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### Effect of Corporate Governance Practice and Bank Regulatory Capital on Performance: Evidence from Deposit Money Banks in Nigeria

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#### Abstract

This study aims to examine the effect of corporate governance practice and regulatory capital on the performance of deposit money banks in Nigeria. The study employed panel data, covering nine years period across 14 listed deposit money banks in Nigeria. Data were analyzed using an ordinary least square (OLS) regression. Breusch and Pagan LM and Hausman test were performed to ascertain the best model between pooled OLS, random effect, and fixed effect. Results suggest that board size, non-executive directors, and bank regulatory capital significantly have a positive impact on deposit money banks' performance in Nigeria, while role duality was insignificant. Contingent on the findings, this study recommends compliance with any good corporate governance practice and bank regulatory capital to maintain healthy banks.

**Keywords:** Corporate Governance, Bank Regulatory Capital, Performance, Deposit Money Banks

**JEL Classification:** C33, C58, E8, G21, G32

#### Introduction

Following the 2007-2009 global financial crises, many financial institutions were seriously affected, particularly banks; this led to renewed agitation to ensure strict compliance with

regulations and guidelines issued by the regulatory authorities. Although corporate governance studies have been on for a relatively long period, the issue still needs further evaluation due to different scholars' mixed reports (Abdulraouf, Mardnly, & Mouselli, 2018). The most recent corporate governance issue is scandals at Equifax and Wells Fargo involving a popularly known U.S. corporation. Poor corporate governance practice was also attributed to the scandals in Qwest, Enron, Tyco, and WorldCom, which resulted in their demise (Bhagat & Bolton, 2019). In Nigeria, corporate governance practice is faced with a lot of challenges ranging from improper accountability and transparency, ineffective statutory framework, inadequate supervision, and protection, among others, and in turn, it affects the performance and operation of the bank across the country. Non-compliance to regulatory capital is also seen as one of the reasons for the poor performance of banks particularly in emerging countries like Nigeria.

Some theories have justified the association between corporate governance and firm performance. Notably among these theories is the Agency theory postulated by Jensen and Meckling (1976) and Fama and Jensen (1983). The theory serves as the nerve center for many deliberations on how corporate governance and firm performance are related. From another theoretic perspective, Freeman, in stakeholder theory, advocates a managerial perspective of the firm in need of the senior management team to attend to the need of all stakeholders. In the finance model contribution by Shleifer and Vishny (1997), corporate governance practice should ensure efficient management of resources within the firm that would be in the best interest of the capital provider, reducing the acts of resources' expropriation by managers. Mullineux (2016) opined that better-governed banks have a higher tendency to distribute capital efficiently and have less likelihood to fail. In Nigeria, good corporate governance practice is imperative due to large number of banks controlled by private partners. Most corporate governance studies focus attention on advanced countries; these studies include those conducted by Anginer, Demirguc-kunt, Huizinga, and Ma, (2018); Ayadi, Ayadi, and Trabelsi, (2019); Bhagat & Bolton,(2019) and Orazalin, Mahmood, and Lee, (2016).

Bank corporate governance in emerging economies is crucial for various reasons. First, banks have a significant principal spot within the financial system of the emergent nations' economies and are highly relevant drivers of growth (Levine, 1997). Second, the financial market in developing economies is often less developed; hence banks are mainly the most crucial financial source for a large number of firms (Arun & Turner, 2002). Third, a key role is played by banks in facilitating

the system of payment and are the central depository for the economy's saving in most emerging economies. Finally, the role of economic regulation is minimized due to liberalization. As a result, banks are run by managers with a higher level of freedom. Banks that are well-managed have tendencies to efficiently allocate capital and unlikely to fold up (Narwal & Pathneja, 2016). These banks are therefore most probably to ensure that other companies also efficiently distribute capital for financial and monetary constancy, which on its own can possibly enhance growth and investment.

Moreover, issues relating to capital adequacy has been a long-standing problem confronting the performance of Nigerian banks. Meanwhile, some scholars like Allen, Carletti, and Marquez (2011) and Mehran and Thakor (2011) believe that adequate capital leads to higher profits. On the other hand, Vanhoose (2007) 's submission holds that capital adequacy doesn't necessarily increase banks' performance. Banks are encouraged to act following regulatory capital standards through a minimum requirement for risk-weighted ratios. In developed countries, most banks keep an amount of their capital base above the minimum standard imposed by regulations (Distinguin, Roulet & Tarazi, 2013). While on the other hand, most banks in developing countries find it challenging to comply with the standard, resulting in most banks' failures. Some few studies on regulatory capital from the literature include; De Bandt, Camara, Maitre, and Pessarossi, (2018); Deyoung, Distinguin, and Tarazi, (2018); Jiang and Zhang, (2018) and Raz, (2018).

Although efforts have been geared in through the revised banks and discount houses corporate governance code of conduct introduced in 2014 to enhance the performance of the affected sector in Nigeria. Yet, corporate governance failure issues persist within the banking sector coupled with the problem of regulatory capital non-compliance inadequacy among Nigerian Deposit Money Banks (DMB's). To further evaluate these issues and contribute to the literature, we are motivated to participate in this research. Unlike previous studies that looked at corporate governance and regulatory capital in separate studies, our focus is to examine the effect of the two different issues in a single study, focusing on Nigerian Deposit Money Banks.

The study revealed a significant positive relationship between board size, non-executive directors, and bank performance, while the relationship between role duality and bank performance is insignificant. Moreover, bank regulatory capital and performance are significantly positive.

The rest of the paper is structured as follows. Sections 2 focuses on the literature review and hypothesis development. Section 3 explains the data and methodology. Section 4 describes the result and discussion of findings. Conclusion and policy implications are highlighted in section 5.

## **2. Literature Review**

### *2.1 The Concept of Corporate Governance*

Corporate governance could be described as a process, mechanism, and relations through which firms are controlled and guided (Narwal & Pathneja, 2016). Corporate governance is viewed in a complex world as a tool through which maximum firm value is attained (Pham, Ho, Pham, & Nguyen, 2020). The economy of a nation relies on the healthiness and effectiveness of its financial organizations (CBN, 2014). Therefore, the degree to which the board of financial establishment carries out their functions influences the competitive position of the country. They must be at liberty to move their institution forward, but the exercise of such freedom must be within the setting to ensure effective accountability and transparency. This is the result of any system whose corporate governance system works better. Corporate governance is a good determinant of transparency in the organization; therefore, it became imperative for banks to embrace the practice to have a conducive and safe business environment. Corporate governance, as defined by Sir Adrian Cadbury, the Chief of Committee on the Financial Aspects of Corporate Governance in the U.K. is “the system by which companies are directed and controlled”(“Cadbury Committee,” 1992).

Most empirical literature focuses on other regions of the world, giving less attention to research in African countries, particularly on corporate governance, regulatory capital, and firm performance. Some of the few empirical works by scholars include the work by Anginer, Demirguc-kunt, Huizinga, and Ma (2018). This study found that shareholder-friendly corporate governance was related to higher stand-alone and banking systemic risk. Ehsan, Iqbal, and Nawaz (2019) found that the financial performance and sustainability of micro-financial institutions (MFI's) improved the practice of good governance. In contrast, a better governance system was a key feature of highly lucrative and sustainable micro-financial institutions (MFIs). The findings of Al-saidi and

Al-shammari (2013) suggested that the relationship between the composition of the board in banks and bank performance is significant.

Moreover, according to Narwal and Pathneja (2016), banks' profitability and productivity were explained by virtually all bank-specific attributes variables in the study. Still, there was a fragile relationship between corporate governance and individual performance. In the study of Choi, Hasan, and Waisman (2015), on corporate governance and firm performance among Korean banks, a strong positive relationship existed among independent directors generally, foreign ownership, overseas directorship, and bank performance. From the Eurozone, Ayadi et al. (2019) evaluated the effect of in-house and extrinsic governance mechanisms on risk-taking and bank performance prior to and afterwards the 2008's financial crisis.

Bhagat and Bolton (2019) explored the relationship involving corporate governance and performance in the U.S. financial institution. The study found director stock ownership mainly consistent and positively associated with future corporate governance performance. Orazalin et al. (2016) investigated the impact of corporate governance and financial crisis on the performance of top Russian banks. Results showed a positive effect of corporate governance on banks before and after the financial crisis. In the North African and Middle East region, Ghosh (2017) focused on the influence of corporate governance modifications and banks' performance. The results of the study implied that not the entire governance attributes were vital, and some of these attributes had a more significant influence on banks' performance as compared to others. Arouri, Hossain, and Muttakin, (2014), investigated the effect of board structure and ownership composition on the performance of banks in Gulf Co-operation Council (GCC) Countries. Result from their study indicated that foreign ownership, family ownership, and institution ownership showed a significantly positive relationship with banks' performance. However, the effect of CEO duality and board size on banks' performance was insignificant.

## *2.2 Corporate Governance in Nigeria*

Among the most substantial obstacles militating against the bank's code of conduct of corporate governance in Nigeria are the non-compliance and lack of strict implementation of the corporate governance codes' conduct. This was due to the absence of a strong corporate governance structure,

which will ensure effective corporate governance code compliance and supervised by other government regulatory agencies in the country, like The Security and Exchange Commission (SEC), the Central Bank of Nigeria (CBN) and others.

Due to highly important cases involving unnecessary use of corporate power, and in other instances, alleged criminal activities by banking corporate officers, led to more consideration given to corporate governance. The banking sector in Nigeria was served with banks' corporate governance code in Nigeria after the proposed consolidation programme in 2005. The code was made to enhance corporate governance good practice within the context of the banking industry. It came into effect in April 2006, and the need for it became imperative because corporate governance mechanisms in banks were ineffective. Members of the financial institutions' board were not well informed on their fiduciary and statutory roles and approved all executives' proposals irrespective of their consequences to their financial stand (CBN, 2014).

Meanwhile, at the time of the code execution, it was realized that banks could not execute some sections due to their complexity; and was found to be in contrast with the Companies and Allied Matters Act (CAMA) provisions of 1990. Also, in 2009, a joint CBN/NDIC evaluation that resulted in the removal of five (5) bank CEOs in the country showed, among others, weak practices of corporate governance in the institutions (CBN, 2014). There was also a need to update the code to conform to international best practices and modern developments, hence the recent review.

### *2.3 Bank Capital Regulation in Nigeria*

For banks to operate in Nigeria, they must meet all the requirements needed before issuing a license to operate. Likewise, to meet up with global practice, banks are expected to comply with international banking regulations; a more prominent one is the Basel committee's regulation. The Nigerian banks' consolidation policy has led to the Nigerian banks' recapitalization to twenty-five billion Naira (₦ 25,000,000,000). Nigeria has complied with these indicators. As defined by the Basel Committee on Banking Supervision, three tiers of regulatory capital exist, namely Tier 1, Tier 2, and Tier 3. Only Tier 1 and Tier 2 are operational in Nigeria. While the international convention provides that regulatory capital should not be less than 8.0 percent of banks' risk-weighted assets, Nigeria sets the minimum requirement at 10.0 percent. In Nigeria, Deposit Money

Banks (DMBs) are currently categorized into three – International Banks, National Banks and Regional Banks with different capital adequacy requirements. International banks have a minimum threshold of 15.0 percent, while National/ Regional banks have 10.0 percent (CBN, 2014). A recent appraisal of banks' prudential ratios in 2015 provided new legislation for the industry capital adequacy ratio (CAR) to stand at 17.7 percent compared to the 15.9 percent by December 2014 end. The CAR development was unconnected with the rise in the qualifying capital of banks emanating from marginal capital increased during the year and capitalized retained earnings. So also, the industry average liquidity ratio (L.R.) was 48.6 percent as compared with 45.7 percent by December 2014 end, and more than the initial minimum L.R. of 30.0 percent by 18.6 percent.

Some empirical studies relating to regulatory bank capital include; De Bandt et al. (2018), who surveyed regulatory requirements and optimal capital and bank performance in France during the economic downturn. The findings of the study showed that capital exhibited a positive influence on bank performance. De young, Distinguin, and Tarazi (2018) evaluated the relationship between the joint regulation of bank liquidity and bank capital. Redirection of focus on commitment to loans, loans and paying out dividends were strategies employed by banks to improve their capital ratios and liquidity status when their governing capital ratios were externally affected. Jiang and In China, Zhang (2018), examined the effect of charter value and regulatory capital pressure on bank risk-taking. The study's findings indicated that increased pressure on capital requirements results in fewer charter banks' value, which raises their risk-taking. Raz (2018) analyzed the relationship between risk and capital of large banks in Indonesia. The empirical evidence showed that the relationship between capital and risk measures was negatively significant. Minimal studies investigated the regulatory capital's effect on bank performance, emphasizing advanced countries; this is the reason for conducting this study to contribute in that area, particularly from developing countries with a focus on Nigeria.

#### *2.4 Hypotheses Development*

Board size, non-executive directors, role duality, and regulatory tier1 capital are our main variables of interest. Many studies have been conducted on each variable with mixed findings. The following hypotheses are developed from the empirical literature.

### *Board Size*

One of the crucial functions of directors is to handle agency costs emanating from control and ownership separation (Fama & Jensen, 1983). Some studies suggest that for better corporate governance, a board size is a relevant tool associated with firm performance (Jensen, 1986; Zahra & Pearce, 1989). Lipton and Lorsch (1992) and Yermack (1996) hold that small board size is more valuable having a better experience diversity and knowledge and, more importantly, the easy co-ordination issue, communication, and cohesiveness (Jensen, 1993). On the other hand, Adams and Mehran (2008) and Coles, Daniel, and Naveen (2008), in their arguments, posit that better corporate performance is dependent on a larger board due to enhanced monitoring, which minimizes the CEO control within the board.

A positive correlation between board size and performance was found by Haniffa and Hudaib (2006) by using ROA as a proxy of performance. Adams and Mehran (2003) reported a positive association between banks' performance and board size for an American holding company. Meanwhile, a negative association between firm performance and board size was found in some studies (e.g., Agoraki, 2010; Al-Manaseer, Al-Hindawi, Al-Dahiyat & Sartawi, 2012). A study by Kyereboah-Coleman and Biekpe (2006) found a positive association between board size and bank performance among banks in Ghana. Thus, the below hypothesis is developed;

H<sub>01</sub>: There is a significant positive relationship between board size and bank performance

### *Non-Executive Director*

The Board of directors constitutes one of the most robust in-house control mechanisms used to monitor top management's behavior (Fama & Jensen, 1983). Executive directors are employees of a firm that operates full time and are in charge of the firm's daily operations based on clearly defined roles. In contrast, non-executive directors are independent or outside directors and are not in any way affiliated to a firm neither its employees (Weir, Laing, & McKnight, 2002). Jensen and Meckling (1976) opine that boards with Non-Executive Directors (NED) majority may help eliminate agency challenges by controlling and monitoring top management's behavior to ensure that shareholders' interests are pursued.



Empirical studies reported mixed findings of the association between NED and performance of the firm. The studies conducted by Al-Manaseer et al. (2012) and Pathan, Skully, and Wickramanayake (2007), proved that a positive relationship existed between NED and bank performance. Conversely, studies conducted by Bino and Tomar (2012); Kyereboah-Coleman and Biekpe (2006) indicated a negative correlation between NED and bank performance. Adams and Mehran (2003) reported a non-significant association between NED and bank performance. Regarding the empirical evidence above, the next hypothesis is postulated;

H<sub>02</sub>: Non-Executive Director and bank performance have a significant positive relationship

### *Role Duality*

Holding the two most powerful positions in the organization, the CEO and board chair position, is known as duality. CEOs who hold the chairman board of directors exhibit unwarranted board influence, which compromises the strength of the board's governance ( Jensen, 1993). Uncoupling the two roles of board chairman and CEO ensures a clear division of responsibilities and hence, is a sign of bad governance to combine the two positions (“Cadbury Committee,” 1992). Studies on this relationship reported mixed results. Yermack (1996) asserts that firms' value is enhanced when there is a separation of the position of board chair and CEO. In this regard, Sanda, Mukaila, and Garba (2003) found a positive association between role separation involving (CEO and board chair) and firm performance. Studies by Adnan, Htay, Ab. Rashid & Meera, (2011), Cooper, (2009); Griffith, Fogelberg, and Weeks, (2002), Haniffa and Hudaib, (2006) and Weir et al., (2002), found that role duality and performance of firm were insignificantly related. Based on the findings above, the below hypothesis is postulated.

H<sub>03</sub>: Role duality and bank performance have a significant negative relationship

### *Regulator Tier1 Capital*

Tier 1 regulatory capital is a regulatory capital contain in Basel III provision, which provided that a tier 1 capital should maintain a minimum of 6 percent of risk-weighted total asset. Holding large capital reserves by banks helps mitigate depositors' risk, hence improving their performance

(Larsson, 2010). Studies on the relationship between regulatory tier1 capital and bank performance are limited. Some studies that include Abou-El-Sood, (2016); Aebi, Sabato, and Schmid, (2012); Bitar, Pukthuanthong, and Walker, (2018); De Bandt et al., (2018); and Raz (2018), all reported a significant positive relationship between regulatory tier1 capital and banks performance. Based on the above findings, the following hypothesis is postulated

H<sub>04</sub>: Regulatory tier1 capital and bank performance have a significant positive relationship

### **3. Data and Methodology**

#### *3.1 Data*

A panel data set of 14 listed deposit money banks in Nigeria over nine years period, from 2010-2018, are employed in the study. The bank selection is based on data availability within the period. The equity data are obtained from Thomson and Reuter's data stream. The corporate governance data were gathered from the banks' yearly financial reports within the range of the study period. The data for the macroeconomic variables are obtained from the World Bank open data source.

#### *3.2 Variable Description*

The study variables are grouped into independent variables, dependent variables, bank-specific variables, and macroeconomic level variables. The independent variable of interest includes board size (BDSZ), non-executive director (NED), role duality (DUAL), regulatory tier 1 capital (TIER1). Return on asset (ROA) and earnings per share (EPS) are the two dependent variables. Bank specific variables include capital adequacy ratio (CAR), leverage (LEV), deposit ratio (DEP), and bank size (BKSZ). The macroeconomic variables are two; inflation (INF) and gross domestic product (GDP). All these variables are defined in the table below;

Table 1. Description of Variables

Variable	Definition	Code
Dependent		
Return on Asset	The bank's net profit after tax divided by total asset	ROA
Earnings Per Share	The bank's net income divided by the total number of shares	EPS
Independent		
Board Size	Total number of directors on the board	BDSZ
Non-Executive Director	The Proportion of NED to the total number of directors on the board	NED
Role Duality	Dummy Variable; 1 if the chairman is also the CEO, 0, otherwise	DUAL
Regulatory Tier1 Capital Control	6 percent of risk-weighted total asset	TIER1
Capital Adequacy Ratio	Total equity to total asset	CAR
Leverage	Total debt to total asset	LEV
Deposit ratio	Total deposit to total asset	DEP
Bank Size	The logarithm of total asset	BKSZ
Macro Level		
Inflation	Annual consumer price index percent	INF
Gross Domestic Product	GDP growth rate in percent	GDP

Source: Compiled by Author based on the literature, 2020

### 3.3 Model Specification and Estimation Technique

This study seeks to investigate the influence of corporate governance practice, bank regulatory capital on the performance of deposit money banks in Nigeria. The performance is to be evaluated based on two performance measures; return on asset (ROA) and earnings per share (EPS). Some bank-specific variables and macroeconomic variables are included in the model to have a more robust model. The study model was developed following the work of (Al-saidi & Al-shammari, 2013; Umar, Sun, Shahzad, & Rao, 2018).

$$PERF_{it} = \beta_0 + \beta_1 BDSZ_{it} + \beta_2 NED_{it} + \beta_3 DUAL_{it} + \beta_4 TIER1_{it} + \beta_5 CAR_{it} + \beta_6 LEV_{it} \\ + \beta_7 DEP_{it} + \beta_8 BSZ_{it} + \beta_9 INF_t + \beta_{10} GDP_t + \eta_i + \lambda_t + \varepsilon_{it}$$

The panel data will be analyzed using the ordinary least square (OLS) regression. All assumption of OLS regression has to be observed before reporting the result. Three models were analyzed and reported, consisting of pooled OLS, random effect, and fixed effect. In order to choose the best model, Breusch and Pagan LM test and Hausman test were conducted. Breusch and Pagan's test is a test between pooled OLS and random effect. Assuming that the result of the test is insignificant, pooled OLS is to be preferred as the best model and reported and no further test needed while if the result is significant, the random effect is selected as the best model, and there is a need for a further test known as Hausman test between random effect and fixed effect. The Hausman test conducted revealed a significant result, which showed that the fixed effect is the best model to be used for inference. In the event where diagnostic check revealed either a problem of heteroscedasticity or autocorrelation or both, such problem need to be corrected using the best model, and the corrected model will then be used for inference in the study. The symbol *i* and *t* represent individual bank and time correspondingly.

## **4. Result and Discussion**

### *4.1 Descriptive statistics*

The study has 126 years' observations in total. The summary of the statistics reveals a distribution within a close range of values. The mean value of the two dependent variables in the study, return on asset (ROA) and earnings per share (EPS) are 1.7425 and 1.6529, respectively. The standard deviation of the two measures stands at 2.1659 for ROA and 3.5799 for EPS. The main independent variables of the study have a mean distribution of 8.6825, 0.6326, 0.5317, and 17.0250 for BDSZ, NED, DUAL, and TIER1, respectively, and a standard deviation of 1.9866, 0.1765, 0.5010, and 5.2458 accordingly. BDSZ and TIER1 have the highest mean and standard deviation among the independent variables.

The distribution of bank-specific variables is presented. DEP and BKSZ have the highest mean and standard deviation among the bank-specific variable. DEP has a mean of 64.4928 and a

standard deviation of 11.7657, while BKSZ has a mean and standard deviation of 21.0218 and 0.9052, respectively. The mean value for CAR and LEV are 18.5273 and 13.1610, respectively. The macroeconomic variables comprising INF and GDP have a mean of 11.8466 and 3.8115, with a standard deviation of 2.8980 and 2.9515.

Table 2. Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
ROA	126	1.7425	2.1659	-8.63	11.3
EPS	126	1.6529	3.5799	0	36.78
BDSZ	126	8.6825	1.9866	7	12
NED	126	0.6326	0.1765	0.30	0.72
DUAL	126	0.5317	0.5010	0	1
TIER1	126	17.0250	5.2458	9.6	42.82
CAR	126	18.5273	8.7630	2.12	44
LEV	126	13.1610	7.9882	0	39.07
DEP	126	64.4928	11.7657	21.7533	83.7
BKSZ	122	21.0218	0.9052	18.7298	22.7335
INF	126	11.8466	2.8980	8.0625	16.5235
GDP	126	3.8115	2.9515	-1.6169	8.0057

Source: STATA 15 result

#### 4.2 Correlation Matrix

The two dependent variables have a weak negative correlation with a coefficient of -0.1353. ROA maintains a positive association with BDSZ, NED, and TIER1 with a co-efficient of 0.0669, 0.0244, and 0.2353, respectively. Only DUAL among the independent variable negatively relate to ROA with a coefficient of -0.1303. However, EPS maintains a positive relationship with BDSZ and DUAL, with a co-efficient of 0.0818 and 0.0781, respectively, and a negative relationship with NED and TIER1, having a value of -0.0964 and -0.0007, respectively. ROA maintains an excellent positive relationship with the bank-specific variables that include CAR, LEV, DEP, and BKSZ, respectively. While only LEV and BKSZ are positively related to EPS. The association of EPS with CAR and DEP is negative. Macroeconomic variables maintain a significant relationship with bank performance measures. ROA maintains a positive relationship with INF and GDP with a co-efficient of 0.1462 and 0.0796, respectively. However, EPS maintains a negative association with INF and a positive relationship with GDP with -0.01336 and 0.0058.

Table 3. Correlation matrix

	ROA	EPS	BDSZ	NED	DUAL	TIER1	CAR	LEV	DEP	BKSZ	INF	GDP
ROA	1											
EPS	-0.1353	1										
BDSZ	0.0669	0.0818	1									
NED	0.0244	-0.0964	-0.1445	1								
DUAL	-0.1303	0.0781	0.1024	0.2487	1							
TIER1	0.2353	-0.0007	-0.1102	0.1387	-0.1052	1						
CAR	0.3204	-0.1442	0.0268	0.0712	-0.1371	0.3862	1					
LEV	0.0635	0.0444	0.0050	0.0581	0.0626	-0.2412	-0.1347	1				
DEP	0.0426	-0.1664	0.3153	-0.2717	-0.1701	0.0658	0.0334	-0.0867	1			
BKSZ	0.2968	0.1209	0.4466	-0.0874	0.0044	0.1371	0.1390	0.0609	0.1478	1		
INF	0.1462	-0.0136	-0.1327	-0.0128	-0.0249	0.0362	0.0443	0.1391	-0.1458	0.0434	1	
GDP	0.0796	0.0058	0.0901	0.0166	0.0246	0.1613	-0.1035	-0.2864	0.1158	-0.2744	-0.5722	1

Source: STATA 15 result.

### *4.3 Regression Result*

#### *4.3.1 First Regression result*

The main interest of the regression model is to assess the effect of corporate governance and bank regulatory capital on the performance of deposit money banks in Nigeria. Four models are presented, pooled OLS, random effect, fixed effect, and random effect with the correction of heteroscedasticity and autocorrelation. Based on the outcome of the Breusch and Pagan L.M. test and Hausman test, the random effect is the best model for the study. Still, due to the problem of heteroscedasticity and autocorrelation, they were addressed. Hence, the inference is based on the corrected random effect model. The model is free from multicollinearity problem since the mean value of the VIF is less than 10.

Board size indicates a significant positive association with return on asset (ROA). This implies that as the number of board size increases, their performance is expected to increase respectively. This finding is consistent with Adams and Mehran's (2003) findings. Non-executive directors (NED) are significant at 10 percent and positively associated with the performance of banks. This shows that having a higher percentage of non-executive directors on the board improves the performance of banks; this is similar to the result obtained by Al-Manaseer et al. (2012). Role Duality (DUAL) is not significant in the model; although it indicates a negative association with banking performance, these finding is in line with that of (Haniffa & Hudaib, 2006). TIER1 capital is significant at 1 percent and positively relates to the banks' performance in Nigeria. This implies that an increase in the level of tier1 capital improves the performance of banks, a result consistent with the findings of Abou-El-Sood (2016) and Bitar et al. (2018).

Bank specific variables reported a various degree of correlation with the bank performance measures. Capital adequacy ratio (CAR) indicates a significant positive relationship with ROA and the DEP ratio. Leverage (LEV) is not significant in the model. Bank size (BKSZ) reported a significant positive relationship with ROA. This indicates an increase in bank performance with an increase in its size. The macroeconomic variables, INF, and GDP, both revealed a significant positive association with Nigeria banks' performance.

Table 4. Regression result 1

VARIABLES	ROA			
	(1) Pooled OLS	(2) Random Effect	(3) Fixed Effect	(4) Final Model after Rectifying the problem
BDSZ	0.0724*** (0.0157)	0.1391*** (0.0168)	0.1460 (0.185)	0.1391*** (0.0116)
NED	0.5342* (0.348)	1.5301* (1.293)	52.8110*** (6.39)	1.5302* (0.895)
DUAL	-0.4273 (0.391)	-0.5254 (0.389)	-0.6522 (0.413)	-0.5250 (0.342)
TIER1	0.2680*** (0.0422)	0.4501*** (0.0456)	0.0981* (0.0509)	0.4502*** (0.0365)
CAR	0.0684*** (0.0245)	0.0693*** (0.0237)	0.0760*** (0.0248)	0.0693*** (0.0163)
LEV	0.0348 (0.0254)	0.0189 (0.0245)	0.0134 (0.0269)	0.0189 (0.0427)
DEP	-0.0223* (0.0177)	0.2560*** (0.0240)	0.0749* (0.0385)	0.2561*** (0.0326)
BKSZ	0.7370*** (0.256)	0.8851** (0.362)	1.1060 (0.718)	0.8852*** (0.318)
INF	0.1461* (0.0799)	0.1840** (0.0742)	0.2451*** (0.0829)	0.1840* (0.0958)
GDP	0.1281 (0.0891)	0.1670* (0.0857)	0.1892* (0.102)	0.1671*** (0.0103)
Constant	-17.7401*** (5.331)	-21.5621*** (7.952)	-62.4302* (35.75)	-21.5600** (8.963)
Observations	122	122	122	122
R-squared	0.6441		0.5672	
Number of code		14	14	14
Breush Pagan LM Test	0.0012			
Hausman Test	0.3448			
Multicollinearity (Mean VIF)			1.44	
Heteroscedasticity			0.0000	
Autocorrelation			0.0372	

Source: Result of STATA 15. Note- Robust standard errors in parentheses.



#### *4.3.2 Second regression Result*

The second regression aims to examine the effect of corporate governance and bank regulatory capital on the performance of deposit money banks in Nigeria. The regression result presented four models, pooled OLS, random effect, fixed effect, and corrected pooled OLS. The output from Breusch and Pagan LM test indicated that pooled OLS is the best in this regression. The heteroscedasticity and autocorrelation problem in the model made it necessary for the pooled OLS to be corrected before an inference is drawn. Therefore, the assumption is based on the corrected pooled OLS model.

BDSZ is significant at 1 percent and positively associated with bank performance. This implies that an increase in the size of the board will improve the performance of banks in Nigeria. A similar result has been reported by prior studies (Adams & Mehran, 2003; Kyereboah-Coleman & Biekpe, 2006). NED is significant at 10 percent and positively relates to banks' performance, a finding consistent with that of Pathan et al. (2007). The result of DUAL is insignificant in this model; this confirmed the findings of Adnan et al. (2011) and Cooper (2009). TIER1 is significant at 1 percent and positively associated with banks' performance. An indication that an increase in the level of TIER1 capital enhances banks' performance; this is in harmony with the findings of Bitar et al. (2018) and Raz (2018). Bank specific variables maintain both positive and negative association with bank performance measures.

CAR and LEV are both significant at 1 percent and positively relate to banks' performance in Nigeria. This implies that an increase in each of the ratios or both may result in to improve bank performance. DEP ratio is significant at 10 percent and negatively related to bank performance. BKSZ is substantial at 1 percent and relates positively to bank performance. This indicates that an increase in the size of banks improves the performance of banks in Nigeria. INF and GDP are the two macroeconomic variables used in the model. They both reported a significant and positive association with the performance of banks in Nigeria. The coefficient of determination stands at 53.10 percent, which represents the overall variation in bank performance explained by the variables included in the model. The model shows no multicollinearity problem since the mean VIF indicates a mean value of less than 10.

Table 5. Regression result 2

VARIABLES	EPS			
	(1) Pooled OLS	(2) Random Effect	(3) Fixed Effect	(4) Final Model after Rectifying the problem
BDSZ	0.2451*** (0.0280)	0.1100*** (0.0293)	0.3832*** (0.0356)	0.2452*** (0.0185)
NED	3.9230 (2.403)	3.8021 (2.819)	199.7** (89.07)	3.9235* (1.917)
DUAL	0.3622 (0.698)	0.3791** (0.112)	0.5553 (0.793)	0.3624 (0.492)
TIER1	0.8133*** (0.0752)	0.6542*** (0.0790)	0.0496 (0.0977)	0.8137*** (0.0401)
CAR	0.7591** (0.0436)	0.0754* (0.0441)	0.0632 (0.0476)	0.7595*** (0.0909)
LEV	0.1411** (0.0452)	0.0129 (0.0456)	-0.0207 (0.0516)	0.1412*** (0.0227)
DEP	-0.0800** (0.0316)	-0.0733** (0.0350)	-0.0496 (0.0740)	-0.0800** (0.0364)
BKSZ	0.4210*** (0.0456)	0.6033 (0.509)	3.0604** (1.378)	0.4216*** (0.0281)
INF	0.6392*** (0.0142)	0.0559*** (0.0141)	0.0578** (0.0159)	0.6397*** (0.0776)
GDP	0.1590*** (0.159)	0.1514** (0.0159)	0.2600 (0.197)	0.1596*** (0.124)
Constant	-1.1120 (9.504)	-4.2091 (10.78)	-186.7*** (68.64)	-1.1121 (5.963)
Observations	122	122	122	122
R-squared	0.5310		0.5613	0.5310
Number of code		14	14	
Breush Pagan LM test	0.4714			
Multicollinearity			1.44	
Heteroscedasticity			0.0000	
Autocorrelation			0.0002	

Source: Result of STATA 15. Note: Robust standard errors in parentheses and \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

#### *4.4 Discussion of Main Findings and Hypotheses testing*

This study examines the effect of corporate governance practice and bank regulatory capital on the performance of deposit money banks in Nigeria. The result suggests that the association between board size and bank performance is positively significant. The association between non-executive directors and bank performance is significant and positive. On the other hand, the relationship between role duality and the performance of the bank is not significant. However, tier1 bank regulatory capital positively relates to bank performance.

All the hypotheses developed are supported by the results of the study, with the exception of the proposed relationship between role duality and bank performance, which is insignificant. Hence, the study supports a significant positive link between board size and bank performance, non-executive directors and bank performance, and the relationship between tier1 bank regulatory capital and bank performance in Nigeria.

#### *4.5 Robustness Check*

The regression model for the robustness is aimed at confirming our earlier result presented above using different performance measures. In the robustness model, a different measure of performance is employed, namely, return on equity (ROE). The aim is to test the influence of corporate governance and bank regulatory capital on the performance of deposit money banks in Nigeria. Four models are presented, pooled OLS, random effect, fixed effect, and corrected the OLS model. The corrected OLS model will be used to make an inference, having corrected the problem of heteroscedasticity and autocorrelation found in the model.

BDSZ is significant at 5 percent and positively relates with the deposit money banks performance in Nigeria; this is in line with the result obtained by (Haniffa & Hudaib, 2006; Kyereboah-Coleman & Biekpe, 2006). NED is significant at 5 percent and positively associated with banking performance in Nigeria; this confirms the findings of Al-Manaseer et al. (2012). DUAL is significant but negatively related to banks' performance; this is similar to the result obtained by Griffith et al. (2002). TIER1 capital is positively significant in the model; this is in line with the findings of Abou-El-Sood (2016) and Raz (2018). CAR is positively significant. LEV is negatively significant. DEP is positively significant; likewise, BKSZ is significant at 1 percent and

positively relates to banks' performance. INF and GDP are both positively significant. This indicates that they contribute to enhancing the performance of banks with each increase in the macroeconomic variables. The coefficient of determination stands at 60.20 percent, which explained the variation in bank performance influenced by the variables in the model. The model is free from multicollinearity issue, as the mean VIF indicates a value less than 10.

Table 6. Robustness Regression Result

VARIABLES	ROE			
	(1) Pooled OLS	(2) Random Effect	(3) Fixed Effect	(4) Final Model, after Rectifying the problem.
BDSZ	2.7892** (1.286)	2.7892** (1.286)	0.7482 (3.069)	2.7890** (1.513)
NED	16.3512** (7.61)	16.3512** (7.61)	-75.30231 (78.5)	16.3501** (7.79)
DUAL	-9.9201* (5.692)	-9.9201* (5.692)	-11.1911 (6.838)	-9.9203*** (3.686)
TIER1	0.6555*** (0.0614)	0.6555*** (0.0614)	1.3212*** (0.0843)	0.655*** (0.0481)
CAR	1.4031*** (0.356)	1.4031*** (0.356)	1.2363*** (0.411)	1.4030** (0.636)
LEV	-0.3950*** (0.0369)	-0.3950*** (0.0369)	-0.5682*** (0.0445)	-0.3947*** (0.0334)
DEP	0.1060*** (0.0258)	0.1060*** (0.0258)	0.3132*** (0.0639)	0.1056*** (0.0321)
BKSZ	11.2201*** (3.717)	11.2201*** (3.717)	17.0600 (11.89)	11.2223*** (3.670)
INF	1.0201*** (0.1620)	1.0201*** (1.1620)	1.7380*** (0.3742)	1.0200*** (0.753)
GDP	1.1162*** (0.2961)	1.1162*** (0.2961)	1.8500*** (0.6973)	1.1160*** (0.856)
Constant	-242.1*** (77.55)	-242.1*** (77.55)	108.1 (592.3)	-242.1*** (81.97)
Observations	122	122	122	122
R-squared	0.6020		0.5261	0.6020
Number of code		14	14	
Breusch &Pagan LM Test	1.0000			
Multicollinearity			1.44	

Heteroscedasticity	(0.0000)
Autocorrelation	(0.2796)

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Source: Result of STATA 15. Note: Robust standard errors in parentheses and  
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

## 5. Conclusion and Policy Implication

Banks that are well-governed have a greater chance of efficient capital allocation and less opportunity to fail. This study examines the effect of corporate governance practice and bank regulatory capital on the performance of deposit money banks in Nigeria. The study used 14 listed deposit money banks in Nigeria, with nine years period coverage between 2010-2018. The majority of the corporate governance variables are significant and positively related to the performance of banks in Nigeria, so also bank regulatory capital is positively significant. The study has several policy implications.

Board size is a vital component of corporate governance; increasing the size of the board may have a positive effect on the performance of banks. Maintaining a higher number of non-executive directors also helps the management of the banks to improve their performance that translate to improved bank performance. Role duality has no influence on banks' performance in Nigeria, therefore maintaining a single role among the top management is better. The bank management must be abreast with the reviews in the regulatory capital requirement and should endeavor to comply at any point due to the positive correlation between the bank regulatory capital and performance of banks in Nigeria.

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