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## Article

# Credit risk and financial performance of banks in Nigeria : moderating effect of board equity ownership

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Original Research Article

## **Credit Risk and Financial Performance of Banks in Nigeria: Moderating Effect of Board Equity Ownership**

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### **Abstract**

*This study examined the moderating effect of board equity ownership on the relationship between credit risk and financial performance of listed deposit money banks in Nigeria for the period 2013-to 2020. The study used a correlational research design. Data were collected from the published annual financial reports of listed deposit money banks in Nigeria. The population of the study comprised the 14 listed deposit money banks. The adjusted population of twelve (13) listed deposit money banks in Nigeria was arrived at using three points filter. Integrated theory and financial distress theory were used to underpin the study. The data were analyzed with the aid of random effect multiple regression techniques, the result of the random effect regression shows that there is a positive and significant relationship between board equity ownership and financial performance of listed deposit money banks in Nigeria. However, a negative significant relationship was found between credit risk and financial performance. In addition, the study found that board equity ownership had a positive and significant moderating effect on the relationship between credit risk. It is recommended that listed deposit money bank management improve their credit analysis and loan administration capabilities. It is necessary to develop clear credit standards and lending criteria. Regulatory authorities should support board equity participation, according to the findings of the research, with a caveat to avoid interest concentration of power that might lead to abuse.*

**Keywords:** board equity ownership, credit risk, financial performance, firm size, total assets

**JEL Classification Code: G21, G32, L25**

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## 1. INTRODUCTION

Scholars and professionals have re-examined the connection between risk exposure and organisational success as a result of corporate failure. Many financial institutions (FIs), particularly banks, failed to adequately analyse and manage their risk exposure, resulting in major failures on a worldwide scale (Basel Committee on Banking Supervision, 2015; Berger et al., 2016; Elamer, 2017). During their commercial activities, banks are exposed to a wide range of systematic and unsystematic risks (Ishtiaq, 2015). The performance of financial institutions, as well as their risk-taking behaviour, has been scrutinised more closely (Aebi et al., 2012; Berger et al., 2016; BCBS, 2015; Hines & Peters, 2015). According to Chiejina (2016), financial crises in the banking sector have grown increasingly worrying for bank regulators and owners. Therefore, inefficient risk management has been recognised as one of the key drivers of Nigeria's poor financial sector performance (IMF, 2013; SEC, 2012). Financial risk assessment has been thrust into the spotlight as a result of these challenges (Awoyemi, 2010; Rostami, Sommerville, Wong, & Lee, 2015; Kafidipe et al., 2021)

According to Fauzi and Idris (2013), performance refers to a company's market environment, policy, internal structure, and control system all working together. As a result, they often alter the circumstances that decide performance. Though, performance may be categorised into financial and non-financial categories (Lau & Sholihin, 2005). Because of the nature of the problem and the data that will be necessary, this study will concentrate on financial performance, as a company's operational performance is stated in its financial report. Since the financial statements are created and made public, other clients have access to them.

Discoveries in the literature have been made in understanding the relationship between credit risk and bank performance (Adesina 2019; Aysan & Disli 2019, Bustamante et al., 2019; Dang, 2019, Jiang et al., 2020; Nguyen & Dang, 2020; Sobarsyah & Dang, 2020). Bank performance is impeded, according to Adesina (2019), by inadequate loan evaluation and asset portfolios. In the theoretical and empirical literature, there have been several attempts to investigate the link between credit risk and bank performance. Various research has recommended incorporating regulatory factors to reconcile some contradictions in

the literature (Gordon, Loeb, & Tseng, 2009; Hafizuddin-Syah, Abdul-Hamid, Janor, & Yatim, 2014, Ahmad, 2016). To solve the agency problem, investors provide incentives to the board to act in the best investors' interest by allowing directors to own part of the firm (Nyamwanza *et al.*, 2017). However, board ownership may potentially incur some costs. Having control over a firm's decision may mean that some profitable projects are ignored because they are evaluated based on total risk rather than systematic risk (Alhaji, 2018).

Thus, the present study is set to fill the gaps identified in the credit risk and financial performance literature by extending its analysis to cover the moderating effect of board equity ownership. In a view of analyzing the credit risk, most of the previous studies failed to consider the riskiness of the chosen ratios. For instance, Annor and Obeng (2018), Iwedi and Onuegbu, (2014) and Ambrose (2017), tend to measure credit risk, by using non-performing to total loan ratio, and loan loss provision to total loan. Some of these ratios can as well be used to measure performance, for instance, non-performing loan ratio, loan to deposit ratio and net interest margin and others such as loan loss provision to total loan may not automatically translate to risk (Cherkasova & Kurlyanova, 2019). According to Beyani *et al.*, (1964), variability is the standard deviation measure of the risk involved. The standard deviation measures how far off the values in a given data collection are from the sample average (Altman & Bland, 2005; Rajesh, 2016; Fu, 2021). Hence, this study will therefore consider the riskiness of the implored credit ratio.

The remainder of the paper is organized as follows: section 2 presents relevant extant

studies. Section 3 discusses the methodology employed for the study. In section 4, the results of the data analysis are presented and discussed. Section 5 concludes the study by highlighting the finding policy implications.

## **2. LITERATURE REVIEW**

This section reviews relevant studies on corporate governance, risk management and financial performance.

### **Concept of Financial Performance**

The concept of financial performance is a controversial issue largely due to its multi-dimensional meanings. Performance is the result of activities of an organisation or investment over a given period. According to Iswatia and Anshoria (2007), performance is the function of the ability of an organisation to gain and manage its resources in several ways to develop a competitive advantage. Heng and San (2011) contend that productivity, profitability, growth and customer satisfaction are used in measuring firm performance as these tools are closely related. In measuring the financial performance of banks and other financial institutions, profitability measures such as Return on Asset (ROA), Return on Equity (ROE), Net Interest Margin (NIM) and Earnings Per Share (EPS) are mostly used. This study measures financial performance in line Shehu *et al.* (2017) as return on the use of assets of the companies (ROA)

### **Credit Risk and Financial Performance**

Credit risk is measured as nonperforming loan to total loan as used. It arises when a borrower defaults and does not honour its obligation to service debt. It occurs when the borrower is unable to pay his debts as agreed or fails to make timely payments on his debt servicing (Iwedi & Onuegbu, 2014;

Ambrose, 2017). Empirical on credit risk and financial performance such as Isiaka et al. (2017), examined the effect of corporate board size, and risk management on the financial performance of listed deposit money banks in Nigeria for the period 2011-2016. The population of the study is fifteen (15) listed deposit money banks in Nigeria out of which a sample of fourteen (14) were used for the study due to the accessibility and availability of data. Corporate board size and risk management as the independent variable was proxy with numbers of board of directors, liquidity risk, credit risk and operating risk, while the return on equity (ROE) and earnings per share (EPS) were used to proxy financial performance. Data were collected from secondary sources through the annual report and account of the banks for the period under study and the data was analysed using multiple panel regression techniques. The findings reveal that board size, credit risk and operating risk are a significant negative effect on return on equity (ROE) and earnings per share (EPS) respectively. The study also shows that liquidity risk is negative and insignificant effect on ROE and EPS of the study banks in Nigeria.

Annor and Obeng (2018), examined the impact of credit risk management on the profitability of 6 selected deposit money banks listed on the Ghana stock exchange. Secondary data was gathered from the annual reports of the six selected banks and Ghana banking survey for the years under consideration. The study adopted the Random Effect Model within the panel estimation technique framework. The study used return on equity (ROE) to measure profitability of banks, non-performing loans, loan loss provisions ratio, loan to asset ratio and capital adequacy ratio as credit risk. The findings showed that indeed credit risk

management has a significant relationship with the profitability of banks. While capital adequacy ratio had a positive relationship with a bank's profitability; non-performing loans, loan loss provisions ratio and loan to asset ratio show statistically significant negative relationship with the profitability of a bank. The study recommends that banks should assess and manage credit risk indicators vigorously in order reduce their exposure to these risks.

### **Board Equity Ownership and Financial Performance**

Arifur, Balachandran, & Paul, (2008) view board ownership as a percentage of common stock owned by directors, executive directors and independent directors. Empirical studies on board ownership and financial performance such as Buallay, Hamdan and Zureigat (2017), examined the impact of Corporate Governance on Firm performance of listed companies in the Saudi stock exchange. The study methodology was pooled data collected from the Saudi stock exchange (TADAUWL) for the period from 2012 to 2014. The study sample is 171 listed companies. The study's independent variable is Corporate Governance principals. The dependent variable is Firm performance which was measured using ROA, ROE and Tobin's Q. The study also utilized five control variables to help measure the relationship between Corporate Governance and Firm Performance. In conclusion, the study found that the governance level was 61.4% in Saudi stock exchange, which is considered high compared to previous studies. The results of the study test indicate that there is no significant impact of corporate governance adoption on firm's operational and financial performance in the listed companies in Saudi stock exchange. By testing the

Tobin's Q model, the study also concluded that there's no significant impact for ownership of the largest shareholder and independency of Board of Directors on firm's market performance. Significant impact was found for the ownership and the size of the Board of Directors on firm's performance.

Ogaluzor and Omesi (2019), investigated the relationship between share ownership structure and financial performance of listed consumer goods companies in Nigeria, using a cross-section of secondary data for 2016 fiscal year, which was obtained from the published annual reports of the firms. Share ownership structure was viewed from the dimensions of ownership concentration and managerial share ownership, while financial performance was measured with return on assets. Firm size was used to control for heterogeneity in firm-specific characteristics. A Generalized Least Square (GLS) regression technique was used, given the cross-sectional nature of the data to mitigate the interference of heteroscedasticity in the results. In the final analysis, results obtained confirmed a significant negative relationship between ownership concentration and financial performance thereby upholding the entrenchment effect hypothesis. On the other hand, though a positive relationship was confirmed regarding the relationship between managerial share ownership and financial performance, results obtained fell short of statistical significance at the conventional level.

### **3. METHODOLOGY**

The study adopted the correlational research design. The design is informed by the research paradigm which is the positivism approach. The population of the study comprised of all the fourteen (14) listed

deposit money banks on Nigeria stock exchange (NSE) and the sample size is fifteen (13). The sampling technique is based on these criteria:

- i. The firm must be listed on the NSE one (1) year before 2013.
- ii. Firm must not be delisted during the period of study
- iii. Availability of data in the annual financial reports of the firms for the period under study i.e., 2013-2020.

The financial data used for the study is secondary in nature obtained from the annual reports. Panel regression analysis was employed since the study involves the use of both time series and cross-sectional data. The independent variable considered is, credit risk while the dependent variable is financial performance, with board equity ownership as the moderator.

### **Theoretical Framework and Model Specification**

This section explains the related theories on which the study is based. There are several theoretical perspectives which are used in explaining corporate governance, risk management and financial performance. The agency and stakeholders' theories are used to underpin the study.

#### **Integrated theory**

The theory was developed by Stulz (1988) explaining the roof-shaped relationship between ownership and firm performance. In his seminal paper, he focused on the takeover market in a bid to discipline managers. His model incorporated both the takeover premium hypothesis and the enchantment hypothesis in a single theory. As the fraction of manager owned equity increases so does, the increase in premium a hostile bidder must part with to acquire control of a target firm. However, the

probability of the success of the takeover consequently declines. When managers own a smaller fraction of firm's shares, it will be more likely that hostile takeover will succeed at a value below the maximum the investor willing to pay (Salehi & Baezgar, 2011). As managerial ownership in equity of a firm increases, the probability of hostile takeover is cancelled out. This rationale results in a curvilinear trend between the value of firm and insider's fraction of shares (Oscar, 2017). The more equity ownership by management in a firm the more positive effect of credit risk observed on the firm's performance since managers will more meticulous and competent to oppose takeover threat for corporate control (Salehi *et al.*, 2011).

### Finance Distress Theory

Corporate distress was first classified and modelled in 1996 by Beaver. He noted that financial distress is liquidation, bankruptcy, mergers absorption or major structural changes to a company. In this grey area where prediction of financial distress is difficult there is an overlap between non failed and failure. Baldwin and Scott (1983) purported that when a firm's business deteriorates to the point where it cannot meet its financial obligation, the firm is said to have entered a state of financial distress.

The first signals of financial distress are violations of debt payments and failure or reduction of dividends payouts. Whitaker (1999) defines entry in financial distress as the first year in which cash flows are less than current maturities' long-term debt. The firm has enough to pay its creditors as long as the cash flows exceed the current debt obligations. The key factor in identifying firms in financial distress is their inability to meet contractual debt obligations.

### Model Specification

Flowing from the above framework, we expect a functional relationship between credit risk and financial performance expressed in econometric form as:

The model is stated below:

$$ROA_{it} = \beta_0 + \beta_1 CRK_{it} + \beta_2 BEO_{it} + \beta_3 CRK_{it} * BEO_{it} + FSZ_{it} + e_i$$

Where:

i= firms

t= year

$\beta_0$ = Intercept  $\beta_1$ ,  $\beta_2$  and  $\beta_3$  = the coefficients of the Variables.

e = Error Term.

ROA= Return on Asset

CRK = Credit risk

BEO = Board Equity Ownership

FSZ= Firm Size

**Operationalisation of Variables***Table 1: Operationalisation of Variables*

Variables	Proxies	Variable Type	Measurements
Financial Performance	Return on Asset	Dependent Variable	profit after tax to total asset (Shehu, 2017)
Credit Risk	Credit risk	Independent	non-performing loan to total loan ratio by firm minus the industry's average means divided by standard deviation of all firms in the same industry according to Ambrose (2017) and Paroush (1992).
Board equity ownership	Board equity ownership	Moderator	The number of shares owned by the board to total shares (Alhaji, 2018)
Firm size	Total assets	Control	Measured as the log of total assets. (Hashim & Abdul Rahman, 2011)

**4. ESTIMATION RESULTS AND DISCUSSION OF FINDINGS***Table.2 Descriptive Statistics*

	Mean	Std. Dev.	Min	max
Roa	.0156	.018	-.095	.062
Crk	-1.023	1.000079	-1.941	3.605
Beo	.043	.062	.00039	.257
Fsz (million)	2239042.8	1934842.8	156506.5	10384349

Source: summary of STATA OUTPUT

The descriptive statistics of financial performance evaluated by return on asset (ROA) show an average of N0.016 in Table 2 The ROA is a measure of the efficiency of the owners' invested capital; it reflects the contribution of net income per naira (local currency) invested by the businesses' shareholders. The lowest and highest ROA values are -0.095 and 0.062, respectively. That implies the most profitable deposit money banks made N0.062 in net revenue on a single N1 asset investment, while the deposit money banks' largest losses were about -N0.095 on each N1 asset investment. The standard deviation of ROA of N0.018 indicates that there is a wide variation of earnings across the sampled deposit banks.

On the other hand, the average value for credit risk across the sampled banks as seen in Table.2 is -1.023 indicating that on average credit risk exposure is not too high; nevertheless, the standard deviation of 1.000079 indicates wide dispersion as the value doesn't cluster around the mean. The minimum and maximum values are -1.941 and 3.605 respectively.

Director ownership had a minimum value of 0.00039 and a maximum value of 0.257, implying the lowest proportion of shares held by the directors was at 0.04%, while the highest percentage of shares held by the directors was 25.7%. On the whole, Director



Ownership recorded a mean value of 0.037, implying that, on the average, the listed deposit money banks' directors had shares to the tune of 4.3%. The standard deviation recorded a value of 0.062 or 6.2% which implies high variability across the listed deposit money banks in Nigeria.

With respect to firm size, the size of the bank has minimum asset value of N156506.5millions in Nigerian Naira while

the maximum value owned by banks in terms of size is N10384349million. The mean of the size of the firm as presented in Table.2 indicates that on average listed deposit money banks in Nigeria have assets with worth N2239042.8millions value. The lower standard deviation with the value of N1934842.8millions as compared with the mean shows that there is low variation in total assets of the banks that constitutes the study sample.

*Table. 3 Correlation Matrix*

Variables	(1)	(2)	(3)	(4)	(5)
ROA	1.000				
CRK	-0.182	1.000			
BEO	0.038	-0.260	1.000		
CRK*BEO	-0.006	-0.030	0.355	1.000	
FSZ	0.052	-0.255	0.482	0.324	1.000

Source: Summary of STATA OUTPUT

From the correlation matrix table.3, it can be seen that board equity ownership (BEO) is positively correlated with the return on (ROA) of the listed deposit money banks in Nigeria, implying that the variable moves in the same direction as ROA. On the other hand, credit risk is negatively correlation with ROA. The implication is that the above variable moves in the opposite direction from the ROA. In addition, BEO negatively moderates the relationship between credit risk and financial performance. Nevertheless, the relationship among the explanatory variables is not strong to warrant the problem of multicollinearity.

### Residual tests

The current research employed the Breuch Pagan/Cook-Weisberg test to see whether heteroskedasticity existed. The Chi2 of 0.14 with a p-value of 0.129 indicates that there

is no heteroskedasticity, and the null hypothesis that the residual variance is constant (homoscedastic) is not rejected.

The research used a multicollinearity test to determine the strength of the association between the explanatory factors, which might influence the study's outcome. The variance inflation factor (VIF) was calculated, and all of the variables had values less than 10 and tolerance values more than 0.10. (Rule of thumb). This demonstrates that there is no difficulty with multicollinearity.

To decide between the fixed and random effect models, the Hausman specification test was used. The Hausman test found that the value of chi2 is 0.00 and the prob>chi 1.0000 is negligible, indicating that the Hausman test favours the random effect

model. To select between the random effect, result and OLS regression, the Breusch and Pagan Lagrangian multiplier test for random effect was used. The test resulted in a chi2

of 2.21 and a p-value of 0.003. As a result, the random effect regression model is the most appropriate for interpreting the data in this research.

*Table 4: Random Effect Regression Results*

ROA	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
CRK	-1.417	0.232	-6.11	0.000	0.963	1.872	***
BEO	0.062	0.055	1.13	0.261	-0.169	0.046	
CRK*BEO	-.001	.0003	-3.68	0.000	-1.754	-0.892	***
FSZ	.023	.0187	1.27	.204	0.018	0.162	**
Constant	-0.002	0.008	-0.29	0.770	-0.019	0.014	
Mean dependent var		0.013	SD dependent var			0.035	
Overall r-squared		0.273					
Chi-square		41.837	Prob> chi2			0.000	
R-squared within		0.259	R-squared between			0.384	
VIF			1.18				

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

Source: Summary of STATA OUTPUT

From table 4, it can be observed that the adjusted  $R^2$  is 0.273 which means that 27.3% of variation in ROA of listed deposit banks in Nigeria was explained jointly by the independent variables captured in the model and p-value of 0.0000 shows that it is significant at 1%. This implies that the model is fit.

The relationship between credit risk (CRK) and financial performance of listed deposit money banks in Nigeria is found negative with the coefficient of -1.417 at 1% level of significance as indicated by the p-value of 0.000. Thus, an increase in credit risk will lead to a decrease in the financial performance of listed deposit money banks in Nigeria. This is because the increase in the amount of non-performing loans may have a more deteriorating effect on financial performance due to the likely hood of debtors failing to honour their obligation to the banks and more proportion of total loans and advances that turn out to be non-performing dwindles and reduces banks

financial performance. This provides a basis for rejecting the null hypothesis that says, credit risk has no significant impact on the financial performance of listed deposit money banks in Nigeria. This finding is in line with Isiaka *et al.* (2017), Annor *et al* (2018) and financial distress theory which states that credit risk is one of the components that financial distress emanates from, and the shareholders wealth may be affected by increase of returns on their equity at a decreasing rate.

The coefficient of board equity ownership (BEO) is 0.062, which means that equity ownership has a positive relationship with financial performance of listed deposit money banks in Nigeria. However, the relationship between them is not significant as indicated by p-value of 0.26. Therefore, we fail to reject the null hypothesis that says, managerial ownership has significant effect on financial performance of listed deposit money banks in Nigeria. This

finding is in tandem with that of Hamdan and Zureigat (2017).

The moderating effect of board equity ownership (measured by the proportion of shares owned by the board of directors) on the relationship between credit risk and financial performance (using ROA) is negatively significant, with a parameter of -0.003, with the p-value of 0.000. By implication, board equity ownership has a moderating influence on the link between credit risk and financial performance. This is because, as previously noted, past research found conflicting outcomes in the nexus between credit risk and financial performance. As a result, this research concluded that there is a mixed link between credit risk and financial performance, which prompted moderation

## **5. CONCLUSION AND RECOMMENDATIONS**

The study investigated the moderate effect of board equity ownership on the relationship between credit risk and financial performance of listed deposit money banks in Nigeria, 13 out of the 14 listed deposit money banks were used due to data availability. Data were sourced from annual financial reports of the banks. Using the multiple regressions to analyze the data, this study found that there is a positive and significant relationship between board equity ownership and financial performance of listed deposit money banks in Nigeria. However, negative significant relationship was found between credit risk and financial performance. In addition, the study found that board equity ownership had a positive and significant moderating effect on the relationship between credit risk. It is recommended that listed deposit money bank management improve their credit analysis and loan administration

capabilities. It is necessary to develop clear credit standards and lending criteria. Management is also responsible for ensuring that the terms and conditions of loan approval are followed. As a result, top management should establish lending standards and make them known to all employees. This will lower nonperforming loan losses and enhance asset quality management, which increases bank costs and, as a result, increases profitability.

Regulatory authorities should support board equity participation, according to the findings of the research, with a caveat to avoid interest concentration of power that might lead to abuse. As a result, this study contributes to the credit risk literature stream by providing theoretical evidence for the moderating ability of BEO between financial risk and financial performance of listed deposit money banks in Nigeria

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