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# Examining the Link between Technical Efficiency, Corporate Governance and Financial Performance of Firms: Evidence from Nigeria

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**Abstract:** The purpose of this study is to examine the link between technical efficiency and both the corporate governance and financial performance of listed financial firms on the floor of the Nigerian Stock Exchange using three theoretical approaches: shareholder theory, stakeholders' theory, and resource dependence theory. We employed a stochastic frontier analysis to examine the impact of technical efficiency on the link between corporate governance and financial performance on the one hand, and, on the other, multiple regressions comprised of OLS and Poisson estimates to analyze a data-generating set sourced from 2007 to 2020. The results of our OLS estimates suggest that a negative but significant relationship exists between the corporate governance mechanism and the financial performance of the listed firms. When we subject the analysis to the Poisson estimates, the relationship becomes positive and significant. Our results have some positive implications.

**Keywords:** corporate governance; technical efficiency; firm performance; financial firms; Nigeria

## 1. Introduction

At the front burner of financial performance literature lies the discussion of the role of corporate governance. With a good corporate governance mechanism (proxy control by a board of directors, composition and size, audit committee, etc.), a firm's financial performance is expected to be enhanced (Lawal et al. 2018), as this improves shareholders' wealth (Meintjes and Grobler 2014), attract investors (both foreign and local) (Min and Bowman 2015), improves accountability (Sheikh and Alom 2021), improves environmentally friendly measures (Saygili et al. 2022; Hong et al. 2021), reduces insolvency (Ali et al. 2021), improves social benefits (Rodriguez-Fernandez 2016) and improves technical efficiency (Peng et al. 2021). However, recent evidence has proven otherwise, for instance in the US where the need for an effective corporate governance structure was amplified by the collapse of two corporate giants, Enron (power sector giant) and WorldCom (Telecom Sector grant). This also negatively affected one of the world's top four accounting firms, Arthur Andersen, as it was the auditing firm to Enron. In Nigeria, we have seen the overstatement in Cadbury Nigeria PLC accounts in 2007 as well as persistent cases of the winding up of firms, especially in the banking industry, as evidenced by CBN's constant interventions to save the banking industry from collapse, such as the introduction of several legal frameworks to reduce theft, misappropriation and corporate failure, and the dissolution of boards of directors of erring firms, among other things.

The institutional interventions enacted to avert corporate failure include the introduction of the Companies and Allied Matters Act (CAMA) in 1990, the Security and Exchange

Commission Code of 2006, the National Insurance Commission (NAICOM) Code for Corporate Governance and the National Code of Corporate Governance of 2016 by the Financial Reporting Council (FRC). Despite all these interventions, the nation is still bedeviled by cases of corporate governance failure. A major implication of corporate governance failure is that a company's potential is weakened, and it becomes vulnerable to financial difficulty and fraud, among other things.

It is a known fact that the principles stated in most of the corporate governance codes in emerging economies are products of experiences from developed economies, which may not necessarily apply to emerging economies such as Nigeria (Madugba et al. 2021; Khan et al. 2022). When compared with developed economies, emerging economies are characterized by weak institutional and legal frameworks (Lima and Craig 2018; Maier and Yurtoglu 2022; Mohsni et al. 2021). Peng et al. (2021) have noted that each economy has its own national character and social and economic priorities, such that what is permissible in one economy may not be permissible in another. The choice of the Nigerian economy as the focus of this study was born out of the fact that substantial evidence exists to show that the structure of the Nigerian economy to a large extent differs from that of developed economies, which have been the central focus of the existing literature on the corporate governance–financial performance nexus. In Nigeria, most of the listed banks have their controlling shares vested in the hands of a few individuals. Hence, studies that employ samples from Nigeria are more likely to offer different but interesting results.

In addition, recent evidence from the corporate governance literature shows that different systems of governance are appropriate for different industries, ruling out the notion of a “one type fits all” system (Dobija et al. 2022; Ozdemir 2020; Kolte et al. 2021a, 2021b, 2021c; Mohsni et al. 2021). Other studies (Peng et al. 2021; Felix Eluyela et al. 2020; Maier and Yurtoglu 2022), relying on the contingent corporate governance model have noted that special attention should be given to industries characterized by a high level of capital intensity, unstable market status with a high level of competition, macroeconomic volatility, high levels of short-term decision making and a separation of ownership. This is one of the motivations behind our interest in the financial sector of the Nigerian economy, which may exhibit some of these factors.

Recent literature has been of the view that technical efficiency is key to determining a firm's financial performance, hence the need to calibrate input–output procedures in the performance assessments of firms when examining the corporate governance–financial performance nexus (Bozec et al. 2010; Walheer and He 2020). The existing literature in Nigeria rarely explores technical efficiency measures in assessing the corporate governance–financial performance nexus, a gap the current study is set to fill.

The essential purpose of this research is to examine the impact of various kinds of corporate governance on the financial performance of listed firms in Nigeria using a battery of econometrics tools. Although a number of studies exist that have examined the impact of corporate governance structures on the performance of firms, the majority of these studies have employed a nonparametric approach, which is considered inappropriate given the existing data gaps. Additionally, most of the studies have focused on environmental and corporate social responsibility, whereas board structure, which is at the core of a firm's performance, has been neglected. We will attempt to fill these gaps by employing multiple regression methods to analyze the data-generating set sourced from 2007–2021 and concerning the Nigerian economy. Our results have some policy implications.

The remainder of the study is as follows: Section 2 provides the literature review; Section 3 focuses on methodology; Section 4 discusses the results; and Section 5 concludes the study.

## 2. Literature Review

Theoretical model and hypotheses development.

We begin our theoretical framework and hypotheses development by first developing a mediating hypothesis of technical efficiency as it relates to the nexus between the overall

corporate governance framework and financial performance. Thereafter, we will consider the nexus between specific governance components and financial performance in the financial firms listed on the Nigerian Stock Exchange. Our hypotheses are both interrelated and complementary to each other, and hence are useful for exploring the links among the governance structure, technical efficiency and financial performance of financial sector firms listed on the floor of the Nigerian Stock Exchange.

### *2.1. Technical Efficiency, Corporate Governance and Financial Performance*

Corporate governance is simply a series of interactions among a firm's board, management and shareholders, as well as other stakeholders. It refers to a win-win interplay between the firm's structure and the outside world. Technical efficiency centers on operational efficiency based on the input-output nexus, i.e., how much input generates a measure of output. Financial performance, in most cases, is regarded as the key indicator for determining performance. The extant literature has documented the existence of a significant relationship between corporate governance and financial performance, and established that a functional relationship exists between financial performance and technical efficiency (Moon and Min 2020; Peng et al. 2021). Recent evidence suggests the existence of mixed results concerning the link between corporate governance and technical efficiency (Oukil et al. 2016; Kofi and Adams 2020; Bozec et al. 2010; Walheer and He 2020). Peng et al. (2021) have noted that introducing technical efficiency into the nexus between corporate governance and financial performance will help improve the understanding of this relationship. To the best of the authors' knowledge, little literature exists that incorporates technical efficiency in the model of the nexus between financial performance and corporate governance in the financial sector of the Nigerian economy. It is the authors' belief that calibrating the technical efficiency of the output process as a mediating factor will help obtain a better understanding of how corporate governance affects a firm's financial performance. Hence, we purpose the following hypotheses.

**H1a.** *Technical efficiency has a significant positive impact on the financial performance of financial firms listed on the NSE.*

**H1b.** *Technical efficiency significantly mediates the effects of corporate governance on the financial performance of financial firms listed on the NSE.*

### *2.2. Audit Committee and Financial Performance*

The stewardship hypothesis is one of the major theories that govern the impact of an audit committee on the financial performance of firms. According to the model, auditors are agents of the stakeholders employed to access the behavior of managers. The assertion of the theory has been subjected to a number of empirical investigations. For instance, based on data sourced from 2010 to 2019 for some selected European markets, Pozzoli et al. (2022) noted that audit committees have a positive effect on financial performance as they positively impact the environmental sustainability goals, revenue and profit of the investigated firms. Hsu and Yang (2022) have noted that the audit committee financial reporting quality has a mitigating effect on the company's corporate governance behavior and financial performance, based on data sourced from the UK, especially during the COVID-19 pandemic. Pozzoli et al. (2022) examined the impact of audit committee characteristics, such as independence, expertise and tenure, on the performance of European listed companies within the framework of ESG scores, based on a dataset from 2018 to 2020. The study noted that, for the studied economies, a positive relationship existed between ESG performance and audit committee characteristics such as independence and expertise, though a negative relationship was documented for tenure and the financial performance of the listed firms. The authors concluded that the impact of the audit committee on the financial performance was partial. Alsmady (2022) employed a panel regression model to examine the impact of audit committee quality on the financial performance of six selected Arabian GCC economies for the period 2013–2017 and noted that audit committee quality

positively impacted the companies' financial performance, with a consequential reduction in asymmetric information.

For China, [Li and Li \(2020\)](#) introduced gender to the nexus between the audit committee and the financial performance of firms. Their study noted that female chairpersons of audit committees had a more significant impact on the financial performance of firms than their male counterparts. The study also noted that tenure and open organization were key ingredients that promoted audit committee effectiveness. [Salloum et al. \(2014\)](#) noted that more frequent meetings by audit committees helped in mitigating financial loss.

[Al-ahdal et al. \(2020\)](#) have noted that a significant indirect relationship exists between audit committee action and the financial performance of listed firms with effective risk governance structures in the US. [Ghafran et al. \(2022\)](#) have noted that audit committees that share membership with the board are less effective in monitoring the manipulation of earnings by management. This, the authors argued, has negative implications for the overall financial performance of firms listed on the floor of the stock exchange and FTSE350 companies in the UK. [Nguyen \(2021\)](#) introduced a religious dimension to the role of the audit committee in the financial performance of firms. The author noted that highly effective audit committees negatively impact the risk-taking behavior of conventional banks, which in turn negatively impacts their financial performance. However, this may be the effect of the absence of Islamic-oriented banks in the studied economies. It is divergent from the results concerning the relationship between audit committees and financial performance that informed our hypothesis, stated below.

**H2.** *The audit committee is negatively related to a firm's financial performance.*

### *2.3. Board Composition and Financial Performance*

The shareholder perspective is a framework that effectively captures the impact of the board characteristics on a firm's performance ([Saygili et al. 2022](#); [Dobija et al. 2022](#)). The framework provides theoretical notes on the relevance of classical concepts such as agency, stewardship and resource dependence on a firm's output ([Ahmadi et al. 2018](#); [Rashid 2018](#)) and a firm's objective of maximizing shareholders' wealth. [Garcia-Torea et al. \(2016\)](#) noted that characteristics of board composition, such as board size and internal functioning, are key to achieving effective oversight. [Shakil \(2021\)](#) noted that gender sensitivity is crucial to achieving a desirable financial outcome for firms. The study noted that firms in the oil and gas industry with a substantial number of women on board tend to minimize risk more than firms with boards dominated by men. [Sheikh and Alom \(2021\)](#) noted that board composition, as well as other governance structure components such as board ownership, board size and firm size, have a significant impact on the performance of firms in Bangladesh. [Shen et al. \(2022\)](#) noted that board composition, if not properly composed, could obstruct the progress of a firm with the negative consequences of its financial performance. [Lozano and Martínez-Ferrero \(2022\)](#) noted that the impact of board composition on the performance of firms is a function of the corporate governance codes operational in an economy. The study noted that in emerging economies, the effect of the country prevails, with the positive effect of the board of directors guaranteeing its efficiency, whereas, in the developed economies, the board of directors and ownership structure are the two key factors. [Şener et al. \(2011\)](#) noted that the impact of board composition on the performance of firms varies. This position was also maintained by [Chareonwongsak \(2017\)](#) for Thailand. [Ozdemir \(2020\)](#) noted that the impact of board composition on the performance of firms is best amplified by board diversity combined with a low level of institutional ownership. [Shahbaz et al. \(2020\)](#) noted that board diversity is key to achieving a desirable financial performance in the energy sector. [Ahmadi et al. \(2018\)](#) noted that board composition is positively correlated with a firm's financial performance for the French CAC 40 listed firms. [Gloor et al. \(2020\)](#) noted that a board composed of venture capitalists tends to attract funding for firms easily, with a positive impact on the firms' financial performance. For the Spanish economy, [Valls Martínez and Rambaud \(2019\)](#) introduced gender bias to the discussion of board composition, noting that an increasing



number of women on the board of directors enhances financial performance. However, [Nguyen et al. \(2020\)](#) presented evidence that contradicts the view of [Valls Martínez and Rambaud \(2019\)](#), stressing that board composition has little to no effect on the financial performance of firms. [Ararat and Yurtoglu \(2021\)](#) noted that no significant evidence exists to suggest that female participation on a board, or board composition in general, influences the financial performance of firms in Turkey. [Farag and Mallin \(2017\)](#) noted that board composition, especially as concerns gender, has no impact on the financial performance of European banks. [Wang and Hsu \(2013\)](#) are of the view that board composition and board size are negatively and non-linearly associated with financial performance, and that it could have an adverse effect on board-monitoring functions. The debate on the impact of board composition is inconclusive; [Al-Najjar \(2017\)](#) noted a positive relationship, while [De Andres et al. \(2005, 2022\)](#) established a negative relationship. Hence, we developed our hypothesis as follows:

**H3.** *Board composition is negatively related to a firm's financial performance.*

#### 2.4. Board Size and Financial Performance

The agency theory provides a link between board size and the financial performance of firms ([Rashid 2018](#); [Shen et al. 2022](#)). Accordingly, the theory proposes that the board as an agent of owners should provide oversight of management, but that this oversight should correspond appropriately with the size and mixture of the board. The extant literature has suggested a membership of five to nine as appropriate ([Malik et al. 2021](#); [Guney et al. 2020](#)).

[Hsu and Yang \(2022\)](#) noted that board size helps in reducing financial loss in firm output. [Uyar et al. \(2020\)](#) noted that no significant evidence supports the notion that board size has a positive effect on the financial performance of firms. [Tseng et al. \(2020\)](#) noted that the impact of board size on financial performance is at best mixed, stressing that it can only be positive from a corporate social responsibility perspective. [Ghosh and Ansari \(2018\)](#) noted that board size does not affect the performance of Indian cooperative banks. [Vu et al. \(2018\)](#), [Dobija et al. \(2022\)](#), [Guney et al. \(2020\)](#) and [Mohsni et al. \(2021\)](#) have noted that board size has a significant positive impact on ROA, but has no impact on ROE. [Ozdemir \(2020\)](#) has noted that the impact of board size on the financial performance of the US tourism sector is only positively related to Tobin's  $q$ .

The extant literature suggests that the debate concerning this relationship has been largely inconclusive. This development informed our hypothesis, presented as follows:

**H4.** *Board size is negatively related to a firm's financial performance.*

### 3. Methodology

#### 3.1. Model Specification and Justification

##### 3.1.1. Estimation Techniques for Technical Efficiency

Empirically, there are two major estimation techniques for measuring technical efficiency. These are data envelopment analysis (DEA) and parametric stochastic frontier analysis (SFA). A major strength of SFA over DEA is that it allows statistical inferences to be made from efficiency scores as well as the separation of error terms from inefficiency terms ([Chatzimichael and Liasidou 2019](#); [Jarboui and Guetat 2015](#); [Lin and Zhu 2020](#)). This informed our choice to use SFA in this study. We employed a fixed effects model and a translog production model that calibrates the quadratic and interaction terms, and which is better than the Cobb–Douglas model ([Greene 2005](#)). SFA models require that in selecting the input and output criteria, efforts should be made to ensure that the output reflects the business goals, while the input should be the required resources needed to achieve the desired goals. Following the extant literature ([Chatzimichael and Liasidou 2019](#); [Jarboui and Guetat 2015](#)), we specified two input variables—labor and capital—and one output variable—total income—and specified our model as follows:

$$Inincome_{it} = \alpha_i + \alpha_1 Inlabour_{it} + \alpha_2 Incapital_{it} + \alpha_3 (Inlabour_{it})^2 + \alpha_4 (Incapital_{it})^2 + \alpha_5 Inlabour_{it} * Incapital_{it} + \alpha_6 W_{it} + v_{it} - \eta_{it} \tag{1}$$

where  $i$  is the firm,  $t$  is the year,  $W_{it}$  represents the basket of corporate governance variables,  $v_{it}$  represents the random errors, which are assumed to be *iid*, with an  $N(0, \sigma_v^2)N(0,)$  distribution, whereas  $\eta_{it}$  is the non-negative term, a proxy for technical efficiency with a truncated normal distribution (Peng et al. 2021). Hence, we predicted the technical efficiency as follows:

$$\theta_{it}^* = E(\exp(-\eta_{it}) | \hat{e}_{it} = \hat{v}_{it} - \hat{\eta}_{it}) \tag{2}$$

Here,  $\theta_{it}^*$  is the technical efficiency for firm  $i$  in year  $t$ .

### 3.1.2. OLS Estimation Techniques

First, we employed the OLS regression to analyze data sourced from the publications of the Nigeria Stock Market (various issues). The variables were financial performance, which was the dependent variable, proxy by return on equity and the independent variables proxy by board size, board composition and audit committee. The control variables were dividends, employees, assets and capital. The study followed the relevant literature (Paniagua et al. 2018; Salisu et al. 2020; Lawal et al. 2018) and employed OLS regression to examine the relationship between the dependent variable and the independent variables factoring in the selected control variables. The model is specified as follows:

$$InROE_{it} = \beta_1 + \beta_2 BSize_{it} + \beta_3 BComp_{it} + \beta_4 Audit_{it} + \beta_5 Dividend_{it} + \beta_6 In(Employees)_{it} + \beta_7 In(Assets)_{it} + \beta_8 In(capital)_{it} + \epsilon_{it} \tag{3}$$

where  $i$  represents company 'a',  $t$  is the time in the year,  $\epsilon_t$  is a stochastics error term and  $BSize$   $BComp$   $Audit$   $Dividend$   $Employees$   $Assets$   $capital$  represents board size, board composition, audit committee, dividend, number of employees, assets and capital, respectively. Following the extant literature (García-Ramos and Díaz 2021; Naciti 2019; Madanoglu et al. 2018; Malik et al. 2021; Ghafran et al. 2022; Chareonwongsak 2017; Uyar et al. 2020; Ozdemir 2020; Sheikh and Alom 2021; Shen et al. 2022; Lozano and Martínez-Ferrero 2022), we constructed the main dependent variables as follows: board size 1 if the board members are 5 or more, 0 if otherwise; audit committee 1 if 2/3 of the members are professional, i.e., hold relevant qualifications in accounting, finance, etc., 0 if otherwise; board composition 1 if 2/3 of board members are women and are executive directors, 0 if otherwise. Data were sourced from the annual reports of the financial (banking) firms listed on the floor of the Nigerian Stock Exchange (various issues).

### 3.1.3. Multiple Regression Poisson

The limitations of OLS are well known in the extant literature; they include the assumption that the dependent variable is normally distributed, and that the relationship between the variables is linear. To address these limitations, the extant literature (Ojeka et al. 2019; Paniagua et al. 2018) has proposed the use of non-linear Poisson regression. This is premised on the fact that Poisson regression is compatible with dependent variables of zero and reduces estimation bias owing to heteroscedasticity in the error term. Moreover, Poisson regression is popular in non-linear empirical literature, characterized by many zeros in the data-generating set. Specifically, Poisson regression offers two main advantages over OLS, and these are (i) Poisson regression is compatible with dependent variables of zero and reduces estimation bias owing to heteroscedasticity in the error term, and (ii) when the data set consists of many zeros and is non-linear, Poisson regression offers a better result than OLS.

Hence, we modeled our Poisson regression equation as follows:

$$ROE_{it} = \exp(\beta_1 + \beta_2 BSize_{it} + \beta_3 BComp_{it} + \beta_4 Audit_{it} + \beta_5 Dividend_{it} + \beta_6 In(Employees)_{it} + \beta_7 In(Assets)_{it} + \beta_8 In(capital)_{it}) + \epsilon_{it} \tag{4}$$

#### 4. Presentations and Discussions

We present the results of the descriptive statistic in Table 1. The results as presented in the table show that the mean of the ROE was 22.098, the standard deviation for board size was 0.711, and the mean for assets was 6.344. The results show that the distribution is not normally distributed, a condition that necessitated the deployment of Poisson regression.

**Table 1.** Descriptive Statistics.

Definition	Variable	N	Mean	Standard Deviation	Min.	Max.
Return on equity	ROE	33	22.098	12.965	1	27.943
Board Size	<i>BSize</i>	33	11.011	0.711	0.101	13.877
Board Composition	<i>BComp</i>	33	10.554	5.442	0	17.099
Audit Committee	<i>Audit</i>	33	0.987	6.229	0.001	33
Dividend	<i>Dividend</i>	33	3.226	3.427	0.433	5.984
Employees	<i>In(Employees)</i>	33	4.911	0.622	0.655	5.322
Assets	<i>In(Assets)</i>	33	6.344	0.571	3.356	8.592
Capital	<i>In(Capital)</i>	33	6.178	0.613	2.098	8.466

Source: author’s computations, 2022.

We present the results of the correlation matrix in Table 2. The results show that the relationship between the variables was linear. The results show that the coefficient of the independent variables was not higher than 0.5, except that for dividend, which was 0.542. This rules out the possibility of multicollinearity as a concern for our models.

**Table 2.** Correlation matrix.

	Efficiency	<i>BSize</i>	<i>BComp</i>	<i>Audit</i>	<i>Dividend</i>	<i>In(Employees)</i>	<i>In(Assets)</i>	<i>In(Capital)</i>
Efficiency	1							
<i>BSize</i>	−0.034	1						
<i>BComp</i>	−0.021	−0.036	1					
<i>Audit</i>	0.042	0.341	0.039	1				
<i>Dividend</i>	−0.004	−0.445	−0.541	0.035	1			
<i>In(Employees)</i>	0.032	0.344	0.611	0.493	0.025	1		
<i>In(Assets)</i>	0.043	0.067	0.077	0.083	0.045	0.0387	1	
<i>In(Capital)</i>	0.037	0.322	0.0761	0.076	0.044	0.033	0.034	1

Source: author’s computations, 2022.

#### Results of the Technical Efficiency Model

In Table 3, we present the results of the SFA model that was used to examine technical efficiency. From the results, it can be deduced that all the variables are statistically significant, except for capital. The results also show that the average technical efficiency was 78.1%, suggesting that inefficiency was just 21.9%. This result is close to value of 63.7% obtained by Peng et al. (2021) and is also in line with the findings of Bozec et al. (2010) and Walheer and He (2020), though it contradicts Oukil et al. (2016). The results of the coefficients of each of board size, board composition and audit committee are significant. The results also suggest that the average technical efficiency of corporate governance measures is 63.8%, 71.1% and 62.1% for each of board size, board composition and audit committee, respectively. The results suggest the adoption of our H1b hypothesis, that technical efficiency significantly mediates the impact of corporate governance on the financial performance of financial listed firms on the Nigerian Stock Exchange.

**Table 3.** Results of true fixed-effect SFA.

Variables	Coefficients	Std. Err.
<i>Inlabour</i>	1.127 ***	0.554
<i>Incapital</i>	−0.163	0.741
$(Inlabour)^2$	0.103 ***	0.021
$(Incapital)^2$	0.034 *	0.019
<i>Inlabour * Incapital</i>	−0.104 ***	0.781
<i>BSize</i>	0.105 ***	0.638
<i>BComp</i>	0.041 ***	0.711
<i>Audit</i>	0.012 ***	0.621
$\sigma_v$	0.102 ***	0.012
$\sigma_\eta$	14.014 ***	0.013
Groups	33	33
Observations	462	462
Log likelihood	−137.812	

\*\*\*, and \* represent 1% and 10% level of significance respectively.

The results of the OLS estimation techniques of Equation (3) are presented in Table 4. The study employed a stepwise procedure that allowed us to sequentially add the control variables. This procedure allowed for the identification of potentially omitted variable bias. We present the results without the control variables in Column (1) of the table. In the succeeding columns, we present the results of the full set of control variables and those of the fixed effects. No evidence from the results of the OLS procedure supported the validity of any of the hypotheses, suggesting that the OLS is weak when examining the financial performance of firms. The results seen in column 1 of Table 4 further suggest that our main variables had no significant impact on return on equity. The joint power of the variables employed was low, as shown in the coefficient of  $R^2$  of 0.001. The low value of  $R^2$  further justifies the inclusion of the control variables (dividend, number of employees, assets and capital) presented in column 2. After introducing the control variables in column 2, the sign and magnitudes of the board size became significant and remained positive ( $p < 0.01$ ). This result failed to agree with our theoretical expectations, or with some of the extant literature. For instance, the obtained results are in line with the findings of [De Andres et al. \(2005\)](#) but contradict the findings of [Al-Najjar \(2017\)](#), among others. The obtained results failed to support the agency theory proposition that board composition is key to a firm's performance. The fixed effect results presented in columns 3 and 4 show that the variables were significant and positive. The effect of the control variable remained unchanged and appeared to be robust under multiple specifications. The results as presented reveal that firms with greater assets and lower capital requirements often have a higher level of ROE.

This attests to the fact that an audit committee's ability to block linkages and wastages will induce a positive impact on a firm's financial performance. The result is in line with the findings of [Shakil \(2021\)](#), but it contradicts [Shen et al. \(2022\)](#) and [Ararat and Yurtoglu \(2021\)](#), among others. The results suggest the acceptance of the null hypothesis that the audit committee has no impact on financial performance.

The results of the Poisson regression estimation technique are presented in Table 5. It can be seen that the results are different from those obtained under the OLS procedure, shown in Table 4. For instance, the results show that all the variables of interest are estimated with precision ( $p < 0.01$ ). It was observed that the expected negative sign held across all multiple specifications. The estimated coefficient of board size dispersion ranged from −0.028 (column 2) to −0.0316 (column 1). The implication is that increasing the board size in a particular firm by 1% will induce a fall in ROE of at least 2.8%, all other



things being equal. Considering this implication, we reject the null hypothesis that board size does not negatively affect a firm’s financial performance. The results are in line with the findings of Hsu and Yang (2022) and Tseng et al. (2020), but contradict the findings of Ghosh and Ansari (2018) and Vu et al. (2018). The findings are in line with agency theory that postulates that a functional relationship exists between board size and a firm’s performance, stressing that too large a board size will have negative implications for a firm’s financial performance. The estimated coefficient of board composition ranged from −0.041 (column 3) to −0.037 (column 2). Hence, an alteration in the board composition of a particular firm is expected to decrease its ROE by between 4.1% and 3.7% on average, all other things being equal. These results suggest that we can reject the null hypothesis that board size does not negatively affect a firm’s financial performance.

**Table 4.** Multiple regression results: OLS.

	Dependent Variables: In(ROE)			
	(1)	(2)	(3)	(4)
<i>BSize</i>	0.058 (0.044)	0.145 *** (0.004)	0.065 (0.045)	0.112 ** (0.054)
<i>BComp</i>	−0.001 (0.002)	−0.002 (0.003)	0.003 (0.002)	−0.001 (0.002)
<i>Audit</i>	0.003 (0.002)	0.0001 (0.003)	0.0005 (0.002)	−0.001 (0.001)
<i>Dividend</i>		0.034 (0.023)	0.038 (0.011)	−0.001 (0.000)
<i>In(Employees)</i>		−0.042 (0.029)	−0.041 (0.027)	−0.061 (0.041)
<i>In(Assets)</i>		0.179 *** (0.059)	0.111 ** (0.051)	0.171 *** (0.055)
<i>In(Capital)</i>		−0.216 *** (0.037)	−0.164 *** (0.042)	−0.224 *** (0.048)
<i>Observations</i>	33	33	33	33
<i>R<sup>2</sup></i>	0.002	0.75	0.79	0.83
<i>Adj R<sup>2</sup></i>	0.001	0.68	0.73	0.79
<i>FE<sub>sector</sub></i>	No	No	Yes	Yes

Source: author’s computations, 2022. Notes: standard errors in parentheses. \*\* and \*\*\* represent, 5% and 1% significance levels, respectively.

We present the results of the coefficients of the audit committee in Table 4. The coefficients were positive and significant for all the columns. This implies that an increase in the number of audit committee members will lead to a rise in a firm’s financial performance. The results obtained from these estimates support the rejection of the null hypothesis that audit committees negatively affect the financial performance of firms, hence we accept the alternative hypothesis. The estimated coefficient of dividend ranged from 0.014 to 0.020 in columns 4 and 3, respectively. Therefore, we can expect that increasing the dividend by one naira (N1) in a particular firm will increase ROE by at least 3.5% (all other things being equal).

The results of the estimated coefficient of the control variables were as expected and are not in line with the OLS results presented in Table 3. Furthermore, the coefficient for employees was significant and positive, and that of assets was also positive and significant on all horizons. The coefficient of capital was positive and significant. This implies that an increase in any of these variables will enhance the financial performance of a firm by an upward shift in the level/magnitude of their ROE, all other things being equal. Finally, the estimated coefficients of the core variables were robust.

**Table 5.** Multiple regression: Poisson.

	Dependent Variables: In(ROE)			
	(1)	(2)	(3)	(4)
<i>BSize</i>	0.0316 *** (0.014)	0.028 *** (0.041)	0.069 *** (0.015)	0.0312 ** (0.044)
<i>BComp</i>	0.012 *** (0.002)	0.037 *** (0.003)	0.041 *** (0.002)	0.031 *** (0.002)
<i>Audit</i>	0.017 *** (0.002)	0.024 *** (0.003)	0.019 *** (0.002)	0.013 *** (0.006)
<i>Dividend</i>	0.011 *** (0.002)	0.038 *** (0.023)	0.021 *** (0.011)	0.014 *** (0.000)
<i>In(Employees)</i>		0.044 *** (0.011)	0.041 *** (0.015)	0.067 *** (0.021)
<i>In(Assets)</i>		0.192 *** (0.063)	0.111 *** (0.051)	0.171 *** (0.075)
<i>In(Capital)</i>		0.244 *** (0.066)	0.184 *** (0.012)	0.296 *** (0.053)
<i>Observations</i>	33	33	33	33
<i>R<sup>2</sup></i>	0.009	0.56	0.65	0.72
<i>Adj R<sup>2</sup></i>	0.005	0.49	0.58	0.68
<i>FE<sub>sector</sub></i>	No	No	Yes	Yes

Source: descriptive statistics result using SPSS 26. Notes: standard errors in parentheses. \*\* and \*\*\* represent 5% and 1% significance levels, respectively.

## 5. Conclusions of the Study

This study has examined the nexus between corporate governance and the financial performance of financial firms listed on the floor of the Nigerian Stock Exchange based on data sourced from 2007 to 2020. The study also accounts for the impact of the mediating role of technical efficiency on this relationship. The study employed both the OLS and Poisson multiple regression techniques in order to investigate the relationship between corporate governance and financial performance, and the stochastic frontier model was used to determine the moderating role of technical efficiency in this relationship. The results established the existence of a positive linear relationship between technical efficiency and both corporate governance and financial performance. The results have some policy implications.

First, the study's assessment of the mediating role of technical efficiency in the financial performance of financial firms listed on the floor of the Nigerian Stock Exchange based on the SFA model shows that the studied firms were at least about 78% technically efficient, suggesting that the inefficiency in these firms was about 22%. This result supports the findings of Peng et al. (2021) and Moon and Min (2020).

Second, the contingent corporate governance model suggested that governance structure varies across economies and sectors. Hence, this study empirically investigated the link between corporate governance and the financial performance of financial institutions in Nigeria. The study noted that the financial industry, unlike the real sector, is highly regulated, hence, the results obtained may differ from existing studies. The results show that a negative relationship existed between board size and the financial performance of the studied sector. The reason behind this negative result could be differences in inducements. For instance, a large board size could lead to the slowing down of the decision-making process, low efficiency and poor coordination of the board, among other things. The results concerning the link between board composition and a firm's financial performance show that changing the gender, age, etc., of the board's membership has little to no impact on financial performance. The results concerning the link between audit committees and the

financial performance of firms are positive and significant, suggesting that audit committee quality, in terms of the number of professionals on the audit committee, will have a positive impact on the firm's financial performance because professionals will be able to offer cost-cutting advice to firms and provide oversight that will reduce wastage.

Our study is not an all-encompassing work, and there is room for further research, such as expanding the scope of the study to accommodate the financial sector in other African and emerging economies, deploying other estimation techniques and expanding the scope of the variables employed, among other things.

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