Bulletin of Applied Economics, 2024, 11(1), 85-102
https://doi.org/10.47260/bae/1116

# Do Directors' Remuneration and Remuneration Committees of the Board affect Bank's Performance: Application of GMM model?

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## Abstract

This paper assessed the effect of directors' remuneration and the remuneration committee on a bank's performance. The study used 200 observations from 20 licensed banks in Ghana from 2012 to 2023. The study employed dynamic System Generalized Method of Moments as the main analytical estimator using Stata 16.0 software. The study revealed that directors' remuneration, audit committee independence, and the remuneration committee are positively and significantly related to the bank's performance. Furthermore, the study revealed that banks with a remuneration committee as well as an independent audit committee tend to enhance the bank's performance because remuneration and audit committees tend to align directors' remuneration with the bank's performance. The findings highlight the importance of setting up a remuneration committee as well as strengthening its functions. The first recommendation for this study is for the board to strengthen the remuneration committee since it affects the bank's performance positively. Lastly, the study recommends that the remuneration committee should be strengthened to align directors' remuneration with the bank's performance metrics, such as revenue growth, profitability of the bank, and shareholders' returns.

**Keywords:** Audit committee independence; Bank's performance; Directors' remuneration; Ghana; Optimal contracting contract.

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Article Info: Received: March 28, 2024. Revised: April 10, 2024. Published online: May 17, 2024

# 1 Introduction

Directors are senior managers who are appointed by the shareholders and supervise and control managers on issues that relates to corporate matters and affairs. Directors are remunerated for performing work on behalf of the shareholders which is referred to as compensations paid to directors on the sitting on the board which includes salary, bonuses, benefits, other perks that are given to directors for their services. For that matter, directors' remuneration has become an issue of considerable interest and debate in the matter of corporate governance, as it directly ties to the issues of accountability, motivation and shareholder value. These make directors' remuneration is importance because it serves as a critical component in shaping managerial behaviour and decision-making. Understanding the dynamics of how directors' remuneration influences the financial outcomes of the firm is vital for the shareholders, and corporate governance practitioners.

Stakeholders in the recent past have scrutinized directors' remuneration to ensure that such payments are consistent with corporate governance structures and to enhance accountability of the banks. This is due to the fact that some stakeholders perceive that directors' remuneration has seen a substantial increase in recent times, causing the public to raise concerns about the magnitude of the firm's resources being spent on directors on the board. The high directors' remuneration poses the issue of shareholders' dissatisfaction, especially if it is perceived to be disproportionate to the firm's performance. This poses concerns, especially among academics and researchers, as to whether directors' remuneration correlates with the bank's performance. Such questions have heightened the discontent of the shareholders, as to whether the directors' remuneration is misaligned and lacks due consideration for the bank's performance.

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Directors' remuneration is not merely a matter of financial transaction, but rather it serves as a potential catalyst for monitoring the performance of management in terms of decision-making and risk management of the banks, which may subsequently affect the firm's value. How much directors should be remunerated is a corporate governance issue, such that Bryant and Davis (2012) argued that payment to directors should be incentivized as a tool to control the agency problem. This implies that directors' remuneration should be performance-based, enough to motivate directors to supervise and control management (Boshkosba, 2015). This implies that directors' remuneration should not be too high or excessive, as it drains the firm's resources and affects the firm's value, nor too low to demotivate the directors to act in the best interest of the firm. On the other hand, appropriate compensation is needed to attract and retain requisite skilled directors who can positively influence strategic decision-making and the firm's value. Therefore, it is important to balance director remuneration and firm's value metrics in the best interest of the financial health. The intricacies of directors' remuneration are considered critical in determining the success of the bank's performance.

Again, the corporate governance experts acknowledge the importance of better remuneration for the directors. They must ensure that directors' remuneration is not excessive but optimal for the firm. The experts argue that giving appropriate remuneration to directors is the only guarantee to control the conflict of interest arising from agency theory. This conflict arises due to the separation of ownership and control in modern business operations (Fama & Jensen, 1983). It is believed that directors must be well-remunerated to act in the best interest of shareholders and resolve the challenge of principal-agent problems. Additionally, corporate governance experts advocate for sound and good corporate governance structures to handle the agency problem. Upholding sound and good corporate structure rests with the directors, especially the independent directors on the board.

The proponent of the remuneration committee argued that directors' remuneration should be directly linked to performance-based payment to attract and retain skilled directors to the firm, thus acting in the best interest of the firm. They argued that this would contribute to the well-functioning of the banks. Consequently, several studies have been carried out on directors' remuneration and how best to minimize the agency problem (Bebchuk & Fried 2003). Previous studies have revealed a mixed and inconsistent relationship between directors' remuneration and the firm's performance. While some studies revealed a positive and significant relationship between directors' remuneration and the firm's performance (Zhou et al., 2010; Wu & Lan, 2009; Zhou et al., 2010; Wu & Lan, 2009; Chakrabarti, Subramanian, Yadav, & Yadav, 2012; Ghosh, 2006; Ozkan, 2011), others opined that there was an insignificant relationship between directors' remuneration and the firm's performance (Hans, 2015; Li & Sun, 2007; Gao, Luo & Zhang, 2007). According to Iodsa (2016), the remuneration policies of directors should aim at long-term value creation for the firm. The mixed outcome is inconsistent with agency theory which expects that directors' remuneration should be positive and significantly related to the bank's performance. This inconsistency may be partly due to the wrong determination of directors' remuneration due to the lack of a remuneration committee or wrong composition in the banks. The purpose of the remuneration committee is to recommend/review directors' remuneration for management based on their performance. Another function of the remuneration committee is to ensure the remuneration policy of the firm is directed at rewarding performance. Secondly, the remuneration committee should be reviewed periodically based on the achievement of the directors. According to Iodsa (2016), the remuneration policies of directors should aim at long-term value creation for the firm. The second reason for the mixed outcome may be due to the wrong use of model estimator as analytical tools in the assessment of the relationship between directors' remuneration and the bank's performance. The recent article by Wintoki et al. (2012) and Tchamyou, Erreygers, and Cassimon (2019) argue that the previous performance of a company affects its current performance, leading to challenges of endogeneity and unseen heterogeneity in regression analysis. These studies demonstrate that the use of the dynamic panel model is more effective than ordinary least squares (OLS) regression, which often produces unreliable and inconsistent results.

This study aims to assess the intricate relationship between of directors' remuneration on the firm's value by employing GMM model to control the issue of endogeneity, unobserved heterogeneity and auto-correlation issues. The GMM allows for inclusion of lagged values to capture the temporal aspects of the relationship over different time periods. Finally, this study assesses whether optimal contracting theory is adequate to explain the underlying relationship between directors' remuneration and bank's performance. According to Bryant and Davies (2012) optimal contracting theory involves a performance-based incentive structure that is in line with the long-term value creation of the firm. Scholars of remuneration committee opine that setting up remuneration committee would ensure fairness, transparency and alignment of directors' remuneration with the company's goals and performance. Hence, this whether optimal contracting theory is adequate to explain the relationship between directors' remuneration and bank's performance.

This study aims to contribute valuable insights to corporate governance practices, helping in the development of effective compensation structures that is aligned with the interest both the directors and the shareholders. This study is of immense importance in the context of fostering transparency, accountability and sustainable financial performance within the firms. The findings would contribute to discussions on policy and regulation around corporate governance regulations and policies that minimizes the negative effect of agent-principal's problem. This study would contribute to the understandings regarding the nuances of directors' remuneration and a well-structured remuneration that is aligned with the interests, the motivation of directors capable of enhancing the bank's performance. Understanding the relationship between directors remuneration and the bank's performance would help stakeholders especially the shareholders to align executive incentives with the firm's value in the long-term, fostering responsible business practices. Secondly, the study employs GMM model to ensure the regression assumptions such as endogeneity, unobserved heterogeneity and simultaneity are accounted for and not violated which is the not the case for ordinary least square. The remainder of this paper is organized as follows: We begin literature review and development of hypotheses is in section 2 of this paper. Section 3 discusses research

methodology outlined for this paper. Section 4 presents empirical findings and discussions of the results. Finally, section 5, ends the study with some conclusions and limitations for the study.

# 2 Literature Review

This section reviews previous frameworks used by previous studies on the effect of directors' remuneration on the bank's performance to identify existing gaps to enhance this study. The literature review is critical in building new framework in situating the current study into a broader academic and research discourse, and also to provide a benchmark to compare and contrast with the study's findings. The review is organised into theoretical review and empirical review.

## 2.1 Theoretical Review

The main theory used in this study is optimal contracting theory which is used to provide in-depth understanding of the relationship between directors' remuneration and the firm's value. The theory was put under stress to predict the correlation between the variables used in this study.

### 2.1.1 Optimal Contracting Theory

This subsection reviews and discusses optical contracting theory as the main theory underlying this study. The optical contracting theory focuses on designing agreements between directors and the firm in a manner that would achieve the best possible outcomes for the firm given various constraints and uncertainties. The theory delves into the ways contracts are structured to align with incentives, risk allocation, and maximizing value to the owners and the firm. Secondly, the theory explains how to design the contracts of directors' remuneration that address the conflicts of interest in principal-agent problems. The optical contracting theory was first developed by various economists, in which Jensen and Mecking in 1976 were very instrumental in applying it to the broader field of agency theory. Two key contributors to this theory were Bengt Holmstrom and Paul Milgrom. Their work, particularly the Holmstrom-Milgrom model, was very influential in shaping the theory (Holmstrom & Milgrom, 1991). The theory advocates that a successful firm should set up necessary governance structures in respect of directors' remuneration in awarding and maintaining contracts to exercise control over the management opportunistic behavior of agents (Mwangi, 2012). The theory, as an off-set of the agency theory, stresses that the principal hires one or more persons (the agent) to perform a service on behalf of the principal (Jensen & Meckling, 1976). If both parties are seeking to maximize their utility, it is likely that the agent may not always act in the best interests of the principal. To reduce such conflicts of interest between the principal, the theory advocates for an optimal contract between the business and the directors that would motivate them to act in the best interest of the firm. This involves a performance-based incentive structure that is in line with the long-term value creation of the firm (Bryant & Davies, 2012). The theory is relevant to structuring the nexus between directors' remuneration and the firm's value in the corporate governance context as follows: (1) aligning directors' incentives to enhance the long-term value of the firm, (2) averting the risk of directors engaging in actions that might be detrimental to owners' interest, and (3) the theory seeks to remunerate directors in a manner that meets the short-term and long-term aspirations of the firm. Agency theory emphasizes the need for performance-based compensation that reflects both the short term and long-term goals of the firm, fostering a strategic and responsible approach to decision-making by directors. The theory provides valuable insights into the understanding of the dynamics of the principal-agent relationship in respect to directors' remuneration. This would help ensure that directors make decisions that enhance shareholder value. However, the difficulties lie in striking the right balance to prevent excessive risk-taking or short-term focus on the remuneration payment that sustains the growth of the firm. The theory emphasizes that giving performance-based remuneration to the directors is the best way to motivate the agents to work in the best interest of the principal, thereby optimizing the overall outcomes of the firm. It suggests that designing directors' remuneration should be aligned with the interest of the principal (i.e., the owners of the firm) and those agents (i.e., the directors) would essentially pursue the principal's interest. It implies that directors' remuneration in this context motivates directors to act in the best interest of the owners to enhance the firm's

value. When the theory is applied well, it acts as a tool to encourage directors to act in the best interests of shareholders, thereby reducing agency problems (Holmstrom, 1979; Rahayu et al., 2022). According to Holmstrom (1979), he suggests that optimal contracting theory connects directors' remuneration with the long-term objectives of shareholders and the financial performance of the firm. By linking directors' remuneration to value metrics, such as the firm's value, the firm aims to align directors' incentives with the long-term success of the organization and reduce the agency problem inherent in the principal-agent relationship. The theory advocates that the remuneration committee of the Board aligns directors' remuneration to maximize shareholders' value. In summary, the theory is applicable in the context of enhancing corporate governance structures as the main mechanism to enhance the performance of the firm by addressing its agency challenges, especially through the reduction of agency costs that may have adverse effects on the performance of the relationships between the two parties. In short, the theory is the bedrock that provides a theoretical framework for designing directors' remuneration that promotes responsible decision-making, aligning the interests of directors with the financial success of the firm.

### 2.2 Empirical Review

This subsection reviewed some empirical studies carried out by previous Scholars on the relationship between directors' remuneration and bank's performance. The purpose of this empirical review is to articulate explicitly all the supporting and contracting on this study.

#### 2.2.1 The Relationship between directors' remuneration and Bank's Performance

Directors' remuneration is a corporate governance issue which must be adequately structured to bring success to the business (Bryant and Davies, 2012). So much responsibility is placed on the shoulders of directors, such that they have to take proper and sufficient care, to the best of their knowledge and ability, for the maintenance of the business. This includes safeguarding the assets of the firm and preventing and detecting fraud and any other irregularities. This requires adequate compensation for their knowledge and ability in monitoring the performance of management, in order to minimize opportunistic behaviors that conflict with the principal's interest. Some scholars advocate that directors' remunerations should be designed to bridge the agency problem between the principal and the agent, but to bridge this gap, reward systems must be related to the performance of managers and the firm as a strategy. This strategy must take into account the growth of the firm and the nature of the firm. According to Kuo et al. (2013), Gill et al. (2004), and Shin (2013), directors' remuneration should be done in a way that enhances the overall performance of the firm. This position is consistent with optimal contract theory, which advocates that contracts between principals (owners) and agents (management) should be designed to align their incentives, ultimately maximizing shareholders' value and the firm's performance.

## 3 Methodology

To test the null hypotheses, the study employed a dynamic panel data estimator, also known as the Generalized Method of Moments (GMM), to assess the relationship between directors' remuneration and the bank's performance.

Secondary data was extracted from the published financial statements and organized into dependent, independent, and control variables for analysis from 2012 to 2023. GMM was preferred for analysis because it is able to control any potential issues of endogeneity, unobserved heterogeneity, and autocorrelation that may arise due to time-invariant variables like directors' remuneration and board size. According to Sheikh et al. (2018) and Haron (2018), GMM is capable of addressing issues such as endogeneity, unobserved heterogeneity, and autocorrelation that, when not checked, result in spurious regression outcomes. The software used in this research was STATA 16.0.

### 3.1 Population and Statistical Sample

The target population for this study includes all 21 licensed banks regulated by the Bank of Ghana in Ghana. To determine the appropriate sample size, the study used Taro Yamane's formula (1967). This

formula takes into account the precision level (e), which represents a 95% confidence level or a 5% error level as in equation (1). Ultimately, a sample size of 20 licensed banks was selected using a probability sampling methodology employing simple random sampling.

$$n = {}^{N}/_{(1 + N(e^2))} \quad (1)$$

Where:
N is the total population size of 23 licensed banks
e is the margin of error.: level of confidence (100%-95%) = 5% or 0.05

n= 21/1 + 21(0.05)2
n = 20

**3.2 Research variables**

The research variables specified in this study are dependent, independent variables, and control variables. The proxy for the dependent variable (i.e., bank's performance) and it is net interest margin (NIM), the proxies for independent variables are directors' remuneration (DR), audit committee independence (ACI), and remuneration committee RC), and the proxies for the control variables are leverage (Lev) and bank's size (Size).

**3.2.1 Dependent Variable (i.e., NIM)**

**Net Interest Margin (NIM):** NIM is the dependent variable used to measure bank's performance of banks. NIM is calculated as the ratio between received and paid interests, all over total assets. The ratio measures the margin a bank makes on its core business of the bank. The researchers used NIM as a proxy for measuring the efficiency in the banking sector. For formula for calculating NIM is expressed in equation (2):

$$NIM = \frac{Interest\ Received - Inteerest\ Paid}{Total\ assets} \quad (2)$$

**3.2.2 Independent Variables (i.e., DR, RC and ACI)**

The independent variables used in this study are directors' remuneration (DR), remuneration committee (RC) and audit committee independent (ACI). These variables were used to understand their effect on the dependent variable.

**Directors Remuneration (DR):** Directors remuneration (DR) is one of the independent variables used to explore how variations in the directors' remuneration affect decision-making, leadership effectiveness of the directors to affect the overall bank's performance. The proxy for measuring directors' remuneration is the logarithm of total directors remunerations paid to the directors in the financial year. For formula for calculating NIM is expressed in equation (3):

$$DR = \text{Log (Directors'remuneration)} \quad (3)$$

**Remuneration committee (RC):** The remuneration committee is a sub-committee of the Board responsible for determining the directors' remuneration. The role of the remuneration committee is to align directors' remuneration with the financial performance of the bank in order to retain talent, promote sustainable growth, mitigate risk, and enhance shareholder confidence. The committee recommends appropriate salaries, bonuses, and other benefits for the directors based on the requisite skills and experience needed by the bank and its appropriate compensation to the board. The study assigns a value of "1" to measure RC when the bank has a remuneration committee as a sub-committee of the board, and "0" when there is no

remuneration committee as a sub-committee of the board. This study uses a proxy similar to Zraiq and Fadzil (2018) and Yahaya (2022). Previous studies have revealed a positive relationship between the remuneration committee and the bank's performance (Appiah & Chizena, 2016; Agyemang-Mintah, 2015; Cybinski & Windsor, 2013; Lam & Lee, 2012).

**Audit committee Independence (ACI):** Audit committee independence is another independent variable used to assess the firm's value in this study. The main idea to ensure audit committee is independent is to ensure that this sub-committee of the board is empowered to reduce agency problem and cost (Hermalin & Weisback, 2017). Audit committee independence is a vital corporate governance body that assists the board of directors in terms of transparency and integrity in the financial reporting process (Klein, 2002). The primary function of the establishment of the audit committee is to enhance the financial reporting quality. The proxy for measuring ACI is the proportion of independent directors on the audit committee. This is often expressed as a percentage or ratio of the independent directors over the total members of audit committee. Independent directors are those who do not have any significant financial or business relationships with the company. Previous opined there is a positive relationship between audit committee independence and performance (Ahulu & MacCarthy; Kakar et al., 2021; Klein, 2002; Mansi & Reeb, 2002; Monks & Minow, 2004). They promote objectivity in financial oversight.

$$\text{ACI} = \text{No of Non-executive/ No of directors on the audit committee} \quad (4)$$

### 3.2.3 Control Variables

The firm's specific characteristics were used as control variables in this study. This is line with literature that highlights the importance of controlling for the specific impact of corporate governance on bank performance; firm size and leverage are included as control variables in the regression model.

Firm's size (Size): One of the control variable used in this study is the firm size because larger firm's more likely to pay higher remuneration to their directors and set up sub-committees of the board to enhance corporate governance structures. The study expects firm's size to affect bank's performance positively (Abor & Biekpe, 2009; Benyaminu et al., 2021; Gatsi, Gadzo & Kportorgbi, 2013). Firm's size is measured by the natural logarithm of the firm's total size and expressed as equation (5):

$$\text{Size} = \text{Log (Total assets)} \quad (5)$$

Leverage (Lev): Leverage is another control variable used in this study. Capital structure is one of the conflict of interest in agency theory. The directors take loans to expansion the business but the risk of bankruptcy affects owners of the firm. Therefore, to control conflict, there is the need to incorporate monitoring and control into capital structure theory. The study expects leverage to affect bank's performance negatively (Benyaminu et al., 2021; Onaolapo & Kayola, 2010; Poyry & Maury, 2009; Lavorski, 2013; Booth et al., 2001). The proxy for measuring Leverage (Lev) is the firm's total liabilities divided by total assets (Nguyen, Nguyen & Phung, 2019).

### 3.3 Model Specification

Panel data is a valuable tool for addressing the problem of limited data, particularly in developing economies where data is often scarce. By combining observations from different time periods, panel data helps to overcome issues such as omitted variables and unobserved heterogeneity that are common in pure cross-sectional or pure time-series data. The panel regression equation, which is distinct from regular time-series or cross-sectional regression, effectively addresses data scarcity, particularly in developing countries. The first stage of selecting the most suitable estimator involves the use of panel data estimators, namely the fixed effect (FE) estimator and the random effect (RE) estimator. These estimators are effective in addressing the issue of heterogeneity among the cross-sections. To determine which estimator to use, the Hausman test is employed. The general form of the panel data model can be specified as follows:

$$Y_{it} = \alpha + \psi Z^{i}{}_{it} + \beta X^{i}{}_{it} + \varepsilon_{it} \quad (6)$$

In the second stage of model selection, an estimator is chosen to deal with the problem of endogeneity and serial correlations among the variables. In order to resolve issues such as heteroscedasticity, serial correlation, and endogeneity among certain explanatory variables, this study opts to utilize dynamic panel data with difference GMM (Arellano & Bond, 1991) and System GMM (**Blundell & Bond, 1995)** (Leitao, 2010). The study incorporated lagged observations of the dependent variable into equation (4). This type of regression analysis is referred to as Autoregressive Order 1, or AR (1), and it is called the GMM model. Including the AR (1) structure enhances the reliability of the regression analysis when dealing with panel data (Eklemet et al., 2023; Owusu, Saat, Suppiah & Hook, 2017). In this study, the GMM is used to estimate the coefficients in the model. The classical ordinary least square is not suitable as an estimator in this case. The GMM model is preferred because it can address potential issues of endogeneity, unobserved heterogeneity, and auto-correlation in the dataset (Wintoki et al., 2012). To tackle these challenges, the study adopted Blundell and Bond's (1998) two-step Generalized Method of Moments (GMM), specifically the BB two-step SGMM, as the primary estimation technique to address concerns related to endogeneity, simultaneity, and unobserved heterogeneity. Equation (6) is rewritten and expressed as equation (7) as follows:

$$Y_{it} = \alpha + \phi Y_{it-1} + \psi Z^{i}{}_{it} + \beta X^{i}{}_{it} + \mu_i + \delta_t + \varepsilon_{it} \quad (7)$$

Where:
$Y_{it}$ is the dependent variable and is represented by net interest margin (i.e., NIM). $Y_{it-1}$ is one lagged of the dependent variable as ($NIM_{it-1}$) as independent variable in the model, $Z^{i}$ is the vector of control variables, $X^{i}$is the vector of independent variables, $\mu$ is the unobserved firm-specific fixed effects, $\delta$ is the time trend, $\phi, \psi$ and $\beta$ are the coefficients to be determined, i is the number of cross sections (1, 2, 3……N), t is the time series (1, 2, 3……T) and $\varepsilon$ is the error term. The purpose of including the control variables is to determine whether the effect of the director remuneration on the bank's performance. The AR (1) model is a time series analysis that capture temporal dependencies. There are two specification tests to assess the dynamic panel data which are: (1) the use of Hansen test for over-identifying restrictions test to check for the overall validity of the instruments and (2) using the null hypothesis that assumes the error term is not serially correlated.

### 3.4 Research hypotheses development

The following three hypotheses were espoused to assess the effect directors' remuneration (DR) and sub-committees of Board (i.e., RC and ACI) on bank's performance (NIM) in this study:

***H01:*** *There is no significant effect between directors' remuneration (DR) and the bank's performance (NIM). Hence directors' remuneration does not influence the bank's performance for the period selected for the study.*

***H02:*** *There is no significant relationship between Audit Committee Independence (ACI) and the bank's performance (NIM). Hence Audit Committee Independence does not influence and bank's performance (NIM).*

***H03:*** *There is no significant relationship between remuneration committee (RC) and the bank's performance (NIM). Hence remuneration committee does not influence and bank's performance (NIM).*

The null hypotheses of this study are assessed based on levels of significance of the coefficients of regressors in the model. Each null hypothesis is rejected when the p-value of the regression is lower than 5% significance level as the decision criteria.

# 4 Result and Discussion

This section contains result and discussions of the results. These are descriptive statistical analysis, the Pearson correlation analysis, and the panel GMM regression analysis outlined in this study.

## 4.1 Descriptive Statistics Analysis

Descriptive statistical analysis is foundational analysis used to explore and communicate the basic properties of the dataset prior delving into complex inferential analyses for this study. It provides information on the central tendency of the dataset using the mean, standard deviation, minimum, maximum, skewness, kurtosis and Jarque-Bera. The summarised information is used to facilitate a better understanding of the data structure and trends without making inferences or generalised to the larger population. The result from descriptive statistical analysis is presented in Table 1.

**Table 1: Result of the Descriptive Statistical Analysis**

| Variable | Mean | St. Dev. | Min | Max | Skewness | Kurtosis | J-B | Prob |
|---|---|---|---|---|---|---|---|---|
| NIM | 0.261 | 0.314 | 0.068 | 0.436 | 0.630 | 3.035 | 26.699 | 0.231 |
| *DR* | 3.422 | 0.255 | 2.799 | 4.051 | 0.037 | 3.128 | 23.873 | 0.197 |
| *ACI* | 0.679 | 0.071 | 0.500 | 0.714 | 0.259 | 2.949 | 40.901 | 0.352 |
| *RC* | 0.755 | 0.088 | 0 | 1.000 | 0.713 | 2.736 | 36.531 | 0.664 |
| *Lev* | 0.558 | 0.237 | 0.250 | 1.227 | 0.552 | 3.180 | 17.602 | 0.743 |
| *Size* | 6.831 | 0.448 | 6.000 | 8.226 | 0.426 | 2.977 | 26.041 | 0.613 |

Source: Researcher's STATA version 15 Compilation

Table 1 displays the descriptive statistics for the variables used in the analysis. The means was used to identify any possible irregularities before inferential statistics, while the standard deviation discloses the dispersion from the mean or the observation. The mean values for the variables are presented in the second column. The means for NIM, DR, ACI, NRC, Lev and Size were 0.261, 3.422, 0.612, 0.755, 0.558 and 6.831, respectively, for the period understudy. The bank's performance (i.e., NIM) ranges from the minimum of 0.068 to the maximum 0436, with the mean value of 0.261 representing a mean bank's performance of 26.1% for the period understudy. A higher NIM generally signifies a better profitability for the financial sector for Ghana. The mean value of 26.1% for the NIM indicates a good and moderate bank's financial performance and suggests that the banks are efficiently converting the net interest into good financial performance.

In addition, Table 1 shows a mean score director remuneration (DR) of 3.422 (2,643.04), the minimum score was 2.799 (630) and maximum 4.051 (11,255) which indicate a huge difference between the minimum directors' remuneration and maximum directors' remuneration. Detail analysis of the NIM and DR values revealed that none of DR values resulted in negative NIM for the period understudy. It suggests that directors' remuneration for the period understudy is perfectly aligned with the long-term value of the bank. Again, notably difference in the directors' remuneration is closely related with the bank size and the leverage. This outcome is consistent with Bryant and Davies (2012) on performance-based remuneration. Furthermore, Table 1 showed a mean value for audit committee independence score of 0.679 it represents a measure how independent the audit committee of banks in Ghana is under the period understudy. The mean score ranges from 0 to 1, with the higher mean scores indicating a greater independence of audit committee independence. An independent audit committee suggests lesser financial ties of audit committee members to the bank and their ability to make objective decisions in the best interest of the shareholders (owners) during the audit process. Again, Table 1 showed a mean score of 0.755 for remuneration committee (RC) or about 75.5% remuneration committee have acted to determine directors' remuneration in line with the bank's compensation strategy, directors pay package. This is favourable outcome and it suggests that the bank's directors' remuneration is often determined by remuneration committee which is consistent with optimal contracting theory. This helps to maintain a balance between compensating

directors for their contributions and protecting the interests of the shareholders and the overall bank's performance.

The third column of Table 1 contains information on the standard deviation for the dataset. The standard deviation is a measure of how the variables used for the analysis spread out from the mean of the dataset. The standard deviation for NIM, DR, ACI, RC, Lev and Size were 0.314, 0.255, 0.071, 0.088, 0.237 and 0.448, respectively. A higher standard deviation suggests greater variability in the dataset especially Size (0.448), NIM (0.314), DR (0.255) and Lev (0.237) suggests that these standard deviations are more spread out from the mean, indicating a greater variability in the dataset. While a lower standard deviation for ACI and RC of 0.071 and 0.088 respectively indicate the spread or the dispersion are around the mean scores.

The sixth and seventh column of Table 1 provides information on skewness and kurtosis of the dataset, which are used to assess the dataset's normality assumption (Kline, 2011). According to George and Mallery (2010) the acceptable skewness values in regression analysis should be between -1 and +1, while kurtosis values should fall between -7 and +7. The skewness scores for NIM, DR, ACI, RC, Lev and Size were 0.630, 0.037, 0.259, 0.713, 0.552 and 0.426 respectively. These values were within 0 and +1, and suggest that the variables exhibit acceptable and positive skewness that is closer to zero.

Positive skewness suggests that the dataset is skewed to the right, with a longer right tail than left. Therefore, the skewness for the variables is approximately symmetrical. The kurtosis values for NIM, DR, ACI, RC, Lev and Size were 3.035, 3.128, 2.949, 2.736, 3.180 and 2.977. These kurtosis values were closer to or around 3, indicating a normal distribution. Finally, the p-values of the Jarque-Berra test were above 5% (i.e., p-value>0.05) which suggests that the null hypothesis that assumed the data is normally distributed is supported since the p-values are greater than 5% level of significance.

### 4.2 Result of the Pearson Correlation Analysis

Correlation analysis is a statistical technique used to quantify the relationship between two variables. The Pearson correlation coefficient, denoted as "r," measures the level of covariation or association between the variables. The range of the "r" value is from +1.0 to -1.0. A value of +1.0 signifies a perfect positive linear relationship, -1.0 indicates a perfect negative linear relationship, and 0 implies no correlation between the variables. The result from Pearson correlation analysis is presented in Table 2.

**Table 2: Pearson Correlation Analysis Result**

| Variables | NIM | DR | ACI | RC | Lev | Size |
|---|---|---|---|---|---|---|
| NIM | 1 | | | | | |
| DR | 0.725 | 1 | | | | |
| ACI | 0.565 | 0.484 | 1 | | | |
| RC | 0.516 | 0.480 | 0.409 | 1 | | |
| Lev | 0.704 | 0.443 | 0.378 | 0.298 | 1 | |
| Size | 0.689 | (0.355) | 0.291 | 0.226 | 0.281 | 1 |

Source: Researcher's STATA version 15 Compilation

The result shows a strong correlation or association between the independent and dependent variables used in the analysis. Table 2 demonstrates that the correlation coefficient (r) between DR, ACI, RC, Lev and Size was 0.725, 0.565, 0.516, 0.704, and 0.689, respectively. This indicates a positive and statistically significant relationship between the directors' remuneration (DR), audit committee independence (ACI), remuneration committee (RC), leverage and size, and net interest margin (NIM). However, the correlation among the independent variables is not strong enough to violate the assumption of multicollinearity. Multicollinearity is the term used to describe a scenario in which two or more explanatory variables in a multiple regression model are highly linearly related (Sekaran & Bougie, 2016). It is important to highlight that all the independent variables or predictors in Table 2 have correlation coefficients below the threshold of 0.7 (Sekaran & Bougie, 2016). The results among the independent variables were below 0.70. Therefore, the result indicates that there is no evidence of multicollinearity as all independent variables had r values less than 0.7. A further test using Variance Inflation Factor (VIF) and the tolerance level indices used to

detect multicollinearity. Variance inflation factor is the inverse or reciprocal of the Tolerance value. The rule of thumb indicates that a VIF index of 4.0 or higher indicates a violation of the multicollinearity assumption, while a TL index lower than 0.250 suggests the presence of multicollinearity among the independent variables. The result obtained is presented in Table 3, and it confirms that there is no issue of multicollinearity.

**Table 3: VIF Index and TL index Results**

| Variables | VIF | Tolerance level |
|---|---|---|
| DR | 1.218 | 0.821 |
| ACI | 1.591 | 0.629 |
| RC | 2.098 | 0.477 |
| Lev | 1.271 | 0.787 |
| Size | 1.374 | 0.728 |
| Mean VIF | 1.510 | |

Source: Researcher's STATA version 15 Compilation

Table 3 shows that the VIF indexes for all the independent variables were below three, and the tolerance level was above 0.400. The highest VIF was RC with a value of 2.098, indicating that there were no problems of multicollinearity in the analyses.

### 4.3 Result of the Dynamic GMM model

This section presents the regression results conducted from the GMM estimator for this study. This section is organized into two sub-sections: (1) Econometric Techniques for Efficient Estimation and (2) GMM Regression Results.

#### 4.3.1 Econometric Techniques for Efficient Estimation

The study compares the results of static panel data and dynamic panel data using the SGMM estimator. It begins by assesses firstly the static panel data models (pooled OLS, FE estimator and RE estimator) and dynamic panel data using the SGMM estimator. The RE estimator was excluded from this study based on the Hausman test econometric diagnostic test. The selection between FE and RE was made based on the assumption that if the p-value is less than 5%, we reject the null hypothesis (random effect estimator) and use the alternate hypothesis (fixed effect estimator) for the analysis. This means that if the p-value is greater than 5%, the fixed effect estimator will be used for the analysis. The Hausman test result is presented as Table 4.

**Table 4: Test Results from Hausman Test**

| Test | Chi-Square (5). Statistics | p-value | Recommendation |
|---|---|---|---|
| Hausman test | 34.36 | 0.012 | Fixed effect estimator |

Source: Researcher's Stata version 15 Computation

The second stage of selecting the suitable estimator for this study is to compare the coefficients of the pooled OLS, FE estimator with the Special GMM (SGMM) and Difference GMM (DGMM). Bond (2001) states that, in order to choose the most suitable estimator between DGMM and SGMM, we need to first estimate the coefficients of ∅ for the lagged dependent variable included as the independent variable for the pooled OLS, FE estimator, and DGMM. Then, we compare the coefficient estimates obtained to make a decision between DGMM and SGMM. The rule of thumb by Bond (2001) is that the coefficient estimate obtained for ∅ from the pooled OLS is considered the upper-bound estimate, while the coefficient estimate from the FE estimator is considered the lower bound estimate. If the result shows that the coefficient estimate for DGMM is close to or below the coefficient estimate of the FE estimator, it suggests that the coefficient estimate for DGMM is downward biased due to weak instrumentation. Therefore, SGMM is

preferred. The result obtained for the lagged NIM (i.e.,) from the estimated coefficients of pooled OLS, fixed effect estimator, and DGMM are presented as Table 5.

**Table 5: Decision to Select between SGMM and DGMM**

| Estimators | Pooled OLS | Fixed Effect | DGMM | Recommendation |
|---|---|---|---|---|
| Coefficients | 0.679 | 0.546 | 0.529 | SGMM |

Source: Author's Stata version 15 Computation

Table 5 shows that the coefficient estimate of ∅ for pooled OLS was 0.679 (i.e., upper bound) and the coefficient estimate of ∅ for the fixed effect estimator was 0.546 (i.e., lower bound), while the coefficient estimate of ∅ for DGMM was 0.529, which is lower and close to the fixed effect estimator. This suggests that the DGMM estimator is downward biased due to weak instrumentation. Therefore, SGMM is the preferred estimator for this analysis. Based on the information obtained, the study adopted SGMM for the analysis, which is considered more robust and more efficient in resolving heteroscedasticity and autocorrelation issues (Roodman, 2009).

**4.3.2 GMM Regression Results**

This sub-section presents the results from the baseline for the pooled OLS, fixed effect estimator, and SGMM (i.e., direct analysis) and presented as model (1), model (2) and model (3). The models (1) and (2) are static panel models while model (3) is a dynamic SGMM models in Table 6. The columns 1 to 3 shows the coefficients of the independent variables used collectively to assess the relationship between directors' remuneration and the bank's performance. The result of the pooled OLS and the fixed effect estimator are shown as model (1) and (2) respectively, while the SGMM is shown as model (3). In all cases, the coefficients for the independent (DR, ACI and RC) variables exhibited a positive and statistical significant relationship with the bank performance in line with the expectation of agency theory. The discussion of this result focuses mainly on model (3) that assesses the effect of directors' remuneration, remuneration committee and bank's performance. The study placed greater emphasize on the SGMM estimator because it was deemed as the most suitable estimator to address the biases occasioned by panel data analysis. Secondly, the SGMM is the most recent estimator that incorporates lagged dependent variable as regressor in the model to solve the issues of serial correlation, heteroscedasticity and endogeneity problems in the model. The purpose of including the static panel models in the analysis is to assess the robustness of the SGMM estimator and to compare the coefficients and significance of the estimators in this study. Table 6 show that the p-values for AR (1) was 0.000 and less than 5% and indicates that AR (1) values are statistical significance, while the p-value for AR (2) was 0.432 which is greater than 5%, which is statistically insignificant under the dynamic model. Finally, the p-value for Hansen J test was greater than 10% but below 30% in line with the recommendation Roodman (2009) that instrument used in the model is valid, and uncorrelated with the error term. It suggests that the over-identifying restrictions on the dependent variable indicate statistical significance of the SGMM estimator. While, the R-squared ($R^2$) measures the goodness of fit for the pooled OLS and FE estimator respectively. Table 6 shows that the $R^2$ are 0.444 and 0.463 for models (1) and (2). The outcomes in Table 6 contain information on the estimated coefficients and the standard errors (in parenthesis) with the corresponding significance levels for the pooled OLS, fixed effect estimator and SGMM presented in Table 6.

**Table 6: The Result of the pooled OLS, fixed effect estimator and SGMM estimator**

| | Static Panel Model | | Dynamic SGMM |
|---|---|---|---|
| NIM | **Model 1** | **Model 2** | **Model 3** |
| NIMt−1 | | | 0.639*** |
| | | | (0.143) |
| DR | 0.165 ** | 0.156 ** | 0.124** |
| | (0.054) | (0.048) | (0.037) |
| ACI | 0.239 *** | 0.150*** | 0.216** |
| | (0.072) | (0.043) | (0.061) |
| RC | 0.231** | 0.051** | 0.163** |
| | (0.055) | (0.012) | -0.038 |
| Lev | (0.094) | (0.126)** | (0.097)** |
| | 0.032 | 0.044 | 0.034 |
| Size | 0.134 ** | 0.104 | 0.151*** |
| | -0.034 | -0.027 | -0.038 |
| Constant | 0.195*** | 0.133*** | 0.158** |
| | (0.064) | (0.045) | (0.053) |
| Observations | 230 | 230 | 230 |
| Number of firms | 20 | 20 | 20 |
| Instrument | | | 12 |
| Time Dummies | No | No | Yes |
| R-square | 0.444 | 0.463 | |
| F-statistics | 0.000 | 0.000 | |
| AR (1) | | | 22.08 |
| P-value | | | 0.001 |
| AR (2) | | | 4.69 |
| P-value | | | 0.000 |
| Wald Chi(2) statistics | | | 0.432 |
| P-value | | | 0.129 |
| Hansen test | | | 48.05 |
| P-value | | | 0.115 |

Note: This table reports empirical results from estimating equation (5) using the SGMM approach (column 3). Columns 1, and present the results of robustness checks with alternative estimators such as pooled OLS and FE, respectively. Asterisks indicate significance at 10% (*), 5% (**) and 1% (***). The notations in all the regression tables are as defined under Section 3.1- Research Variables.
Source: Author's Stata version 15 Computation

To allay the concerns of omitted variables bias and other factors that could influence the result of the analysis, one lagged net interest margin ($NIM_{it-1}$) was included in the model alleviate this concerns. Table 6 presents the coefficients of the independent variables of SGMM in model (3), which fall between those of the pooled OLS and FE estimator. This finding aligns with Bond (2002) and suggests that the pooled OLS underestimates the convergence rate, while the FE estimator overestimates it. Notably, the coefficient of the lagged net interest margin is highly significant and substantial in magnitude. The results in Table 6 demonstrate that the past bank's performance, represented by the lagged net interest margin, positively and significantly impacts the current bank's performance, specifically the net interest margin (NIM). The lagged net interest margin accounts for a considerable portion of the variation in the current net interest margin. In fact, it explains 36.1% (i.e., 1-0.639) of the gap between the current NIM and the desired NIM within one year. Given this rate, it would take approximately three years to fully close the gap in the model.

It is worth noting that in the SGMM estimator model (3), the coefficients and p-values for directors' remuneration (DR), audit committee independence (ACI), remuneration committee (RC), and size (S) all show a positive relationship with the bank's performance. However, leverage (Lev) shows a negative relationship. Specifically, Table 6 presents the coefficients and p-values for the relationship between

directors' remuneration and the bank's performance under the SGMM estimator (β= 0.124, p= 0.000). This indicates a significant positive relationship between directors' remuneration and the bank's performance at a 5% significance level. Therefore, based on the results in Table 6 and the accompanying explanations, the study fails to reject the null hypothesis (H01) and concludes that directors' remuneration significantly affects the bank's performance. In other words, a 1% increase in directors' remuneration leads to a 12.4% increase in the bank's performance. This finding consistent with previous studies and agency theory that found a positive and significant relationship between directors' remuneration and bank's performance (Aggarwal & Ghosh, 2015; Aslam et al., 2019; Harymawan et al., 2020). Agency theory advocates that performance-based payment model would incentivize directors to minimize agency problem which would ultimately enhance bank's performance (Kumar & Sivaramakrishnan, 2008). This implies that a higher directors' remuneration can help to mobilize skilled and enthusiastic directors to perform their supervisory functions more actively, improve upon the firm's governance structure, thereby improving the bank's performance.

The coefficient and p-value between audit committee independence and the bank's performance under the SGMM estimator were (β = 0.216, p = 0.000). This indicates a positive and significant relationship between audit committee independence and the bank's performance at a 5% significance level. Therefore, based on the results in Table 6 and the explanations provided, the study fails to reject the null hypothesis (H02) and concludes that audit committee independence significantly affects the bank's performance. In other words, all else being equal, a 1% increase in audit committee independence increases the bank's performance by 21.6%. This finding is consistent with agency theory and previous studies that suggest a positive and significant relationship between audit committee independence and the bank's performance (Appiah & Chizema, 2016; Cybinski & Windsor, 2013; Agyemang-Mintah, 2015). According to agency theory, audit committee independence enhances the supervision and independence of the board, thereby mitigating agency problems through oversight of financial reporting and ensuring managerial accountability and transparency. The positive relationship between audit committee independence and the bank's performance supports the idea that an independent audit committee strengthens the board's ability to monitor management actions, scrutinize the quality of financial reports, and reduce the likelihood of financial misstatements or fraud. Therefore, increased oversight and accountability can lead to reduced agency costs, increased investor confidence, and ultimately enhance the bank's performance.

Furthermore, the coefficient and p-value for the relationship between the remuneration committee and the bank's performance, as estimated by the SGMM estimator, were (β = 0.163, p = 0.000). This indicates a positive and significant relationship between the remuneration committee and the bank's performance at a 5% level of significance. Therefore, based on the findings in Table 6 and the accompanying explanations, the study does not reject the null hypothesis (H03) and concludes that audit remuneration significantly affects the bank's performance. This means that, holding all other factors constant, a 1% increase in audit committee independence leads to a 16.3% increase in the bank's performance. This finding is consistent with previous studies, optimal contractual theory and agency cost (Appiah & Chizena, 2016; Agyemang-Mintah, 2015; Cybinski & Windsor, 2013; Lam & Lee, 2012; Harymawan et al., 2020). Harymawan et al. (2020) opined that remuneration committee monitors and advice the board on decisions concerning directors' remuneration that would reduce agency cost and ultimately leads to better bank's performance. This study agrees with Holmstron's (1979) optimal contracting theory, which suggests that directors' remuneration should be linked to both the long-term objectives of the shareholders and the financial performance of the firm. Similarly, Guo and Masulis (2015) argued that the presence of remuneration committee promotes more stringent oversight over management leading to enhance bank's performance. Finally, the result shows that the firm's size used as control variables in this study was positively related to the bank performance while leverage was negatively related to the bank's performance. This outcome contributes to optimal contractual theory by aligning directors' interests with the bank's performance metrics using appropriate compensation packages. The ultimate aim of the optimal contracting theory is to mitigate agency conflicts and promote efficient corporate governance that contributes to the long-term value of the bank in Ghana. Therefore, the null hypotheses: H01, H02, and H03 were supported at the significance level of 5%.

#### 4.3.3 Robustness Tests and Post Estimation Tests

To ensure the reliability and accuracy of the assessment regarding the relationship between directors' remuneration and bank performance, this study employed two approaches for robustness testing. The first approach utilized SGMM to estimate the relationship among the variables, while the second approach utilized various estimators such as pooled OLS and FE estimator to evaluate the suitability of the regression model and assess the sensitivity of the results obtained under SGMM. The robustness test was conducted based on the recommendations of Boozer (1997) in order to identify any potential weaknesses that could significantly influence the outcome of the results. The results of the pooled OLS and FE estimators are shown as model (2) and (3) respectively in Table 6. The results obtained for pooled OLS and FE estimators are similar to the results of SGMM estimator in terms of p-value and direction of the coefficients of the DR, ACI, and RC, except the magnitude of the coefficients. Again, the robustness of the SGMM estimator was confirmed by the AR (1), AR (2) test, and Hansen test. The result of the Hansen test of over-identifying restriction test for overall validity of the instrument showed a p-value of 0.126 which is in line with Roodman's (2009) recommendation that the p-value should be between 10% and 30% (i.e., 0.10 and 0.30) to accept the overall validity of the instrument for the analysis.

## 5 Conclusions and Recommendations

This study was undertaken purposefully to assess the effect of directors' remuneration and the remuneration committee on the bank's performance. The diagnostic tests conducted confirmed that there is an absence of second-order correlation and validity of the instrument. The study revealed a positive and significant relationship between directors' remuneration, audit committee independence, remuneration committee, and bank performance. These findings are well-aligned with optimal contractual theory and the agency theorists' perspective that advocates for strengthening corporate governance mechanisms and audit committee independence to minimize agency conflicts arising out of the principal-agent relationship. The findings of this study confirm that optimal contracting theory is sufficient to explain the payment of performance-based remuneration to directors. Specifically, the results support the important role of the remuneration committee in selecting directors who possess the necessary skills and competence to reduce agency conflicts. By ensuring that the Board appoints directors with relevant skills and competence, the bank's performance can be enhanced. Again, the findings support the need to directors with requisite skills to monitor and ensure management's opportunistic behaviors are minimized to the benefit of the bank. Overall, this study's findings are consistent with optimal contracting theory that argues for strengthening corporate governance structure in the form of audit committee independence and setting up a remuneration committee to attract the best and most qualified individuals who will act in the best interest of the bank and minimize the opportunistic behaviors of management (i.e., agents) at the expense of owners (principals). Secondly, the banks should ensure that directors' remuneration is tied to the bank's performance metrics, such as revenue growth, profitability of the bank, and shareholders' returns. Aligning directors' remuneration to the bank's performance metrics would enhance the bank's performance. Finally, the result of this paper should motivate the board to design performance-based incentives that would retain and attract top talent with the experience necessary to drive the bank's success. The findings of this study are considered in light of three key limitations. The first limitation is that the study was carried out in Ghana, a developing country with nascent corporate governance systems that are still evolving. To enhance the generalizability of the results, future studies should incorporate data from both developed and developing countries for comparative analysis. Therefore, future research should take up a study involving performance-based bonuses such as share options as moderating variables between the remuneration committee and the bank's performance.

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