	(0.343)	(0.066)	(0.357)	(0.167)	(0.024)	(0.019)	(0.018)	(0.084)
Constant	-0.106***	-0.636***	-0.487**	-0.544	-0.703**	-0.814**	-0.289***	3.533	-0.160***	0.066	-0.279*	0.052
	(0.012)	(0.032)	(0.180)	(0.454)	(0.317)	(0.383)	(0.038)	(2.953)	(0.041)	(0.087)	(0.139)	(0.038)
Obs.	126	126	126	100	126	126	126	100	126	126	126	100
N	26	26	26	26	26	26	26	26	26	26	26	26
R-square	0.297	0.328	0.286		0.335	0.249	0.503		0.560	0.249	0.300	
F/Wald	157.34***	62.70***	106.44***	179.06***	65.19***	134.35***	165.54***	175.05***	42.11***	302.29***	120.56***	302.20***
Instruments				20				20				20
AR(1)				0.006				0.004				0.037
AR(2)				0.210				0.549				0.507
Hansen				0.684				0.538				0.781
Sargan				0.898				0.386				0.949

Note: Values in parentheses represent standard errors. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. POLS denotes pooled ordinary least squares; RE denotes random effects; FE denotes fixed effects; and GMM denotes Generalized Method of Moments. The AR(1) and AR(2) statistics represent p-values from the Arellano–Bond serial correlation tests, while

Hansen and Sargan statistics represent p-values from the corresponding overidentification tests. Instruments denotes the number of instruments used in System GMM estimation.

Table 6 presents the effects of CEO compensation (CEOC) and executive compensation (EXC) on Islamic-bank profitability using pooled OLS, random effects, and fixed effects estimators. The results reveal a consistently negative relationship between CEOC and profitability across all specifications. Specifically, CEOC exhibits negative and statistically significant coefficients for ROA in the POLS ($\beta = -0.843$) and RE ($\beta = -0.701$) models, while its coefficient remains insignificant in the FE model. Similarly, CEOC is negatively and significantly associated with ROE ($\beta = -0.548$ to -0.062) and NIM ($\beta = -0.015$ to -0.011) across all three estimators. In contrast, EXC exhibits a predominantly positive association with profitability. Its coefficients are positive and significant for ROA in the POLS and RE models ($\beta = 0.886$ and 0.734), but negative and insignificant in the FE model. For ROE, EXC demonstrates positive and statistically significant coefficients across all specifications ($\beta =$ 0.024–0.787). Similarly, EXC is positively associated with NIM in the RE and FE models ($\beta = 0.006$), although the POLS coefficient is negative and significant ($\beta = -0.005$). Regarding the control variables, bank size (SIZE) and solvency (SOLV) generally exhibit positive associations with ROA and NIM, whereas liquidity (LIQ), measured by net advances relative to assets, is negatively associated with ROA and ROE across all estimators. Financial structure (FS) is negatively associated with ROA and NIM but positively associated with ROE, while credit risk (CR) consistently exhibits negative and statistically significant coefficients across all profitability measures. Economic growth (ECG) shows mixed results, whereas inflation (INF) is positively and significantly associated with NIM in all specifications. Overall, the findings indicate that CEO compensation is negatively associated with Islamic-bank profitability, while executive compensation generally exhibits a positive relationship, contrasting with the patterns observed for conventional banks in Table 5.

Table 6: Association of CEOC and EXC with profitability (Islamic banks).

	ROA			ROE			NIM		
	POLS	OLS(RE)	OLS(FE)	POLS	OLS(RE)	OLS(FE)	POLS	OLS(RE)	OLS(FE)
CEOC	-0.843*	-0.701**	-0.058	-0.548***	-0.615**	-0.062*	-0.014***	-0.015***	-0.011*
	(0.463)	(0.328)	(0.233)	(0.177)	(0.269)	(0.034)	(0.003)	(0.004)	(0.006)
EXC	0.886**	0.734***	-0.014	0.787**	0.349*	0.024***	-0.005**	0.006***	0.006***
	(0.428)	(0.147)	(0.089)	(0.345)	(0.180)	(0.006)	(0.002)	(0.001)	(0.002)
SIZE	0.167	0.167	0.258***	0.227**	0.305	-7.382	0.003***	0.004**	0.021***
	(0.232)	(0.323)	(0.059)	(0.107)	(0.279)	(8.372)	(0.001)	(0.002)	(0.008)
SOLV	0.177**	0.185***	0.085**	0.770	0.809	0.976	-0.000	0.012***	0.009***
	(0.080)	(0.016)	(0.033)	(1.189)	(1.092)	(0.650)	(0.000)	(0.003)	(0.002)
LIQ	-0.052**	-0.052**	-0.049*	-1.087***	-1.090**	-0.946***	0.000	0.000	-0.005***
	(0.023)	(0.026)	(0.027)	(0.390)	(0.516)	(0.209)	(0.000)	(0.000)	(0.001)
FS	-0.057**	-0.041***	-0.006	2.765***	2.801***	2.754***	-0.015***	-0.000	-0.038***
	(0.028)	(0.009)	(0.007)	(0.467)	(0.583)	(0.198)	(0.004)	(0.000)	(0.011)
CR	-0.049**	-0.047*	-0.198***	-1.332***	-1.329***	-2.969***	-0.001***	-0.006***	-0.002**
	(0.021)	(0.026)	(0.017)	(0.321)	(0.446)	(0.347)	(0.000)	(0.002)	(0.001)
ECG	0.078	0.065	0.975*	-0.251	0.545**	-1.430	0.023*	0.025**	0.020
	(1.390)	(1.235)	(0.557)	(0.335)	(0.172)	(1.971)	(0.012)	(0.011)	(0.012)
INF	-0.101	-0.966	4.054***	-0.282	-1.309	0.403**	0.134***	0.140***	0.136***
	(2.537)	(3.538)	(0.718)	(0.621)	(1.393)	(0.190)	(0.016)	(0.016)	(0.018)
Constant	-0.889	-0.928**	0.187	-0.811***	-0.755***	0.400	-0.106***	-0.112***	-0.405***
	(0.946)	(0.438)	(0.462)	(0.193)	(0.279)	(0.279)	(0.036)	(0.023)	(0.147)
Obs.	30	30	30	30	30	30	30	30	30
N	6	6	6	6	6	6	6	6	6

R-square	0.350	0.277	0.164	0.364	0.292	0.268	0.256	0.296	0.270
F/Wald	31.68***	85.01***	60.55***	39.62***	86.48***	44.55***	309.91***	180.98***	137.4***

Note: Values in parentheses represent standard errors. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. POLS denotes pooled ordinary least squares; RE denotes random effects; and FE denotes fixed effects.

Supplementary analysis: combined sample

Table 7 presents supplementary estimates of the relationships between CEO compensation (CEOC), executive compensation (EXC), and bank profitability using the combined sample of 32 conventional and Islamic banks. Both compensation variables are included simultaneously in each specification, alongside bank-specific and macroeconomic controls. The results indicate that CEOC maintains a positive association with profitability across all specifications. Specifically, CEOC exhibits positive and statistically significant coefficients for ROA in the POLS, RE, and GMM models (β = 0.015–0.784), while its coefficient remains insignificant in the FE model. Similarly, CEOC is positively and significantly associated with ROE in the POLS, RE, and GMM estimations (β = 0.052–7.823), whereas the FE coefficient is insignificant. For NIM, CEOC demonstrates positive and statistically significant coefficients across all four estimators (β = 0.004–0.010). Conversely, EXC exhibits predominantly negative and significant associations with profitability, except for the positive and significant coefficient in the ROA–GMM model and the insignificant coefficient in the NIM–FE specification. Among the control variables, bank size (SIZE) and solvency (SOLV) generally exhibit positive associations with profitability, while credit risk (CR) and financial structure (FS) demonstrate predominantly negative relationships. Inflation (INF) is positively and significantly associated with ROE and NIM in most specifications, whereas the effects of liquidity (LIQ) and economic growth (ECG) vary across estimators. The System GMM estimates reveal significant profitability persistence, with lagged dependent-variable coefficients of 0.927, 0.559, and 0.910 for ROA, ROE, and NIM, respectively. Furthermore, the AR(2) test p-values (0.869, 0.227, and 0.948) indicate no evidence of second-order serial correlation, while the Hansen and Sargan tests do not reject the overidentifying restrictions. Overall, the combined-sample results largely reinforce the positive association between CEO compensation and profitability and the predominantly negative association between executive compensation and profitability observed in conventional banks, although the relationships differ from those reported for Islamic banks.

Table 7: Association of CEOC and EXC with profitability (all banks).

	ROA				ROE				GMM			
	POLS	OLS(RE)	OLS(FE)	GMM	POLS	OLS(RE)	OLS(FE)	GMM	POLS	OLS(RE)	OLS(FE)	GMM
				0.927*				0.559**				0.910***
				(0.498)				(0.209)				(0.101)
CEOC	0.664**	0.784*	0.294	0.015***	6.920***	7.823**	4.969	0.052***	0.007***	0.008***	0.010***	0.004**
	(0.291)	(0.466)	(0.340)	(0.004)	(1.792)	(3.132)	(5.279)	(0.017)	(0.002)	(0.003)	(0.003)	(0.002)
EXC	-0.330***	-0.389***	-0.495**	0.096***	-0.522***	-0.184*	-0.937*	-0.124**	-0.006***	-0.006***	-0.003	-0.004**
	(0.028)	(0.101)	(0.213)	(0.025)	(0.136)	(0.095)	(0.501)	(0.056)	(0.002)	(0.002)	(0.003)	(0.002)
SIZE	0.972***	1.073***	1.619*	0.546	0.322***	0.086***	0.975	1.031	0.005**	-0.005	0.013***	0.034***

	(0.217)	(0.397)	(0.865)	(0.423)	(0.087)	(0.024)	(0.838)	(2.408)	(0.002)	(0.004)	(0.005)	(0.012)
SOLV	0.451***	0.460***	0.465***	0.434***	0.139***	0.106***	0.101***	-0.072	0.005*	0.006**	0.009	0.014***
	(0.006)	(0.008)	(0.002)	(0.014)	(0.029)	(0.034)	(0.024)	(0.090)	(0.003)	(0.003)	(0.011)	(0.005)
LIQ	0.033	0.045	0.001	0.006	-0.151***	-0.023**	0.346	-0.205	-0.011**	-0.000	-0.005**	-0.004**
	(0.022)	(0.032)	(0.049)	(0.078)	(0.054)	(0.010)	(0.788)	(0.285)	(0.005)	(0.000)	(0.002)	(0.002)
FS	0.058	0.000	-0.066	0.180	-1.274**	-1.547**	-1.941***	-0.748	-0.001**	-0.000	-0.008***	0.008
	(0.065)	(0.079)	(0.045)	(0.120)	(0.542)	(0.668)	(0.604)	(0.759)	(0.000)	(0.000)	(0.002)	(0.022)
CR	-0.116**	-0.131*	-0.067*	0.132	-0.674***	-0.603*	-1.285	-0.437	-0.001***	-0.001***	-0.001	-0.005
	(0.050)	(0.077)	(0.040)	(0.089)	(0.253)	(0.358)	(1.041)	(0.826)	(0.000)	(0.000)	(0.001)	(0.006)
ECG	-1.059	-0.811	0.053***	0.713***	-0.363	-0.033	-0.206	-0.709	0.010	0.004**	-0.005	0.114**
	(2.052)	(0.576)	(0.011)	(0.261)	(0.311)	(0.968)	(0.213)	(0.959)	(0.021)	(0.002)	(0.006)	(0.048)
INF	-0.096	0.558	2.259**	0.314	0.225	0.894***	0.355***	0.963***	0.082***	0.079***	0.072***	0.190***
	(2.326)	(1.808)	(0.879)	(0.208)	(0.361)	(0.126)	(0.047)	(0.107)	(0.021)	(0.016)	(0.016)	(0.024)
Constant	-0.005***	-0.520***	-0.451	-0.453	-0.755***	-0.167***	-0.656	0.963	-0.163***	0.054	-0.274***	0.002
	(0.001)	(0.048)	(0.410)	(0.509)	(0.047)	(0.027)	(0.797)	(0.978)	(0.042)	(0.086)	(0.097)	(0.050)
Obs.	156	156	156	124	156	156	156	124	156	156	156	124
N	32	32	32	32	32	32	32	32	32	32	32	32
R-square	0.292	0.258	0.326		0.388	0.369	0.491		0.553	0.297	0.343	
F/Wald	188.81***	136.76***	266.36***	100.17***	5.94***	251.76***	275.94***	146.02***	28.05***	188.86***	15.87***	287.43***
Instruments				20				20				20
AR(1)				0.077				0.013				0.042
AR(2)				0.869				0.227				.948
Hansen				0.416				0.699				0.439
Sargan				0.824				0.563				0.792

Note: Values in parentheses represent standard errors. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. POLS denotes pooled ordinary least squares; RE denotes random effects; FE denotes fixed effects; and GMM denotes Generalized Method of Moments. The AR(1) and AR(2) statistics represent p-values from the Arellano–Bond serial correlation tests, while Hansen and Sargan statistics represent p-values from the corresponding overidentification tests. Instruments denotes the number of instruments used in System GMM estimation.

Discussion

The findings reveal contrasting relationships between managerial compensation and profitability in conventional and Islamic banks, offering insights into the competing theoretical perspectives on executive remuneration. In conventional banks, CEO compensation (CEOC) exhibits a consistently positive association with return on assets (ROA), return on equity (ROE), and net interest margin (NIM), with statistical significance in most specifications. These findings support agency theory (Jensen and Meckling, 1976) and optimal contracting theory (Murphy, 1999), which emphasize the role of appropriately structured managerial incentives in aligning executive interests with organizational performance. The results are broadly consistent with Houston and James (1995), who examine the importance of incentive structures in bank CEO compensation, and Hubbard and Palia (1995), who document stronger pay–performance sensitivity in more competitive banking environments. Similarly, Ang et al. (2002) identify differences in the compensation arrangements of

bank CEOs and other senior executives, reinforcing the importance of distinguishing executive positions when evaluating remuneration outcomes. However, these findings contrast with Watto et al. (2023), who report an insignificant relationship between compensation and bank performance in Pakistan, suggesting that empirical outcomes may depend on compensation measurement, institutional characteristics, and estimation approaches. Conversely, executive compensation (EXC) exhibits a consistently negative and statistically significant association with conventional-bank profitability. This finding is compatible with the managerial power perspective (Bebchuk and Fried, 2003), which suggests that remuneration arrangements may reflect managerial influence rather than effective incentive alignment. Recent theoretical evidence from Castiglionesi and Zhao (2024) further demonstrates that incentive-based remuneration can encourage excessive leverage, diversification, and systemic risk, challenging the assumption that stronger managerial incentives necessarily improve banking outcomes. Nevertheless, because EXC represents aggregate remuneration rather than individual executive pay, its negative association may also reflect differences in management-team size and organizational complexity rather than inefficient compensation alone.

In contrast, Islamic banks exhibit a predominantly negative and statistically significant association between CEOC and profitability, whereas EXC generally demonstrates positive relationships with ROA, ROE, and NIM. These findings suggest that compensation–performance relationships may differ across institutional and governance environments. The negative CEOC coefficients are compatible with the managerial power hypothesis (Bebchuk and Fried, 2003), particularly where CEO remuneration is insufficiently aligned with financial outcomes. They can also be considered through stakeholder theory (Freeman, 1984), which recognizes organizational responsibilities beyond shareholder wealth maximization. Islamic banks operate within governance arrangements that incorporate Shariah compliance, contractual fairness, and stakeholder considerations, potentially influencing the relationship between executive incentives and financial performance. Beck et al. (2013) document differences between conventional and Islamic banking models, highlighting the relevance of institutional characteristics when assessing bank outcomes. Risfandy and Hassan (2026) further demonstrate that excess remuneration among different governance participants in Islamic banks is associated with heterogeneous risk-taking outcomes, reinforcing the importance of distinguishing managerial and supervisory roles when examining compensation arrangements. However, that study examines risk-taking rather than profitability and therefore offers contextual rather than direct confirmation of the present results. Conversely, the positive association between EXC and Islamic-bank profitability is compatible with human capital theory (Becker, 1964) and upper echelons theory (Hambrick and Mason, 1984), which emphasize the contribution of managerial expertise, professional capabilities, and executive decision-making to organizational outcomes. Higher aggregate executive remuneration may reflect broader managerial resources and specialized expertise relevant to Shariah-compliant financing, risk management, and operational coordination. Nevertheless, these interpretations remain tentative because managerial expertise, remuneration incentives, and Shariah governance quality are not directly measured, while the Islamic-bank sample comprises only six institutions.

The combined-sample robustness analysis further highlights the heterogeneous relationship between managerial compensation and bank profitability. CEOC remains positively associated with ROA, ROE, and NIM, while EXC exhibits predominantly negative coefficients, broadly reinforcing the conventional-bank findings. However, the positive and statistically significant EXC coefficient in the ROA System GMM specification indicates that the relationship is not entirely consistent across estimation methods. These findings complement the evidence of Watto et al. (2023), who report an insignificant compensation–performance relationship in Pakistani banks, and the theoretical arguments of Castiglionesi and Zhao (2024), which highlight potential distortions arising from managerial incentive arrangements. Furthermore, the generally negative association between credit risk and profitability is consistent with Athanasoglou et al. (2008) and Yao et al. (2018), who emphasize the importance of asset quality and bank-specific financial characteristics in determining profitability. Overall, the results suggest that CEO and broader executive compensation are associated with different profitability outcomes, and that these relationships vary between conventional and Islamic banking systems. The findings are broadly compatible with optimal contracting theory in conventional banks, whereas managerial power, stakeholder, and human capital perspectives offer possible explanations for the contrasting Islamic-bank results. Nevertheless, differences in coefficient signs across banking systems do not establish statistically significant differences between groups without formal interaction tests. Moreover, the observational nature of the analysis limits causal interpretation, emphasizing the need to consider institutional characteristics, compensation structures, and potential endogeneity when evaluating managerial remuneration and bank profitability.

Conclusions

This study examines the relationship between CEO compensation, executive compensation, and bank profitability in conventional and Islamic banks. Using a sample of 32 banks, comprising 26 conventional and six Islamic banks, with 156 bank-year observations, the study employs pooled OLS, random effects, fixed effects, and two-step System GMM estimators. Profitability is measured through return on assets (ROA), return on equity (ROE), and net interest margin (NIM). The findings reveal that CEO compensation is positively associated with conventional-bank profitability but negatively associated with Islamic-bank profitability. Conversely, executive compensation exhibits a consistently negative relationship with conventional-bank profitability and a predominantly positive relationship with Islamic-bank profitability. The combined-sample analysis largely supports the conventional-bank findings, although some coefficients vary across estimators. Overall, the results highlight the importance of distinguishing CEO remuneration from broader executive compensation and considering institutional differences when evaluating compensation–profitability relationships.

Practical Implications

The findings offer important implications for bank management, boards of directors, remuneration committees, and regulatory authorities. Conventional banks should strengthen performance-linked CEO compensation arrangements while carefully evaluating the effectiveness of broader executive remuneration structures. Conversely, Islamic banks should reassess CEO compensation policies and

consider remuneration frameworks that recognize the contributions of executive management to financial performance. Remuneration committees should establish transparent compensation policies incorporating profitability, risk-adjusted performance, long-term sustainability, and governance objectives. Regulatory authorities, including the State Bank of Pakistan, may encourage stronger compensation disclosure, effective board oversight, and alignment between managerial incentives and institutional risk profiles. Furthermore, Islamic banks should ensure that remuneration practices remain consistent with Shariah governance principles and stakeholder interests. Overall, the findings emphasize the importance of designing differentiated compensation arrangements rather than adopting uniform remuneration policies across banking systems.

Limitations and future research directions

Despite its contributions, this study has several limitations that provide opportunities for future research. First, the relatively small Islamic-bank sample, comprising six banks and 30 observations, may limit the precision and generalizability of the findings. Future studies should employ larger, multicountry datasets to examine whether compensation–profitability relationships differ across institutional and regulatory environments. Second, the compensation measures capture aggregate remuneration without distinguishing fixed salaries, bonuses, performance incentives, and nonmonetary benefits. Future research could investigate individual compensation components and their effects on profitability and risk-taking. Third, potential endogeneity, reverse causality, and unobserved managerial characteristics may influence the estimated relationships despite the use of alternative estimators. Future studies could employ stronger identification strategies and examine the moderating roles of board independence, ownership structure, Shariah governance, and compensation committee effectiveness. Although the study compares compensation–profitability relationships across conventional and Islamic banks using separate subsample estimations, formal interaction tests are not reported; therefore, future research should examine whether the observed differences in coefficient estimates are statistically significant. Finally, extending the analysis to risk-adjusted profitability and long-term financial stability could provide additional insights.

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