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An Empirical Investigation into the Relationship Between Financial Risk and Bank Performance

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Abstract: The importance of an optimally operation of the banking sector in any society cannot be over-emphasized thus the need for the government to pay particular attention on the operation and sustainability of the banking sector. However, the banking industry's services are highly volatile, and the sector's existence exposes it to numerous risks. Since deposit money banks are at the core of financial activity regulation, they are often exposed to threats and uncertainties which has unfavorable effect on their performance. The study examined the relationship between financial risk and bank performance of deposit money banks in Nigeria. A total of 11 deposit money banks were purposively selected for a period of 10 years (2010-2020). Relevant information for our analysis were obtained from the audited report of the selected banks. These data sources were seen to be appropriate for this study because have been validated by external auditors and relevant regulatory agencies. Ex-post facto research design was adjudged the appropriate design for the study. From our result we identified that financial risk has no momentous effect on return on equity of deposit money banks in Nigeria, Adj. $R^2 = 0.0077$, $F(4, 116) = 1.23$, $P > .05$). When the variables of financial risk were regressed against the variables of performances, the result indicated that financial risk variables jointly and significantly affected performances of deposit money banks in Nigeria, Adj. $R^2 = 0.0672$, $F(4, 116) = 44.08$, $P < .05$). Based on the findings we concluded that risk has a momentous effect on the performance of deposit money banks in Nigeria. The study recommended that credit risk assessment processes should be more intensified to reduce the value and volume of non-performing loans in the banks. A reduction in non-performing will result to an increase in the total asset of the bank and result to increase in interest income which as a positive effect on both the top line and bottom line of the bank.

Keywords: Credit Risk, Financial Risk, Performance, Liquidity Risk, Return on Equity

1. Introduction

The importance of an optimally operating banking sector in any society cannot be over-emphasized thus the need for the government to pay particular attention on the operation and sustainability of the banking sector. However, the banking industry's services are highly volatile, and the sector's existence exposes it to numerous risks. Since deposit money banks are at the core of financial activity regulation, they are often exposed to threats and uncertainties which has unfavorable effect on their performance.

After the global financial crisis, banks in most emerging economies have faced ongoing performance challenges. The government played their roles in supporting the bank through the aid of favorable monetary policies introduced during those periods to foster economic growth, but the covid-19 pandemic required a drop-in interest rate to ensure that the citizenry stayed afloat. The extended period of low interest rate put pressure on the deposit money banks in the interim as the net interest income dropped resulting in a drop in performance [6]. A simulation exercise conducted for a group of nine advanced economies indicates that a large fraction of their banking sectors, by assets, may fail to generate profits above their cost of equity in 2025. The pandemic to some degree and extent further crippled the banking operations by reducing the volume of business transactions from potential investors which had a unfavorable effect on the performance of the banking sector generally [6].

Poor performance of banks and the resulting reduction in their profitability can be traced to the high volume of stage 3

loans in the books of several banks [12, 17, 30]. Iwedi and Onuegbu [9] highlighted that despite the efforts to establish a risk management department in all the deposit money banks, statistics indicate that non-performing loans rate was about 35% high in Nigeria deposit money banks between the years 1999 and 2009. There are various factors that affect the performance of banks which include but are not limited to the high level of non-performing loan rate, inadequate loan processing, absence of loan collateral, and these are all linked to the poor and ineffective credit risk management system adopted [12].

According to Oladejo and Oladipo [19] In Nigeria, the performances of Deposit Money Banks have been affected by decline in efficiency, instability, and various financial risk. The failures of banks in Nigeria and other developing countries have been said to have been caused by improper lending practices, lack of due experience, lack of proper information systems to assess the credit risk adequately in the failing economy. Pandy [23] emphasized the importance of appropriate risk profiling by transaction and portfolios with the aid of an accurately built model as this will help increase their chances of managing pre-identified risk. Banks should also develop procedures, policies and standards to combat pre-determined risk to prevent a negative impact on performance.

Bank failures and liquidation have been a persistent problem in Nigeria since the bank's emergence in 1892. In 1998 the Central Bank of Nigeria liquidated 16 banks because of poor performance where licensed commercial banks authorized share capital was as low as N2 billion as of 1998 making it easy for many merchant banks without the prerequisite banking experiences to obtain banking licenses to support their business. As a result, uncoordinated and spurious practices became the order of the day and most banks share capital dwindled. It resulted in some banks inability to meet contractual obligations and refund depositors' funds. This was the beginning of the turbulent banking crisis in Nigeria. customer began to lose interest in the banking services [27].

In a bid to forestall a systemic collapse of the banking industry and its important role in the economy the regulatory authority, CBN conducted an extensive review of inherent risks in all the banks and its findings necessitated the radical consolidation of the banks in 2006 and upward review of their share capital. The CBN categorized the banks into three regional commercial banks, national commercial banks and commercial banks with international branches. Each category had different share capital requirements. For regional commercial banks the share capital was N10 billion, N25 billion for National banks commercial banks and N50 billion for commercial banks with international branches [3].

The study examined empirically the association between financial risk and bank performance of Deposit Money Banks. The specific objective of the study is to investigate the effect of financial risk on Return on Equity of Deposit Money Banks in Nigeria.

2. Literature Review

2.1. Deposit Money Banks' Performance

Bank performance in this context relates to sustainable profitability. In achieving a sustainable performance, the bank must have a methodology to ensure a balance of growth, return and risk. In assessing performance of banks, the traditional, economic or market measure could be adopted depending on the aspect of performance that is to be considered. An example is the economic value added propounded by stern and Stewart [24]. Several works have been done over the years on bank performance but there is still room for more works on the Nigerian banking sector has several grey areas remain unresearched. Profitability is the major focus in defining the performance of a bank and various authors have defined performance in their own views [22]. Profitability is the ability of a firm to earn reasonable profit or returns on its investments. The importance of sustainable performance sector cannot be over-emphasized, and this can only be achieved with increasing profitability [1].

2.1.1. Return on Equity

The return on equity (ROE) is a measure the profitability of a business in relation to the shareholder equity. The return on equity ratio or ROE is a profitability ratio that measures how efficiently a firm utilises shareholders fund in earning quality returns. The ROE of a firm could be affected by various factors such as the profits, huge debt, number of shares, negative shareholders fund, all these factors could either result in a low or high return on equity [8]. In measuring the performance of firm using ROE is it best to make a comparison with prior years ROE, peer companies ROE and industry average [11]. It is largely believed that the ROA and ROE measures performance the same way, although ROA is focused on utilisation of the firm asset while ROE is focused with shareholders fund investment to earn quality returns. [14].

2.1.2. Financial Risk

The Institute of Risk Management [10] explains risk as a mix of likelihood of an event and its outcome. The outcome of an event be favorable or otherwise. In the finance world, it is the possibility of financial loss. Financial Risks take the form of various types of risks associated with financing. Risk is also concerned with how an organization manages the handles its gearing. Risk management involves putting in place processes and procedure for pre-identifying, analyzing, and evaluating risk with the aim of controlling and mitigating the effect on the business. In managing risk, understanding the risk is important as this will aid the process development for combatting risk identified. In finance and business term, when an organization makes an investment decision, it exposes itself to a number of financial risks [5].

2.1.3. Credit Risk

Credit risk exposure are caused by factors such as organizational policy on credit, lack of robust policies on credit, inappropriate credit assessment and inadequate

supervision by the Central bank just to mention a few [16]. A non-performing loan will attract liquidity risk as the inability of the loan to generate inflow for the firm will result to reduction in cash inflow affecting the liquidity position of the bank. This is evident that credit risk could result in exposure to other forms of risk. [2], deposit money banks issue huge volume of loans as it could be argued as the largest source of income, but loans expose the bank to credit risk the most. Credit risk are of various types which includes Credit default risk, Concentration risk and Country risk.

2.1.4. Liquidity Risk

According to Olagunju, Adeyanju and Olabode [20], the ability to meet financial obligations where necessary without struggling with cashflow is referred to as liquidity. Also, liquidity for a bank could mean the ability to provides customer deposit on demand of the customer. Inability to meet with customer cash withdrawal at any point in time could be perceived as liquidity problems which could threaten their existence. Illiquidity in the bank at any point will cause panic amongst the populace. Deposit money banks are usually surrounded with variety of liquid asset which can be converted cash to meet their short-term obligations at maturity [6]. Placements and short tenured investment are considered highly liquid compared to investment in equity instrument as their prices of short tenured investment and placements are not affected by price volatility [25].

Liquidity can also be explained with the available market for a financial instrument, financial instrument that with a readily available market are referred to as liquid asset and will be considered when analysing the liquidity position of the bank. The obligations of a deposit money bank are numerous therefore the need for a strong liquidity position cannot be emphasized, This required the CBN to enforce a minimum liquidity position of 30% for al deposit money banks [4]. Therefore, liquidity could be a vital element of financial management and must be managed with caution [5].

2.2. Theoretical Framework

The study is hinged on signaling theory and it explains the action taken by the managers to reduce information asymmetries between them and the investor. Furthermore, the theory explains visible signals in terms of policies, profits, efficiency, practices, growth which serves as an attraction or a signal to the investor to locate in the economy. Investees reduce the asymmetry by providing information and putting policies and practices in place which serve as a visible sign to the investors on the basis upon which they can base their investment decisions. [26] referenced the work-force market in explaining the signaling effect of education on quality of job. Spencer explained that in employing candidates for a job opening, employees are uninformed about the quality of the candidates but the quality of the qualification signals to the employer the candidate quality therefore reducing information gap. This is presumably a reliable signal because lower quality candidates would not be able to withstand the rigors of higher education [31].

2.3. Empirical Review

The study of Olamide, Uwalomwa and Ranti [21] examined the effect of risk management on the performance of Banks in Nigeria. The study analyzed the financial of 14 selected deposit money banks in Nigeria for a period of 6 years (2006-2012), the study proxied performance with ROE and measured risk management with NPL ratio, capital ratio, LDR ratio. They regressed ROE against all variables of risk management and based on the result of their regression analysis result the concluded that although effective risk management helps mitigate risk but does not guarantee a improved performance.

Okere, Isiaka and Ogunlowere [18] investigated how risk management impacted performance of deposit money banks in Nigeria. In a achieving a reliable conclusion the study adopted panel methodology where the data of 15 listed deposit money banks were obtain from their audited financial statement for a period of 10 years (2006-2015). The study measure performance with ROA while independent variable been credit & Liquidity risk management were measured with NPL ratio, CAR, Leverage ratio and LDR. A multiple regression was ran and the result insinuates that risk management variables positively impacted performance of deposit money banks in Nigeria except for leverage ratio which produced a negative impact. Based on their finding the study recommended that every bank should develop a credit risk strategy and endeavor to review and update the strategy to accommodate recent reality and happens as it affect the bank directly.

Kurotamunobaraomi, Giami and Obari [13] analyzed the connection between liquidity and performance of Nigerian banks. The study obtained the relevant data needed for their findings from the audited annual report of selected banks in Nigeria for the period of 1984-2014. The result of the multiple regression explains that LDR and LR which are proxies of liquidity risk have a positive relationship with the performance (returns on shareholders' funds) of deposit money banks in Nigeria while cash reserve ratio has an unfavorable effect on performance. The study recommended that banks should always have a good liquidity position, also banks should invest excess liquid asset as holding excess cash would yield little or no return thereby affecting performance.

Muriithi and Waweru [15] examined the effect of liquidity risk on performance of commercial banks in Kenya. A quantitive research design was adopted, the study employed secondary sources in obtaining data from 43 banks licensed in Kenya for a period of 10 years (2005-2014). Data needed were obtained from the annual report of the banks for the selected period under study. Performance which is the dependent variables was proxied with ROE, while liquidity was measured with liquidity coverage ratio which is a regulatory ratio and net stable funding ratio. Based on the result arrived at, the study concluded both NSFR, LCR has a negative but insignificant impact performance of banks in Kenya while. The study then recommend that banks should

pay close attention to liquidity management.

3. Methodology

A total of 11 deposit money banks were purposively selected from a porpulation of 22 for the period of 2010-2020. *ex-post facto research* design was adjudged appropraite for this study. Data were obtained from the audited financial statement of the selected banks as the information has been verified and approved by regulatory agencies guarantying authenticity.

Model Specification

$$Y = f(X)$$

$$Y = \text{Dependent Variable}$$

$$X = \text{Independent Variable}$$

$$Y = \text{Bank Performance (BP)}$$

$$X = \text{Financial Risk (FR)}$$

Where:

$$Y = f(y_1)$$

$$y_1 = \text{Return on Equity (RE)}$$

While,

$$X = (x_1, x_2)$$

$$x_1 = \text{Credit Risk (CR)}$$

$$x_2 = \text{Liquidity Risk (LR)}$$

Functional relationship:

$$ROE = f(CR, LR) \qquad (1)$$

The model is specified as:

$$ROE_{it} = \alpha_0 + \beta_1 CR_{it} + \beta_2 LR_{it} + \mu_{it} \qquad (2)$$

4. Results and Discussion

4.1. Descriptive Statistics

Table 1. Descriptive Statistics.

	MEAN	STD. DEV	MIN	MAX
ROE	10.712	42.787	-387.692	110.760
CR	0.068	0.072	0.01	0.56
LR	2.227	9.313	0.26	55.3

4.1.1. Return on Equity

The mean value of 10.712 suggests an average return on equity of N10.712 for selected deposit money. Therefore, a N10.72 return is earned on the average from the funds invested by shareholders in the business for the selected period (2010-2020). The standard deviation of 42.787% which far apart from the mean explains that ROE of deposit money banks in Nigeria varies largely, this result is also collaborated with the

gap between the minimum value -387.7% and the maximum value 110.8%. This further implies that some deposit money banks are not efficiently managing their investment hence resulting to a negative minimum value.

4.1.2. Credit Risk

The result indicates that on the average deposit money banks in Nigeria are exposed to Non-performing loan portfolio of about 6.8% (mean value) for the period of 2010-2020. A 6.8% non-performing loans (credit impaired) is relatively small which is better for their operations. According to the Central bank Nigeria circular issued in 2019 which stated that "the maximum non-performing loan to gross loans for deposit money banks in Nigeria shall not at any point in time exceed 10%". The result is collaborated with a low standard deviation of 0.072 and relatively close ranged minimum value and maximum value of 0.01 (1%) and 0.56 (5.6%) respectively.

4.1.3. Liquidity Risk

Our result indicates that Nigerian deposit money banks are highly liquid on the average thereby surpassing the regulatory minimum liquidity of 30% for deposit money banks. The selected Deposit money banks have resources to meet their obligation at every point in time. Although the minimum value suggests that some deposit money banks fell below the regulatory minimum during the selected period for the study. The standard deviation, minimum & maximum value of 9.313, 0.26 and 55.3 explains that the performance of deposit money banks in Nigeria varies largely.

Table 2. Correlation Analysis.

	VIF	Tolerance
CR	1.27	0.786
LR	1.15	0.867

The VIF result of 1.27 and 1.15 indicates that a moderate correlation backed with a tolerance rate of less than 1% evidencing that multicollinearity does not exist.

Table 3. Regression and Post-Estimation Results for financial risk and Return on Equity.

MODEL THREE				
Pooled Regression with Cluster				
Variable	**Coeff**	**Std. Err**	**T-Stat**	**Prob**
Constant	33.254	18.694	1.78	0.078
CR	61.964	60.892	1.02	0.311
LR	-0.138	0.438	-0.32	0.753
Adjusted R^2	0.0077			
Wald Stat	1.23 (0.30)			
Hausman Test	11.03 (0.026)			
Testparm Test/LM Test	0.74 (0.57)			
Heteroscedasticity Test	7.68 (0.0056)			
Serial Correlation Test	28.233 (0.00)			

Source: Researcher's Computation (2021)
Note: all the analysis was tested at 5% significance level.

4.2. Post-Estimation Results

The result of the Hausman test suggests the test is

significant at 5 percent level of significance chosen for the study. Therefore, the study adjudged fixed effect as appropriate estimator for the study. This was supported with the result of the Breusch and Pagan Lagrangian multiplier test carried out for the appropriateness of random effect, having *p-value* of 0.000 showed that fixed effect is the best appropriate estimator for the study.

The model was tested for heteroscedasticity, autocorrelation, and cross-sectional dependence to examine the robustness of the model. The heteroskedasticity test is significant at 5 percent is an indication of the presence of heteroskedasticity, thus the study does reject the null hypothesis. The Wooldridge test serial correlation is significant at 5percent evidencing serial correlation problem in the model. Therefore, the study rejects the null hypothesis. In addition, the cross-sectional dependence test is also statistically significant at 5 percent evidenced that the model has cross sectional dependence problem. Due to the presence of heteroskedasticity, serial correlation and cross-sectional dependence problems in the model; Model three was estimated using fixed effects Regression with Pooled Regression with Cluster.

4.2.1. Regression Equation Results

$$ROE_{it} = \alpha_0 + \beta_1 CR_{it} + \beta_2 LR_{it} + \mu_{it}\ldots\ldots\ldots$$

$$ROE_{it} = 33.254 + 61.964 CR_{it} - 0.138 LR_{it} + \mu_{it}$$

The Model examined the effect of the four measures of the independent variables (CR, LR) on return on equity (ROE). The result in table 3 explained that credit risk (CR) has a positive and insignificant effect on return on equity (ROE). The positive value of its coefficient of 61.964 implies that a 1% increase in CR (Credit Risk) will lead to 61.964 percent increase in Return on equity; LR (Liquidity Risk) has an insignificant negative effect on ROE. The negative value of its co-efficient which means that a 1% rise in LR will necessitate a direct drop of 0.138 percent of Return on equity. The Wald stat result with P value of 0.30 indicates that CR & LR jointly and significantly impacted ROE. The value of the coefficient of multiple determination of 0.0077 means that all the proxies of the independent variables (CR, LR) are jointly responsible for 0.7% changes in ROE while the remaining changes in ROE (99.3%) cannot be explained by the model.

The result of the F-statistic in table 3 connote that Financial risk has no significant effect on return on equity of deposit money banks in Nigeria which is means the null hypothesis is accepted based on the result (β =1.23, *P* =0.30).

4.2.2. Discussion of Findings

The regression results explained the relationship between financial risk and Return on Equity of deposit money banks listed in Nigeria and found out that financial risk had a positive insignificant effect on Return on Equity of deposit money banks listed in Nigeria. This implies that on the overall that financial risk has a insignificant positive effect on

Return on Equity of deposit money banks listed in Nigeria especially credit risk, liquidity risk, foreign exchange risk and operational risk were implemented.

The result affirms the study with the results of prior studies of Nwanna and Oguezue [16], Okere, Isiaka and Ogunlowere [18]. The work of Okere, Isiaka and Ogunlowere [18] investigated the effect of risk management on performance of deposit money banks in Nigeria. The study then found that operation risk had a significant effect on return on equity of deposit money banks listed in Nigeria. Also, in the study of [7, 21, 28] they discovered that a negative relationship exists between financial risk and performance of deposit money banks in Nigeria. It was found out that liquidity risk and foreign exchange risk had an insignificant relationship to return on equity of the deposit money banks which was attributable to small firm size and business operations of the banks.

5. Conclusion

The study concluded that the independent variables (CR, LR) have no significant impact on ROE of deposit money banks listed in Nigeria. The study recommends that Credit risk assessment processes should be more intensified to reduce the value and volume of non-performing loans in the banks because a reduction in non-performing result to increase in interest income which will result affect both the top line and bottom line of the bank.

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