Financial Intermediation on the Soundness of Quoted Commercial Banks in Nigeria Okpu, Precious Miracle

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https://doi.org/10.56201/ijbfr.vol.12.no9.2026.pg79.97

Abstract
This study investigates the effect of financial intermediation on the soundness of quoted commercial banks in Nigeria. The study was undertaken to establish whether key financial intermediation activities contribute to the financial strength and stability of quoted commercial banks. An ex-post facto research design was employed, using secondary panel data obtained from the annual financial statements of fourteen quoted commercial banks in Nigeria for the period 2016–2025. Panel Ordinary Least Squares regression was used to estimate the specified models. Capital adequacy and asset quality were examined as indicators of bank soundness, while credit to the private sector as a percentage of gross domestic product, loan-to-deposit ratio and deposits to gross domestic product served as the financial intermediation variables. The first model shows that the explanatory variables account for 42.1 percent of the variation in capital adequacy. CPS/GDP has a positive and statistically significant relationship with capital adequacy, whereas LDR has a negative but statistically insignificant relationship. DM/GDP also has a negative and statistically insignificant relationship with capital adequacy. The second model indicates that the financial intermediation variables explain 41.7 percent of the variation in asset quality. CPS/GDP has a positive and statistically significant relationship with asset quality, while LDR and DM/GDP have positive but statistically insignificant relationships. The study concludes that financial intermediation is an important determinant of the soundness of quoted commercial banks in Nigeria. It therefore recommends that bank management strengthen credit appraisal and risk management, maintain adequate capital and liquidity buffers, improve deposit mobilization, and continuously monitor asset portfolios. The Central Bank of Nigeria should also strengthen regulatory supervision and promote strict adherence to prudential requirements to support a stable and sound banking sector.

Keywords: *Financial Intermediation, Soundness, Quoted Commercial Banks, Capital Adequacy, Assets Quality*

Introduction

Banking regulators are primarily concerned with preventing banking crises and limiting the adverse effects that financial instability can have on the wider economy (Jahn & Kick, 2012). When the financial system becomes weak or dysfunctional, businesses and households may face difficulties in obtaining funds, while productive investment can be constrained by reduced credit availability. For commercial banks to remain sound and continue performing their financial intermediation function effectively, they need appropriate strategies for identifying and managing the financial risks arising from their operating environment (Jahn & Kick, 2012; Akani, Azike & Nwonodi, 2022). Over time, banking systems across the world have become

more liberalized and interconnected, reflecting increased deregulation of financial products and services. Greater integration has also intensified competition among financial institutions, making effective risk management and sound banking practices increasingly important.

Nigeria's banking history demonstrates the importance of effective regulation and supervision in maintaining a stable banking system. The first major wave of bank failures occurred between 1952 and 1958. By 1954, only four of approximately twenty-five indigenous banks established in the country had survived the Banking Ordinance of 1952. The establishment of the Central Bank of Nigeria in 1958 subsequently brought banking operations under a more formal framework of regulation and control (Osuka & Mpamugoh, 2007; Akani, Amadi-Opareli & Ajinwo, 2023). Adekanye (2010) observed that the largely unregulated banking environment between 1952 and 1958 contributed to bank failures and losses suffered by depositors. In addition, the broader macroeconomic environment remains an important factor in determining the sustainability of the banking sector. Economic instability can weaken banking performance because periods of slow economic growth or recession reduce business opportunities and may encourage decisions that increase pressure on banks. The introduction of the Structural Adjustment Programme (SAP) in 1986, followed by interest-rate deregulation in 1987, contributed to significant changes in the Nigerian macroeconomic environment and affected banking-sector performance. A stable macroeconomic environment generally provides more favourable conditions for a sound banking system, while weaknesses in the banking system can, in turn, contribute to wider economic instability (Sanusi, 2003; Akani, Ogolo & Sarakiri, 2023; Akani, Azubuike & Lucky, 2023).

Weak management is another important factor associated with banking crises. The appointment of competent and suitable personnel, together with integrity, transparency, and effective disclosure practices, can contribute to improved bank performance. Conversely, poor-quality management, inadequate disclosure, and weak accountability may undermine a bank's operations and eventually threaten its survival (Kama, 2010, Akani, Uchechukwu, & Ezebunwo, 2021; Akani, Godwin & Lucky, 2023). The deregulation that followed the Structural Adjustment Programme in 1986 and the subsequent liberalization of interest rates and bank licensing in 1987 also brought a number of new institutions and personnel into the banking industry. In some cases, inadequate technical knowledge and weak management practices created additional risks for banks. These challenges contributed to banking-sector instability and were followed by the revocation of the licences of 25 banks by the Central Bank of Nigeria in 1998.

The determinants of bank soundness have received considerable attention in previous studies. Igbinosa and Naimo (2020) examined the relationship between capital adequacy and bank stability or soundness in Sub-Saharan Africa over the period 2007–2016. Sit (2022) investigated the effect of the financial soundness index on bank financial performance in Turkey using annual data for 11 banks listed on the BIST Bank Index from 2005 to 2019. Mohammed et al. (2022) examined financial strength using profitability indicators and considered their implications for financial soundness in selected commercial banks in Iraq. Shah and Tiwari (2023) applied CAMEL analysis to assess the financial soundness of commercial banks in Nepal, while Oseni (2024) examined the soundness of Nigerian deposit money banks in response to the growing dependence of stakeholders on a stable banking system. Udofia and Okhae (2024) used the discriminant (Z-score) technique and regression analysis to examine the effects of Capital Adequacy, Asset Quality, Management Quality, Earnings Quality, and Liquidity Efficiency (CAMEL). Although these studies provide useful evidence on the determinants and measurement of bank soundness, they did not specifically incorporate financial intermediation variables as

explanatory factors. This study therefore examines the effect of financial intermediation on the soundness of quoted commercial banks in Nigeria.

Literature Review

Theoretical Framework

Financial Intermediation Theory

Financial Intermediation theory focuses on how banks mitigate transaction costs and deal with issues stemming from information asymmetry between lenders and borrowers. This foundational perspective of financial intermediation is primarily attributed to the seminal work of Diamond and Dybvig (1983). They developed a model illustrating how banks as intermediary transform illiquid assets (loans) into liquid liabilities (demand deposit), therefore providing liquidity to the economy by meeting the liquidity preferences of depositors, through the process of maturity transformation. This process enables banks to meet depositors' withdrawal needs while financing long-term investments. However, this structure makes banks susceptible to bank runs, as the sudden and constant withdrawal of funds by a large number of depositors can lead to insolvency. Financial intermediation is linked to banks financial soundness, which includes factors such as capital adequacy, asset quality, and liquidity must be effective to prevent bank-runs and maintain financial soundness and stability in the economy, (Akani, Azubuike & Ezebunwo, 2021; Akani & Nathaniel, 2021; Akani & Sarakiri, 2022; Akani & Agilebu, 2021).

Liquidity Preference Theory

This concept was first expressed by Keynes (1989) this theory is also known as liquidity preference hypothesis the idea of this theory is that investors need premium with longer maturities because they would prefer to hold cash, which entails less risk. When the investment is more liquid it is easy to sell it or easily converted in to cash with minimum risk and also the demand of money increase and decrease depends on the interest rate, when the interest rate decrease people demand more money to hold until the interest rate increase and vice versa. Financial institution that lend out credit to borrowers must ensure the borrower's ability to pay the debt on time when borrowers are not able to pay the money on time this result credit risk this may prevent the firm from investing in profitable investment that promises higher returns in future so before giving out credit to the firm it is important to know the credit worthiness of the firm to decrease the credit risk. (Jappelli and Pagano, 2002) The significance of this theory is that firms should maintain an optimum level of liquidity to able to grasp opportunity that promise higher return in the future and Firm's works towards the balance through proper management of their asset and liability to achieve capital requirement and future higher return investment which means in order to be profitable and stable in the sector its necessary to manage and coordinate asset and liability , for finance sector it is a key tools to achieve efficiency and growth, (Akani & Ezebunwo, 2021; Akani & Anyamaobi, 2021; Ekemere & Akani, 2020, Onyuku, Ohaka & Akani, 2025).

Buffer Theory

The buffer theory of capital adequacy was established by Calem and Rob (1996). According to the theory, a capital buffer may raise the bank performance as a result of the reduced lending rate that raises the loan demand. Besides, the theory asserts that an excessive rise in capital than required reduces bank risk. Thus, the theory posits that a bank reaching a minimum capital ratio has the incentive to increase its capital to avoid the risk of failure and regulatory costs arising as

a result of the breach of the capital requirement, the commercial loan theory originated in England during the time of the 18th century. The theory also known as the real bill doctrine asserts that a deposit money bank should only grant short-term liquidating productive loans to business organisation and the Central Bank should in turn land on the deposit money bank on the collateral securities of should short-term loan. This will ensure that the risk of the bank is reduced, ensure adequate liquidity for the banks and the country. This theory has however been criticized because it is based on the demand of trade as a key criterion for regulating this category of bank credit, (Akani & Lucky, 2022; Akani & Ezebunwo, 2022, Akani & Chittey, 2021 and Akani, Ejire & Boma-Oruwari, 2023).

Conceptual Review

Financial Intermediation

Financial intermediation relates to the process whereby the financial institutions creating financial assets within the framework of the financial markets brings together the surplus and the deficit economic units in order to resolve their financial imbalance by means of a price related compensation mechanism called interest rate (Ezirim et al, 2012). This for deposit money banks involves deposit mobilization and credit allocation. The process involves the inflow side characterized with fund mobilization and the outflow which is referred to fund utilization (Ezirim, 2005). One of the intermediate functions of deposit money banks is bank lending. Bank lending is a major factor input to the growth and development of the economy. It is a mechanism for promoting the developing economy and remains very important despite the diverse opinions of researchers on the relationship between finance and economic growth and economic growth and finance. Banks constitute the medium for the implementation of the government monetary policies aimed at achieving the macro-economic goals of full employment, economic growth stability and Balance of payment equilibrium (Odior, 2013; Akani & Lucky, 2023; Akani & Lenyie, 2023).

Bank Soundness

Tuti (2016) defined bank soundness as condition in which the financial system comprising financial intermediaries, markets and market infrastructures-is capable of withstanding shocks and the unraveling of financial imbalances, thereby mitigates the likelihood of disruptions in the financial intermediation process which are severe enough to significantly impair the allocation of savings to profitable investment opportunities. the International Monetary Fund(IMF)defined bank soundness (stability)as bank's capability to endure hostile events, such as bank run, major policy changes, financial sector liberalization and natural disasters. Hence, it reflects bank's ability to be solvent and to remain so under adverse economic conditions by means of their capital and reserve accounts. Bank soundness denotes a solid banking system that is well-regulated, well-supervised and where risks borne by individual banks are properly managed and continuously monitored. Though, the recent financial disturbances that peaked in 2008 have shown that the banking sector was the heart of the crisis, being the main source of vulnerabilities. Moreover, an important role was played by banks 'individual characteristics, being considered as factors of systemic instability, thus riskier banks, characterized by higher financial fragility, contributed more to systemic risk. A sound banking system is a system in which individual banks accounting for most of the system's transactions are solvent and meet capital adequacy requirements (Toby, 2006). Banking system is considered sound, if it is capitally adequate and

can withstand monetary and macroeconomic shocks in its operating environment, (Akani, 2022; Akani,2023; Akani & Rogers-Banigo, 2023 & Akani and Ede, 2025).

Capital Adequacy

Capital adequacy is an important measure of the financial strength of a banking institution because it indicates the extent to which a bank can absorb losses arising from internal or external shocks. Roman and Şargu (2013) and Akani, (2023), identified the ratio of total equity to total assets (TETA) and the ratio of total equity to total debt (TETD) as possible indicators of bank soundness. TETA shows the proportion of a bank's assets financed by shareholders' equity, while TETD reflects the internal financial resources available to cushion the bank against default risk. In general, a higher value of these ratios indicates a stronger financial position. Banks are required by financial regulators to maintain minimum levels of capital because their lending and investment activities expose them to different forms of risk. Adequate capital provides a cushion against unexpected losses and helps protect depositors, while also supporting the stability and efficiency of the financial system. A well-capitalized bank is therefore better positioned to withstand adverse financial conditions and continue its operations.

The major components of regulatory capital include Tier I and Tier II capital, while Tier III capital has historically been associated with covering certain market risks. Tier I capital represents the core capital of a bank and includes paid-up ordinary share capital, statutory reserves, disclosed free reserves, qualifying perpetual non-cumulative preference shares, innovative perpetual debt instruments, and eligible capital reserves. Because it is designed to absorb losses while the bank remains a going concern, Tier I capital provides an important layer of protection for depositors. Tier II capital is supplementary capital and may include undisclosed reserves, revaluation reserves, general provisions, hybrid capital instruments, subordinated debt, and investment reserve accounts. It provides additional loss-absorption capacity, particularly when a bank is being wound up, and therefore offers a lower level of protection than core capital. Tier III capital was designed to cover part of the market risk arising from movements in interest rates, exchange rates, equity prices, and commodity prices. Where recognized as regulatory capital, it is subject to specified limits and eligibility conditions. Capital adequacy is commonly assessed through the Capital Adequacy Ratio (CAR), which relates a bank's regulatory capital to its risk-weighted assets. Risk-weighted assets adjust the value of a bank's assets according to the level of risk associated with them. An appropriate capital position enables a bank to expand its activities while retaining sufficient capacity to absorb losses and remain solvent. It therefore serves as an important indicator of a bank's ability to withstand credit, market, operational, and other financial risks.

Asset Quality

Asset quality is used to assess the strength of a bank and is directly linked to capital adequacy because insolvency risk is accompanied by the deterioration of the bank’s assets (IMF and World Bank 2005). Following prior studies, we use the ratio of loan loss provisions to total loans (LLPTL), the ratio of loan loss provisions to net interest income (LLPII), and the ratio of total loans to total assets (TLTA), LLPTL represents the proportion of risky loans to total loans that were granted to the borrowers. LLPII indicates the ability of a bank to use the received interest income in order to cover the expenses caused by provisions for impaired loans. Accordingly, the lower value of LLPTL or LLPII, the better the quality of loans is. Also, a higher TLTA reflects the more sensitivity of assets structure to loan losses since loans represent the most important

components of a bank's assets (Le 2016). Thus, the highest rank is attributed to a bank that has registered the lowest value of these indicators.

Liquidity

Liquidity reflects the ability of a bank to withstand shocks to cash flows and unexpected withdrawals of depositors. Following prior studies, use the ratio of liquid assets to the short-term funding, (LASTF) and the ratio of net loan to the short-term funding (NLSTF) as measures of bank liquidity. The higher LASTF the safer the bank is since banks hold more liquid assets that can be utilized to address the short-term debt. As a result, the highest rank is assigned to a bank that can acquire the greatest value of LASTF. However, the higher NLSTF the less stable the bank is since loans are generally considered illiquid assets. If the bank advances higher volume of loans, that bank may face liquidity problem to meet the unexpected withdrawals of depositors. The period of 2008 and 2010 witnessed a rapid growth in loans, especially in the booming real estate and stock markets rather than into productive investments. Consequently, this may affect the liquidity status of a bank. The highest rank is assigned to a bank that has registered the lowest value of LASTF, (Akani, 2023, Agwor & Akani, 2020).

Empirical Review

Bob-Manuel et al., (2026) examined the relationship between financial intermediation activities and net interest revenue among publicly listed commercial banks in Nigeria. This study enhances the existing literature by investigating the direct effects of core intermediation indicators, such as deposit mobilization, credit allocation, financial intermediation costs, loan-to-deposit ratio, and branch network size, in contrast to previous research that primarily focused on interest rates and overall profitability. A quasi-experimental research approach was employed, utilizing secondary data obtained from the annual reports and financial statements of publicly traded commercial banks, in addition to the Central Bank of Nigeria's Statistical Bulletin. We used the Statistical Package for Social Sciences (SPSS) to look at the data. Net interest income was the dependent variable, and the intermediation variables that were found were the independent predictors. The empirical findings indicated that financial intermediation variables collectively accounted for 52.5% of the variation in net interest income. Deposit mobilization and credit allocation had a positive and statistically significant effect on net interest income. On the other hand, financial intermediation costs, the loan-to-deposit ratio, and branch expansion had negative and statistically insignificant effects. Based on these results, the study suggests that commercial banks use cost-effective intermediation methods to boost investor confidence. It also says that the Central Bank of Nigeria should lower the amount of cash it needs to keep on hand to make it easier for businesses to get loans. It is also a good idea to strengthen attempts to get more deposits in order to better manage liquidity, increase lending capacity, and make more money. Also, to keep the bank's performance up, it's important to optimize the loan-to-deposit ratio and use good cost management procedures. From a policy point of view, the Central Bank's Monetary Policy Committee needs to make monetary policies that encourage more deposits to be moved about in the banking system. Nkpe (2026) examined how effective banking practices affected the performance of listed commercial banks in Nigeria. Utilizing liquidity reserves, credit allocation, deposit mobilization, and risk management as explanatory variables, return on equity was used as a performance measure. The study evaluated model with pooled, fixed, and random effects using panel data approaches. The Hausman test confirmed that the fixed effects specification was the most appropriate. Overall, the model was statistically significant, and the

findings showed that the chosen banking practice factors explained a large percentage of the variance in return on equity. Credit allocation and deposit mobilization had good impacts on return on equity, whereas risk management and liquidity reserves had negative consequences. Nevertheless, the results also showed that risk management, liquidity reserves, deposit mobilization, and loan distribution were statistically significant factors that affected return on equity. Improving operational efficiency and providing ongoing staff training were suggested as ways to boost banking performance in the study.

Bayelign and Ayalew (2025) used quantitative research approach and nine commercial banks were chosen purposively. Data was collected from national bank of Ethiopia and ministry of finance and economic development covering the period of 2007 to 2020. The generalized method of moments is used to (GMM) to analyze the data. The findings of the present research indicate that the size and liquidity of banks possess a favorable and noteworthy influence on the profitability. Conversely, operational efficiency, leverage, credit to deposit ratio, capital adequacy ratio, and interest rate spread has a negative impact on bank profitability. Additionally, inflation has a negative impact on Ethiopian commercial banks' profitability as determined by return on assets and positive impact on profitability as determined by return on equity, while gross domestic product does not affect bank profitability. Similarly, economic globalization affects bank profitability negatively. The findings of this investigation carry significant ramifications for regulatory bodies of business banks, not only in terms of internal factors but also in consideration of external elements when formulating policies.

Ayieko and Aluoch (2025) determine how credit approval, collateral policies, credit limitations, and solvency impact the profitability of commercial banks in Nairobi City County, Kenya. It was based on four theories: adverse selection theory, asymmetric information theory, credit risk theory, and lending credibility theory. Descriptive research design was utilized. The target group consisted of the 38 commercial banks located in Nairobi City County of Kenya according to the Central Bank of Kenya Report (2023). A census was conducted due to the population being fewer than 100 individuals. A questionnaire was used to collect primary data, while a data collection sheet was used for secondary data. The analysis was assisted by a multiple regression model. Various assessments were conducted, such as autocorrelation, heteroskedasticity, multicollinearity, normality, and stationarity tests. Data analysis involved the use of descriptive statistics as well as multiple regression analysis. The findings revealed significant insights into the components of credit approval, with borrower character and collateral being crucial factors. Regarding collateral policies, a strong belief in the link between asset quality and profitability emerged; highlighting that high-quality collateral enhances bank profitability. In terms of credit restrictions, there was a strong consensus on the importance of borrower payment history in determining credit eligibility, with stringent restrictions seen as a means to improve profitability by reducing default risks. The study concluded that that effective credit approval processes significantly enhance the profitability of these banks.

Ng'humbu (2025) examined the relationship between deposit growth and profitability at CRDB Bank Plc in Tanzania, using Return on Equity (ROE) as a profitability indicator. The commercial banking sector in Tanzania faces considerable challenges in maintaining profitability due to fluctuating economic conditions and increased competition. Factors such as credit risk management, optimization of capital structure, macroeconomic influences (for example, deposit growth), regulatory compliance, and rapid digital transformation contribute to this complexity, highlighting the need for a deeper understanding of profitability dynamics. Despite a notable rise in deposits, academic literature lacks insights into the direct impact of deposit growth on bank

profitability in Tanzania. To fill this gap, the research focuses on CRDB Bank Plc, aiming to shed light on the subtle interaction between deposit levels and ROE. The current study utilized liquidity preference, financial intermediation, and modern portfolio theories. By analyzing quarterly secondary data from 2014 to 2023 and applying correlation and regression analyses on 37 observations, the findings suggest a weak positive correlation between deposit growth and profitability, with a low R-squared of 1.87%. The average ROE was 17.90%, compared to an average deposit growth of 13.08%, indicating that deposit growth is not a significant factor influencing ROE.

Literature Gap

Li and Zhong (2020) examined the impact on China's financial conditions index of global economic policy uncertainty shocks within the VAR framework using monthly data from 2004M01 to 2018M12. Ejem and Ogbonna (2020) employed both the ARDL and VAR m odels to examine the predictive power of financial conditions index for economic growth and inflation in Nigeria using yearly data from 1985 to 2018, Olayungbo and Quadri (2019) employed both the Pooled Mean Group ARDL framework to model the relationship between financial development and economic growth incorporating the both the direct and interaction effect of remittances while Okunlola, Masade, Folaranmi Lukman and Ajayi Abiodun (2020) and Akani, 2024, examined the finance-growth nexus in Nigeria using the causality framework developed by Toda and Yamamoto (1995) which is based on augmented VAR. The findings of the above studies are well established but failed to focus on bank soundness; therefore, this study will examine the relationship between financial intermediation and soundness of quoted commercial banks in Nigeria.

Methodology

This study used quasi-experimental research design approach for the data analysis. This approach combines theoretical consideration (a prior criterion) with the empirical observation and extract maximum information from the available data. The sample size was based on the 14 quoted commercial banks that reports to Nigeria Stock Exchange and have been in existence within the time scope of the study. The study made use of the data available for the entire period of 10 years ranging from 2016-2025. For the purpose of this study, the 14 quoted commercial banks documented by CBN were selected to examine the effects of financial intermediation on quoted commercial banks soundness in Nigeria, using consensus sampling method. Documentary evidence constitutes the instrument of data collection as the study is based on secondary data. The data is cross sectional time series which was collected from the Central Bank of Nigeria statistical bulletin, stock exchange fact book and financial statement of commercial banks in Nigeria.

Model Specification

The following models are specified to achieve the objectives of this study:

Models

$$CBS = \beta_0 + FI + \epsilon i \quad (1)$$

Where:

CBS = Commercial bank soundness
FI = Financial intermediation
ϵi = Error Term of the model

Disaggregating Equation I

$CBI = \bar{y}_0 + \bar{y}_1 CPS/GDP + \bar{y}_2 LDR + \bar{y}_3 DM/GDP + \varepsilon_i$ (2)

$AQI = ¥_0 + ¥_1 CPS/GDP + ¥_2 LDR + ¥_3 DM/GDP + \varepsilon_i$ (3)

Where:

CBI= Capital adequacy indicator of bank soundness
AQI = assets quality indicator of bank soundness
CPS/GDP = Credit to private sector to gross domestic product
LDR = Loan to deposit ratio
DM/GDP = Deposits to gross domestic product
β_0 = Regression Intercept
$\beta_1 - \beta_6$= Coefficient of the Independent to the Dependent Variables

Techniques of Data Analysis

The study adopted the panel data method of data analyses which involve the fixed effect, the random effect and the Hausman Test. The technique used in this study is the Ordinary Least Square (OLS) estimation technique. The test instruments in the OLS are the T-statistics and F-test which were used to test the significance of variables and the overall significance of the regression respectively. Other test instruments also employed were the Durbin Watson test which was used to test the presence or absence of auto correlation between and among the explanatory variables and the adjusted R square used to test the percentage variation of the dependent and the independent variables. To achieve the stated objective, the collected time series data will be analyzed using descriptive statistics, correlation matrix and multiple linear regression analysis. The descriptive statistics (Mean values and standard deviations) will be used to analyze the general trends of the data from 2016-2025 based on the sample of 14commercial banks. The rational for choosing OLS is that, if the Classical Linear Regression Model (CLRM) assumptions 5 hold true, then the estimators determined by OLS will have a number of desirable properties, and are known as Best Linear Unbiased Estimators (Brooks 2008). In addition, as noted in Petra (2007) and Akani, 2026, OLS outperforms the other estimators when the following holds; the cross section is small- and the-time dimension is short. The FE technique is very suitable in cases where the individual specific intercept may be correlated with one or more regressors (independent variables). In order to take into cognizance of different intercepts, the mean differencing or dummy method is usually employed based on which is found more suitable. It is known as the least-squares dummy variable (LSDV) model in cases where dummy variables are used. This is another way of calculating within estimate, most especially when the number of observations (*N*) is not relatively large. The major disadvantage of the LSDV model is that it significantly reduces the degrees of freedom when the number of cross-sectional units, *N*, is very large. In this case, *N* number of dummies is introduced, which will help to reduce the common intercept term. The RE technique which is equally known as the Error Components Model (ECM) is an alternative to FE technique. Basically, the RE estimator assumes that the intercept of an individual unit is a random component that is drawn from a larger population with a constant mean value. The individual intercept is then expressed as a deviation from this constant mean value. One major merit of the RE over the FE is that it is economical (parsimonious) in degrees of freedom. This is because one does not have to estimate *N* cross-sectional intercepts but just only the mean value of the intercept and its variance. The RE technique is suitable in cases where the (random) intercept of each cross-sectional unit is uncorrelated with the regressors. Since there is no significant correlation between the unobserved units of observation,

specific random effects and the regressors, the RE model may be more appropriate. In our case, this leads to the assumption that they are random factors, independently and identically distributed over individuals. Thus we write the random effects model as

$$y_{it} = \mu + x_{it}\beta + x_{it}\beta + \alpha_i + \varepsilon_{it} \quad (4)$$

Where $\alpha_t + \varepsilon_{it}$ is treated as an error term consisting of two components: an individual specific component, which does not vary over time, and a remainder component, which is assumed to be uncorrelated over time.

Analysis of Results

Table 1: Regression Results: Financial Intermediation and Quoted Commercial Banks Capital Adequacy

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Part I: Fixed Effect Model				
CPS/GDP	0.321387	0.156232	2.057119	0.0408
LDR	-0.179184	0.462787	-0.387184	0.6990
DM/GDP	-3.928362	5.157651	-0.761657	0.4470
C	-0.992844	0.067888	-14.62482	0.0000
	Effects Specification			
Cross-section fixed (dummy variables)				
R-squared	0.491780	Mean dependent var		0.357970
Adjusted R-squared	0.421982	S.D. dependent var		11.03594
S.E. of regression	8.390352	Akaike info criterion		7.207704
Sum squared resid	16402.74	Schwarz criterion		7.652274
Log likelihood	-925.6247	Hannan-Quinn criter.		7.386305
F-statistic	7.045721	Durbin-Watson stat		1.954361
Prob(F-statistic)	0.000000			
Part II: Random Effect Model				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
CPS/GDP	0.303869	0.153810	1.975616	0.0492
LDR	-0.043012	0.439557	-0.097852	0.9221
DM/GDP	-4.848950	4.961734	-0.977269	0.3293
C	-0.872853	0.063540	-13.73702	0.0000
	Effects Specification			
			S.D.	Rho
Cross-section random			0.000000	0.0000
Idiosyncratic random			8.390352	1.0000
	Weighted Statistics			
R-squared	0.425427	Mean dependent var		0.357970
Adjusted R-squared	0.418848	S.D. dependent var		11.03594
S.E. of regression	8.413064	Sum squared resid		18544.27
F-statistic	64.66368	Durbin-Watson stat		1.905479
Prob(F-statistic)	0.000000			
	Unweighted Statistics			
R-squared	0.425427	Mean dependent var		0.357970
Sum squared resid	18544.27	Durbin-Watson stat		1.905479

Part IV: Hausman Test

Correlated Random Effects - Hausman Test

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	27.088748	3	0.0000

Source: Extract from E-view 9.0

The Hausman (1978) specification test is the conventional test of whether the fixed or random effects model should be used. The question is whether there is significant correlation between the unobserved unit of observation specific random effects and the regressors. If no such correlation exists, then the Random Effects Model (REM) may be more appropriate. But when such a correlation exists, the Fixed Effects Model (FEM) would be more suitable because the REM model would be inconsistently estimated. However, if we are to go by the identification test, the Hausman's Chi-square statistics, the fixed effect result is more reliable as the P-value of the test is significant at 5% level while the P-values for the other two estimators are not significant. From the results, fixed effect model was adopted.

Analysis of Results

F-Test: The F-calculated value is 7.045721 from the fixed regression results while the P-value of F-statistic are 0.000000 at 5% level of significance, considering the P-value, the chosen level of significance α =0.05 [5%] is less than the P-value of F-statistic. It is concluded that the regression model is statistically significant in explaining the relationship between credit to private sector, loan to deposit ratio, bank deposit as percentage of gross domestic product and capital adequacy of quoted commercial banks in Nigeria. This means that the joint influence of the explanatory variables on the dependent variable is statistically significant.

Coefficient of Multiple Determinations (R^2): The computed coefficient of multiple determinations of 0.421982 from the fixed effect shows that 42.1 percent of the total variations in the capital adequacy of the quoted commercial banks is accounted for, by the explanatory variables which is financial intermediation while the remainder is attributed to variable that is influenced by other factors not included in the regression model.

Durbin Watson statistics (DW): The computed DW is 1.954361 from the fixed results; show that at 5% level of significance with two explanatory variables and 140 observations. The value of computed DW is greater than the lower limit. Therefore, there is no evidence of positive first order serial correlation.

Regression Coefficient and T-Statistics: The t-statistics shows that credit to private sector as percentage of gross domestic product relate positively and significant. 0.321387CPS/GDP as the parameter for percentage of private sector credit to gross domestic product connoted that a unit change leads to 0.32 percent increase to capital adequacy of the quoted commercial banks. However loan to deposit ratio relates negatively and no significant to capital adequacy with -0.179184LDR as the regression signifies that a unit increase reduces capital adequacy of the quoted commercial banks by 0.17 percent while deposit to gross domestic product relates negatively and no significant to capital adequacy with -3.928362DM/GDP as the regression signifies that a unit increase reduces capital adequacy of the quoted commercial banks by 3.9 percent.

Table 2: Regression Results on Financial Intermediation and Assets Quality

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Part I: FIXED Effect Model				
CPS/GDP	0.511477	0.466850	1.095591	0.2744
LDR	0.022648	0.054486	0.415677	0.6780
DM/GDP	0.020647	0.046452	0.444476	0.6571
C	-5.929374	4.898548	-1.210435	0.2274
	Effects Specification			
Cross-section fixed (dummy variables)				
R-squared	0.491676	Mean dependent var		0.466590
Adjusted R-squared	0.417779	S.D. dependent var		11.07358
S.E. of regression	8.449524	Akaike info criterion		7.227063
Sum squared resid	16206.54	Schwarz criterion		7.691407
Log likelihood	-909.1318	Hannan-Quinn criter.		7.413714
F-statistic	6.653498	Durbin-Watson stat		1.959802
Prob(F-statistic)	0.000000			
Part II: Random Effect Model				
CPS/GDP	0.649050	0.406388	1.597117	0.1115
LDR	-0.006913	0.039903	-0.173244	0.8626
DM/GDP	0.030779	0.034791	0.884690	0.3772
C	-7.033020	4.239956	-1.658748	0.0984
	Effects Specification			
			S.D.	Rho
Cross-section random			0.000000	0.0000
Idiosyncratic random			8.449524	1.0000
	Weighted Statistics			
R-squared	0.436597	Mean dependent var		0.466590
Adjusted R-squared	0.427794	S.D. dependent var		11.07358
S.E. of regression	8.376531	Sum squared resid		17962.57
F-statistic	49.59551	Durbin-Watson stat		1.900181
Prob(F-statistic)	0.000000			
	Unweighted Statistics			
R-squared	0.436597	Mean dependent var		0.466590
Sum squared resid	17962.57	Durbin-Watson stat		1.900181
Correlated Random Effects - Hausman Test				
Part iii: Hausman Test				
Test Summary		Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random		19.687479	4	0.0006

Source: Extract from E-view 9.0

If no such correlation exists, then the Random Effects Model (REM) may be more appropriate. But when such a correlation exists, the Fixed Effects Model (FEM) would be more suitable because the REM model would be inconsistently estimated. However, if we are to go by the identification test, the Hausman's Chi-square statistics, the fixed effect result is more reliable as the P-value of the test is significant at 5% level while the P-values for the other two estimators are not significant. From the results, fixed effect model was adopted.

Analysis of Results

F-Test: The F-calculated value is 6.653498from the fixed regression results while the P-value of F-statistic are 0.000000 at 5% level of significance, considering the P-value, the chosen level of significance α =0.05 [5%] is less than the P-value of F-statistic. It is concluded that the regression model is statistically significant in explaining the relationship between credit to private sector, loan to deposit ratio, bank deposit as percentage of gross domestic product and assets quality indicator of commercial banks soundness of quoted commercial banks in Nigeria. This means that the joint influence of the explanatory variables on the dependent variable is statistically significant.

Coefficient of Multiple Determinations (R^2): The computed coefficient of multiple determinations of 0.417779 from the fixed effect shows that 41.7 percent of the total variations in the assets quality indicator of the quoted commercial banks is accounted for, by the explanatory variables which is financial intermediation while the remainder is attributed to variable that is influenced by other factors not included in the regression model.

Durbin Watson statistics (DW): The computed DW is 1.959802 from the fixed results; show that at 5% level of significance with two explanatory variables and 140 observations. The value of computed DW is greater than the lower limit. Therefore, there is no evidence of positive first order serial correlation.

Regression Coefficient and T-Statistics: The t-statistics shows that credit to private sector as percentage of gross domestic product relate positively and significant. 0.511477CPS/GDP as the parameter for percentage of private sector credit to gross domestic product connoted that a unit change leads to 0.5 percent increase to assets quality of the quoted commercial banks. However loan to deposit ratio relates positive and no significant to assets quality with 0.022648LDR as the regression signifies that a unit increase assets quality of the quoted commercial banks by 0.02 percent while deposit to gross domestic product relates positive and no significant to assets quality with 0.020647DM/GDP as the regression signifies that a unit increase assets quality of the quoted commercial banks by 0.002 percent.

Discussion of Findings

Findings of the study proved that 42.1 percent of the total variations in the capital adequacy of the quoted commercial banks is accounted for by the independent variables and that credit to private sector as percentage of gross domestic product relate positively and significant. 0.321387CPS/GDP as the parameter for percentage of private sector credit to gross domestic product connoted that a unit change leads to 0.32 percent increase to capital adequacy of the quoted commercial banks. However loan to deposit ratio relates negatively and no significant to capital adequacy with -0.179184LDR as the regression signifies that a unit increase reduces capital adequacy of the quoted commercial banks by 0.17 percent while deposit to gross domestic product relates negatively and no significant to capital adequacy with -3.928362DM/GDP as the regression signifies that a unit increase reduces capital adequacy of the quoted commercial banks by 3.9 percent.

Findings of this study followed the findings of Cynthia and Brian (2025) showed a positive relationship between capital adequacy ratio (CAR) and return on assets, indicating that a higher CAR enhances financial performance by providing a buffer against potential losses, Batekele

and Maseka (2025) that CAR positively affects profitability, whereas CIR has a negative impact, underscoring the role of operational efficiency and capital strength in high-risk environments, the findings of Gitonga et al. (2024) that findings, poor asset quality, characterized by high levels of non-performing assets, had a significant negative impact on financial performance, the findings of Dang et al., (2024) that SIZE, CAR and INF variables have a significant positive effect on ROE, while the NPLR variable has an opposite significant effect on ROE and the findings of Uremadu (2024) and Akani, (2024), that there was a positive and significant effect of the demand deposit variable on the financial performance of microfinance banks in Nigeria; there was a negative and significant effect of savings deposit variable on the financial performance of microfinance banks in Nigeria.

The study found that 41.7 percent of the total variations in the assets quality indicator of the quoted commercial banks were accounted for by the explanatory variables, the study also found that credit to private sector as percentage of gross domestic product relate positively and significant. 0.511477CPS/GDP as the parameter for percentage of private sector credit to gross domestic product connoted that a unit change leads to 0.5 percent increase to assets quality of the quoted commercial banks. However loan to deposit ratio relates positive and no significant to assets quality with 0.022648LDR as the regression signifies that a unit increase assets quality of the quoted commercial banks by 0.02 percent while deposit to gross domestic product relates positive and no significant to assets quality with 0.020647DM/GDP as the regression signifies that a unit increase assets quality of the quoted commercial banks by 0.002 percent. Findings in this study agree with the findings of Scholtens et al. (2000) argued that the bank still maintains its function as financial intermediary since the financial markets are imperfect. Allen et al. (1998) noted that the theory has little to offer on risk management which is the growing central activity of intermediaries as banks trade risks by creating products, issuing securities with stable cash flow distribution to lower costs for customers. Findings of this study confirm the findings of Ayieko and Aluoch (2025) and Akani,2025 significant insights into the components of that deposit growth is not a significant factor influencing ROE, Aliyu *et al., (2025)* that operating risk has a positive and statistically significant effect on profitability, highlighting the importance of effective operational risk management.

Conclusion

Model one proved that 42.1 percent of the total variations in the capital adequacy of the quoted commercial banks is accounted for by the independent variables and that credit to private sector as percentage of gross domestic product relate positively and significant. 0.321387CPS/GDP as the parameter for percentage of private sector credit to gross domestic product connoted that a unit change leads to 0.32 percent increase to capital adequacy of the quoted commercial banks, loan to deposit ratio relates negatively and no significant to capital adequacy with -0.179184LDR as the regression signifies that a unit increase reduces capital adequacy of the quoted commercial banks by 0.17 percent while deposit to gross domestic product relates negatively and no significant to capital adequacy with -3.928362DM/GDP as the regression signifies that a unit increase reduces capital adequacy of the quoted commercial banks by 3.9 percent. Model two found that 41.7 percent of the total variations in the assets quality indicator of the quoted commercial banks were accounted for by the explanatory variables, the study also found that credit to private sector as percentage of gross domestic product relate positively and significant. 0.511477CPS/GDP as the parameter for percentage of private sector credit to gross domestic product connoted that a unit change leads to 0.5 percent increase to assets quality of the quoted

commercial banks, loan to deposit ratio relates positive and no significant to assets quality with 0.022648LDR as the regression signifies that a unit increase assets quality of the quoted commercial banks by 0.02 percent, deposit to gross domestic product relates positive and no significant to assets quality with 0.020647DM/GDP as the regression signifies that a unit increase assets quality of the quoted commercial banks by 0.002 percent.

Recommendations

i. Commercial banks should intensify efforts on deposit mobilization as one of their main financing options in the Nigerian financial system, as the study has confirmed that commercial banks largely depended on deposits for financing their operations.

ii. Banks should implement effective strategies promoting prize-linked-savings such as to mobilize more deposits from both the formal and informal sectors of the economy. Both strategies would enhance their soundness in the Nigerian banking environment.

iii. Management of commercial banks should deploy measures to raise funds and keep its liquidity position up as these guarantees their sustainable survival, while the central banks of Nigeria should improve regulatory control that guarantees relatively sound credit risk approach for commercial banks.

iv. Banks should regularly reassess and refine their credit management strategies to effectively mitigate credit risk and ensure sustainable lending practices. By doing so, banks can foster a more resilient and profitable loan portfolio, ultimately contributing to the overall soundness of the quoted commercial banks.

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