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Return on Assets and Sufficient Capital of Nigerian Banks

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Abstract

The study examined the link between the capital adequacy of banks and their return on assets in Nigeria from 2001 to 2023. Using secondary data from the World Bank and the Central Bank of Nigeria (CBN) statistics bulletin. The Error Correction Model (ECM) approach was used as the analytical technique. The result showed a strong positive long-run association between these factors. According to your research, capital adequacy in Nigerian banks positively and statistically significantly affects the return on assets (ROA) of the banks. Also, there is a substantial and negative correlation between the ratio of non-performing loans and return on assets. This suggests that banks tend to have lower returns on their assets when their credit risk is larger, as shown by their NPL ratio. Managing credit risk is a crucial aspect of increasing overall profitability and Liquidity Ratio has a positive effect on ROA. While liquidity ratio significantly and favorably affects return on assets in the banking sector of Nigeria. In order to boost public trust in the Nigerian banking industry and eventually raise asset returns for banks and the financial sector overall, this proactive strategy is crucial. In light of the results, we advise that monetary authorities take an active supervisory role in ensuring that banks retain sufficient levels of capital.

Keywords: *Return on assets, Sufficient capital, Nigerian banks*

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Background to the Study

In the business world, Nigeria's banking industry has become well-known for offering financial resources to individuals and companies alike in an effort to generate profitable returns on loan extensions within a certain time period. Deposit money banks serve as middlemen, taking in excess cash and lending it to investors for a range of uses. Deposit money banks support economic growth by providing money to the general people (Kallberg & Udell, 2015). Lending to customers generates a sizable amount of bank revenue, and while it is profitable, it also carries a high risk if not handled carefully. As a result, lending continues to be deposit money banks' principal source of revenue, highlighting its critical role in allocating economic resources across nations (Apere, 2016).

Like arteries in the human body, deposit money banks are essential to the economy of developing nations because they act as conduits for delivering monies to individuals in need. They make up more than 90% of the economic resources in Nigeria, which is a major contribution (Rwayitare, Shukla & Ruhara, 2016). Banks do more than just take deposits; they also offer credit facilities. However, this function of intermediation exposes banks to a range of risks, including those related to credit, liquidity, markets, legal issues, foreign exchange, solvency, and operations. Among them, credit risk is particularly noticeable as a frequent reason for bank failures, highlighting the significance of precise evaluation and efficient management (Kolapo, Ayeni, & Oke, 2012).

A deposit money bank's ability to manage credit risk, in particular, depends on a number of criteria, including its capital adequacy ratio, cost efficiency, and liquidity ratio. Specifically, the capital adequacy ratio is essential for improving bank performance, especially with regard to return on assets (ROA). Jeff (2015) emphasizes how important it is to take ROA into account when figuring out how much capital banks and other financial organizations need. Strict capital rules placed on banks have impeded profitable investments by reducing lending, as Santamero & Watson (2015) have shown.

Moreover, in deposit money institutions, the degree of capital adequacy acts as a gauge of risk. By evaluating how effectively a bank's capital can withstand risky loans, it may be used to determine the health of its finances. According to Mendoza and Rivera (2017), a high capital sufficient influences profitability by improving financial stability and safeguarding depositor money. In addition, the capital to asset ratio is essential for guaranteeing the effectiveness of bank operations. According to Zheng et al. (2012), banks with sufficient capital may favorably modify their capital buffer and risk, whereas banks with inadequate capital may find it difficult to control credit risk, which will affect their return on assets. According to Odonkor et al. (2016), macroeconomic variables also have a big impact on banks' risk-taking behavior, which emphasizes how difficult it is to manage risk in the banking industry.

According to Al-Kayed et al. (2014), banks' capital structure has a major impact on their overall performance, with increased capital having a favorable effect. According to Seenaiah et al. (2015), there is a negative correlation between net interest margin (NIM) and non-performing assets (NPA), but a positive correlation between operating profit, return on equity

(ROE), and ROA. It is important to stress that deposit money banks' continued existence depends on their capacity to successfully manage related credit risks and offer loan facilities in an efficient manner. Bank failures in the past have frequently been caused by a disproportionate number of non-performing loans relative to performing ones. Managing credit risk is one of the most difficult issues the banking sector faces since it is impacted by macroeconomic conditions, particularly their ongoing volatility, which has a substantial effect on banks' performance, in addition to collaterals and defaults. As such, Deposit Money Banks' (DMBs') ability to manage credit risk is critical to their continuing survival.

It's also critical to understand that banks that don't satisfy certain capital ratio criteria run the danger of closing, which can result in mergers or acquisitions. The impact of capital adequacy ratios on bank performance has been the subject of conflicting research, as evidenced by studies by Udom and Eze (2018), Okoye, et. al., (2017), Islam, et. al., (2017), and ELMaude et. al., (2017). By analyzing the connection between capital adequacy and the return on assets (ROA) of Nigerian deposit money institutions, this research seeks to add to the body of current work.

Literature Review

Since capital adequacy acts as a safety net for riskier assets, it is a critical concept in the business world, especially in banking. It measures the amount of capital, or net worth, that a bank has to withstand the negative effects of its high-risk loans. Sustaining sufficient capital levels encourages new ventures, improves performance, and lessens general distress in the banking sector (Ezike & Oke, 2013). On the other hand, inadequate capital raises the risk of credit (Mukhtarov & Mammadov, 2018).

First-tier capital and second-tier capital are the two categories of capital used in the banking industry. While second-tier capital absorbs losses throughout the liquidation process, protecting depositor money, first-tier capital can absorb losses that are not substantial enough to force the termination of bank operations (Mendoza & Rivera, 2017). Adequate capital supports recapitalization initiatives, resolving problems specific to particular banks by broadening the settled-up capital base and allowing banks to function efficiently with their customers (Bessis, 2011). To guarantee the security of investors' money, recapitalization entails raising a bank's long-term capital to the amount mandated by financial authorities (Mendoza & Rivera, 2017).

Based on an examination of the prudential ratios of banks, the average capital adequacy ratio (CAR) was 17.7% in 2015 as opposed to 15.9% at the end of December 2014. Retained profits and extra capital raised throughout the year contributed to the banks' increased capital, which was the main cause of the CAR improvement. Furthermore, the average liquidity ratio (LR) rose to 48.6%, 18.6 percentage points higher than the minimal LR of 30.0% that was advised. Nevertheless, banks' asset quality declined, as evidenced by the rise in NPL to the industry's total from 2.9% at the end of 2014 to 4.9% in 2015. This increase was brought on by the negative effects of macroeconomic events like the decline in global oil prices on banks' credit portfolios (CBN, 2015).

As suggested in circular BSD/11/2003, which was published on August 4, 2003, banks must keep a minimum ratio of cash to total risk-weighted assets of 10%, according to Olalekan & Adeyinka (2013). Furthermore, settled-up capital and reserves should make up at least 50% of a bank's capital, and each bank's adjusted capital assets to total net credits after provisions should have a ratio of at least 1:10. Consequently, Nigerian deposit money institutions are urged to maintain greater capital levels in line with their risk profiles.

Capital sufficiency is important because it helps distribute the costs of ethical business practices and discourages illegal activity (VanRoy, 2006). Well-capitalized banks typically obtain higher bank financial strength ratings (FSRs), as evidenced by the numerous studies (Pasiouras & Kosmidou 2007; Poon et al., 2009; Poon and Firth, 2005; Van-Roy, 2006) that demonstrate the relationship between higher capital adequacy ratios and better bank ratings. As a result, the requirement for banks to have adequate capital is crucial not only in Nigeria but also around the world. The capital-to-asset ratio, a percentage measure of whether there is adequate cash flow to sustain resources, can be used to examine an organization's funding and resources. Investors, business managers, and regulators benefit from this ratio since it provides information about an organization's financial health and how it compares to other organisations of a similar sort. Capital-to-asset ratios are applied in banking in a variety of ways, including the capital adequacy ratio (CAR) and the variable capital asset ratio. The variable capital asset ratio, which applies to deposit money institutions, is a credit control tool devised by the central bank to determine the proper capital-to-total-asset ratio for a commercial bank (Danielle, 2020). Allen and Carletti (2010) argue that in an efficient market, an item's price may be relied on to represent its fundamentals. If the price is unable to do so, it may alter the asset's fundamentals, making it difficult for banks to estimate its value. Since the banking business is profit-driven, all inputs and outputs must be quantified. As a result, the value of the assets owned by banks may be used to assess their future profitability.

Return on Assets (ROA) is one important profitability statistic used in financial research. When analyzing financial documents, this ratio is usually highlighted since it shows how profitable a bank may be. Based on historical performance, ROA calculates the company's ability to turn a profit, which can then be extrapolated to the future. The assets in question are usually business properties that are turned into assets utilized for corporate sustainability from both equity capital and borrowed cash. Brigham and Houston (2001) state that the computation of return on assets (ROA) involves comparing the net profit accessible to common shareholders to the total assets.

Theoretical Framework

In deposit money banks' risk management, capital sufficiency has become a more recent focal point, especially in developing countries. The expected income hypothesis is described as the theoretical underpinning for bank performance in this review. The loan portfolio serves as a source of liquidity under this idea. In essence, one may categorize banks' liquidity according to whether or not the planned loan payments are contingent upon the borrower's income at any particular time. Accordingly, the theory recognizes that banks' liquidity situation is influenced by the maturity structure of their loan and investment portfolio (Kosmidou, 2008). As with

other comparable theories, the expected income theory's main flaw is how installment loans are repaid. Installment loan repayments offer a consistent source of liquidity, but they might not be enough to cover unplanned crises when it comes to the financial system's cash needs (Ezike and Oke, 2013). In order to handle uncertainties in the business climate, bank management should have some cash on hand, according to Bosede, et. al,. (2013). The 2008–2009 financial crisis brought this idea to light and served as the impetus for this assessment. As the environment gets more complicated, it becomes even more important to comprehend its principles.

Empirical Review

The current literature explores the intricate link between capital adequacy and the profitability of financial organisations in great detail. An analysis of Nigerian deposit money banks' (DMBs') Return on Asset (ROA) and its correlation with capital adequacy was conducted by Akinroluyo et al. (2022). Nigerian deposit money banks registered on the Nigeria Stock Exchange as of 2021 were the subject of the study. The Nigerian Stock Exchange listing and international rating of these banks were taken into consideration during the selecting process. The study employed Ordinary Least Square (OLS) regression analysis with data collected from 2006 to 2020. The results demonstrated a statistically significant effect, with an 8% jump in profit margin following a 1% change in the capital to asset ratio. The study also indicated that a 1% change in solvency was connected with a 4.58% change in asset turnover, which was statistically significant. The research indicated that bank decision-makers take into consideration both solvency and capital to asset ratio when considering factors that effect a bank's objectives. Similarly, Mbaeri et al. (2021) evaluated the link between capital adequacy ratio and the performance of listed commercial banks in Nigeria, using return on capital as a proxy. The return on capital used by Nigeria's listed commercial banks and the capital adequacy ratio were revealed to be strongly and favorably associated by the study. These results led to the proposal that, in order to strengthen the performance of the banking system, the Central Bank of Nigeria raise the capital adequacy ratio of commercial banks and maintain compliance.

Oyetayo et al. (2019) looked at the influence of capital adequacy on the performance of Nigerian banks in another research. Utilizing the Breusch-Godfrey test, pooled panel least squares estimate, unit root test, and secondary and primary data from select banks. The results confirmed the trade-off idea between liquidity and profitability by indicating that capital adequacy had a positive and large influence on bank performance, but liquidity had a strong negative relationship with bank performance. Furthermore, the study discovered—contrary to expectations—a negative link between deposits and bank performance. The report concluded that since bank deposit costs may have a large effect on banks' capital and overall performance, the Central Bank of Nigeria should keep a watch on them.

Methodology and Data

The study uses error correction term statistical technique to examine the connection between capital adequacy and profitability in Nigerian banks. Below is a synopsis of the techniques used: with secondary data set sourced from the World Bank developmental indicator and CBN statistical bulletin spanning 2001 through 2023.

Model Specification

This research makes use of a model that is grounded on the anticipated income hypothesis. Using a simple regression analysis based on the OLS econometric technique, this study empirically investigates the relationship between ROA and four independent variables in the Nigerian context: capital adequacy ratio, inflation, non-performing loan ratio of banks, liquidity ratio, and inflation rate.

The functional form of the model is specified thus:

$ROA = f(X_1, X_2, X_3, X_4)$ 1

One way to express Equation (3.1) in Econometric linear form is:

$ROA = \delta_0 + \delta X_1, + \delta X_2, + \delta X_3, + \delta X_4, + \varepsilon t$ 2

Where:

X_1 = Return on Asset;
X_2 = Capital Adequacy ratio;
X_3 =Liquidity Ratio;
X_4 = Non- performing loan;
INFL=Inflation Rate
δ0 = constant.
δ1 – δ4 = The independent variables' coefficient, εt, is equal to the error term.

Result and Discussion

It is critical to evaluate the stationarity of the data used in this study since many macroeconomic variables show non-stationarity. This is due to the possibility that using variables that are integrated at different orders in regression analysis might provide false or absurd regression findings. As a result, before figuring out the long-term correlations between the variables, it is required to examine the stationarity of the data.

Table 1: Phillip-Perron Unit Root Test

Variable Level	**difference**		**Lag(s)**	**integration**
ROA -2.759390	-8.721509***		1	**I(1)**
CAR -2.181736	-5.897749**		1	**I(1)**
NPL -3.467303	-7.811308***		1	**I(1)**
LR -2.628837	-3.848742***		1	**I(1)**
INFL -3.702500	-8.425932***		1	**I(1)**
3.693508*			**0**	**I(0)**

Source: Author's Computation

Table 1 displays the results of the Phillip-Perron stationarity test, which show that ROA, CAR, NPL, LR, and INFL are non-stationary at their respective levels. This suggests that the data points have a unit root problem in their ordinary level forms. At their initial differences, all other variables show stationarity, nevertheless.

Table 2: Johansen cointegration Test Result

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	**Prob.****
None *	0.976399	53.77889	52.74632	**0.0118**
At most 1	0.875331	46.67457	45.76133	**0.0215**
At most 2	0.566927	8.755848	12.51798	**0.2333**

Trace test indicates 2 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon -Haug-Michelis (1999) p-values

At the 5% significance level, Table 2's trace statistic findings show that there are (2) co-integrating equation present. This implies the potential of co-integration, which implies the presence of an equilibrium or long-term link between the variables included in the model. Once the co-integration of all 1(1) variables has been confirmed, the error correction model (ECM) has to be estimated. The outcomes of this process are shown in Table 2.

Table 3: Regression Result
Dependent Variable: D(ROA)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-37.04522	11.18769	-3.636272	0.0030
D(CAR)	0.473226	0.185899	2.066230	0.0776
D(NPL)	-0.336472	0.074623	-3.047216	0.0187
D(LR)	-10.26664	2.928681	-4.157850	0.0043
D(INFL)	0.331962	0.090188	1.561995	0.1623
ECM(-1)	-0.272528	0.212173	-0.855984	0.4203
R-squared	0.844400	Mean dependent var		-0.183851
Adjusted R-squared	0.804685	S.D. dependent var		5.569686
F-statistic	23.77965	Durbin-Watson stat		1.972705
Prob(F-statistic)	0.000294			

Source: Author's Computation

The regression results on the effect of capital adequacy on the return on assets of Nigerian banks are shown in Table 3. The empirical results, which employ the ECM and Ordinary Least Squares (OLS) approach, provide important new information. In the present era, around 27% of the disequilibrium mistakes that accrued in the preceding period have been corrected. With a speed of adjustment or convergence level of -0.272528, the error correction term suggests a strong adjustment of return on assets toward equilibrium one period later. The

ECM (-1) coefficient's negative sign and value smaller than unity are consistent with predictions, indicating that long-term equilibrium conditions between the variables are met. It proposes that 27% of the imbalances are corrected in a year, and the remaining imbalances be corrected in the next year.

The findings show that banks' capital adequacy ratios (CAR) significantly boost return on assets (ROA) in Nigeria. In particular, the variations in the sigma coefficients show how different factors contribute to the profitability of banks as measured by ROA. When all other variables are held constant, the constant sigma coefficient for ROA is -37.04522, indicating a negative variation. The relationship between a unit change in CAR and a rise of 0.473226% in ROA highlights the significance of capital strength in determining bank profitability.

On the other hand, a unit change in non-performing loans (NPL) causes ROA to decline by 0. 336472%, a negative and statistically significant effect. In a similar vein, the liquidity ratio (LR) shows a statistically significant negative impact, with an increase of one unit translating into a
-10.26664% reduction in ROA. Although not statistically significant, inflation rate (INFL) has a negative impact on ROA; for every unit rise, there is a -0.331962% fall in ROA.

The model's explanatory variables explain 84.4% of the changes in banks' return on assets in Nigeria, according to the modified R-squared value of 0.844; other extraneous factors are responsible for the remaining 15.6% of the variations. The model's quality of fit is highlighted by the F-ratio statistic of 23.77, with a probability value of 0.000, and an R-squared value of 0.80. Furthermore, the model appears to be free of problems with autocorrelation or serial correlation, as indicated by the Durbin-Watson (DW) value of 1.97.

Conclusion and Recommendations

The research results you have obtained are highly informative and have significant ramifications for the banking industry in Nigeria. Below is a summary of the main ideas and suggestions raised:

1. Capital Adequacy's Beneficial Effect on ROA According to your research, capital adequacy in Nigerian banks positively and statistically significantly affects the return on assets (ROA) of the banks. This implies that maintaining adequate capital levels is essential to improving the financial performance and profitability of banks.
2. Negative Effect of NPL Ratio on ROA: According to studies, there is a substantial and negative correlation between the ratio of non-performing loans (NPLs) and return on assets. This suggests that banks tend to have lower returns on their assets when their credit risk is larger, as shown by the NPL ratio. Managing credit risk is a crucial aspect of increasing overall profitability.
3. Liquidity Ratio (LR) Has a Positive Effect on ROA According to your research, the liquidity ratio (LR) significantly and favorably affects return on assets in the banking sector of Nigeria. This shows that the profitability and financial performance of banks can be positively impacted by maintaining proper liquidity levels.

4. The profitability of banks appears to be negatively impacted by higher inflation rates, underscoring the significance of efficiently managing inflation risks. Policy Recommendations: In light of the results, we advise that monetary authorities take an active supervisory role in ensuring that banks retain sufficient levels of capital. Increased returns on assets for banks and the stability of the financial system as a whole can result from this regulatory control of the banking industry. Finally, the study emphasizes how crucial capital adequacy is to Nigerian banks' profitability. Through the implementation of efficient regulatory measures and risk management procedures, stakeholders can strive to enhance the stability and financial well-being of the banking industry in Nigeria.

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