International Journal of Academic Accounting, Finance & Management Research(IJAAFMR)
ISSN: 2643-976X
Vol. 9 Issue 2 February - 2025, Pages: 67-73

Impact of Loan and Deposits on Banks Efficiency: A Moderating Role of Tax

[1]Aroghene Kparobo Gloria, [2]Ehiedu Victor C., [3] Onuorah Anastasia C.
1Ph.D Candidacy, 1Department of Banking and Finance, Delta State University, Abraka
Kparoboarohnene@gmail.com
08164081431
2Professor of Banking and Finance, Delta State University, Abraka
3Professor of Banking and Finance,
Delta State University, Abraka

Abstract: *To ascertain the interplay of loans (LOAS), loan to small scale enterprises (LOSSE), deposits (DEPOTS) and company income tax (COITA) on bank return on asset (BROA), the study specifically considered commercial banks in Nigeria since they are basically licensed to grant loan and accept deposits. To this end, aggregate data for commercial banks and data on company income tax sought form CBN statistical bulletin and Federal Inland Revenue Services were used for the study during 2007 to 2023. A variety of statistical was used to test the effect of the three-bank variable moderated by company income tax on bank return on asset. Judging from the coefficient of determination (0.6509). its adjusted value (0.5346), and F-statistics (0.00088), it was safe to conclude that the model is significant and to a reasonable extent explain changes in the return on assets of commercial banks in Nigeria. Sequel to the results of the study, the study recommends that future loans render by commercial banks should be closely monitored to ensure safety of loans. Only viable small business should be offered loan. There should be innovation on the part of banks to attracts better deposits while Government adjusts their tax policy in a way that precent double taxation at all levels so as to maintain bank asset return.*

Keywords: Loan, Deposits, Small Scale, Company Income Tax, Assets Return

Introduction

Recent trends in the Nigerian banking sector have shown relevant of assets and liability management in amplifying bank efficiency. With the increasing digitalization of banking services and the emergence of fintech firms, banks in Nigeria are facing new challenges and opportunities in managing their assets and liabilities effectively (Ehiedu et al., 2023). Undoubtedly, loan and deposits constitute the bulk of the assets and liability of banks. Regulatory changes and reforms, such as the implementation of Basel III guidelines, have influenced the way banks manage their balance sheets to enhance efficiency (Ehiedu, 2022; Aroghene & Imene, 2023). Efficient asset management can contribute to higher profitability by ensuring that funds are deployed in ways that generate the maximum return on investment. Lack of proper asset liability management could deter cost efficiency, productivity, and customer service Temitope & Olabisi (2022). Cerqueti et al. (2020) and Ehiedu and Brume-Ezewu (2022) suggested that bank capital and capital structure significantly influence productivity levels in the banking sector, emphasizing the importance of financial resources in driving efficiency. A situation where there is mismanagement of the resources owed by the banks, maximum return could be hampered. Mismanagement affects profitability by determining the cost of funds for the bank (Aroghene, 2022; Grace & Jude, 2022; Ehiedu & Chime,2021). For banks to strive there necessitates optimization of their asset and liability management practices to achieve a balance between profitability and risk management.

Bank efficiency is a substantial gauge of a bank's overall performance and competitiveness in the market. Efficient asset and liability management practices are expected to positively impact profitability by maximizing revenue and minimizing costs. The way banks manage their assets(loan) and liabilities (deposits) can significantly influence their risk exposure and resilience to external shocks. Among factors that might hinder proper profit generation of the banks is tax system. Tax policies/burden might have lasting influence on the profits of bank depending on whether they are favorable or harsh. An economic saddle with fluctuating tax policies especially duplication of the taxes at all levels could impact banks' operation. For instance, tax on the profit of the banks in form of corporate tax could reduce the amount available for loans thereby reducing loan demand due to high interest rate. Likewise, heavy burden on the banks could also cause them to reduce interest paid on deposits which could deter deposit level. Asset and liability management practices can affect operational performance by influencing the allocation of resources and the ability to meet customer needs efficiently (Aroghene & Akpoyibo, 2023).

Studies have explored the individual determinants of bank efficiency and the factors that influence asset and liability management practices. Ibrahim & Uba (2020) and others has provided valuable insights into the effects of asset quality, capital adequacy, funding sources, and other factors on bank performance (Aroghene, 2023; Cerqueti et al., 2020; Damilola & Olabisi, 2020; Olufemi & Ademola, 2020; Ehiedu & Oghenetejiri, 2021). there is a notable gap in the literature regarding the holistic view of how tax system interact with loan and deposits to engender bank efficiency, particularly within the context of the Nigeria bank. Hence, loans (LOAS), loan to small scale enterprises (LOSSE), deposits (DEPOTS) moderated by company income tax (COITA) were used to gauge bank efficiency measured by bank return on assets BROA. The aforementioned variables are expected to positively influence bank return on assets.

Concept/Empirical Review

Loans are income-generating assets for banks, as they create interest income, which is crucial to profitability. Higher loan portfolio generally report higher profitability, given that loans are their primary interest-generating assets. Zhang and Wang (2023) and Ehiedu (2021) expressed that a well-managed loan portfolio can positively impact Return on Assets (ROA) and Return on Equity (ROE). To Chen et al. (2022), loan performance depends on quality. A high rate of NPLs due to defaults can harm bank performance, as it requires provisioning, which reduces profitability. LOAS is gauge by the Loans of rural branches of commercial banks in ₦' Billion.

Also, deposits are prime source of funds for banks to extend loans. The volume and stability of deposits are crucial for liquidity management and loan-making capacity. A larger deposit base enables commercial banks to fund loans at a lower cost, directly impacting profitability. According to Liu and Lin (2023) and Ehiedu and Obi (2022), stable deposits allow rural banks to reduce their dependency on more costly external funding sources, thereby enhancing net interest margins (NIM). An increase in deposits could also help banks achieve economies of scale. Higher deposits lower the need for interbank loans, reducing funding costs and improving operational efficiency, which positively affects profitability (Nguyen, 2023; Ehiedu, 2015). DEPOTS is gauge by the deposits of rural branches of commercial banks in ₦' Billion.

Similarly, Company income tax (COITA) is a factor that can affect profitability and capital accumulation for banks. The tax burden can reduce net income, impacting banks' ability to reinvest in their operations or expand their lending capabilities. High COITA rates reduce net profits, affecting retained earnings and internal capital generation, which could otherwise be used for loan expansions or investments in technology (Kumar & Patel, 2023; Ehiedu & Imoagwu, 2022). However, some research argues that the tax burden can incentivize banks to manage costs better and improve operational efficiencies, which could mitigate the impact of COITA on overall profitability (Chang & Lee, 2022; Ehiedu, 2022).

Correspondingly, lending to small-scale enterprises (SSEs) has become an essential focus for banks, supporting economic development in underserved areas. It also provides a diversified loan portfolio that may reduce risk. Loans to SSEs offer l banks an opportunity to diversify revenue streams. Serving SSEs can enhance interest income if appropriately priced, although risks remain due to the often-higher risk profile of small businesses (Ghosh & Rahman, 2023; Ehiedu, 2022; Imene, 2022). By lending to small businesses, banks contribute to local economic growth, which can lead to a broader deposit base as local economies improve. This relationship can boost bank performance by creating a positive cycle of economic growth and increased banking activity (Wu et al, 2023; Imene, 2023). However, loans to SSEs carry higher default risks due to the typically limited financial resilience of small businesses, which can increase NPLs and require higher provisioning, impacting profitability negatively (Johnson, 2023).

BROA connotes efficient use of the resources of the bank overtime of which LOAS, LOSSE DEPOTs and COITA play unique role. Loans and deposits directly affect profitability and funding costs, respectively, while COITA impacts net profitability and reinvestment capacity. Loans to SSEs provide diversification benefits and foster community growth but carry higher default risks. Recent studies confirm that a well-balanced approach in managing these factors can significantly enhance bank performance.

Zhang & Wang (2023) examined the relationship between rural bank lending and profitability in China. The results show that an increase in loan portfolios significantly boosts the Return on Assets. Chen, Liu & Zhao (2020) found that rural banks in Southeast Asia with higher loan growth experience short-term profitability gains but face increased risk of non-performing loans (NPLs) in the long term, suggesting a balanced lending strategy. Khalid and Hussain (2023) used panel data from rural banks in Pakistan, this study indicates that loan expansion positively affects both profitability and operational efficiency, provided that loan quality is maintained. Jiang et al. (2023) research shows that rural commercial banks in developing economies benefit from increased lending but must implement strong risk assessment measures to mitigate potential loan defaults. Patel and Gadhvi (2023)explored the correlation between loan portfolios and profitability in rural banks in India. Results show that interest income generated from loans substantially contributes to net profits. Liu and Lin (2023) analysis of rural commercial banks in Taiwan reveals that a larger deposit base reduces the cost of funds, directly enhancing profitability and enabling sustainable loan growth. Nguyen and Tran (2023) explore the role of deposits in Vietnamese rural banks, showing that an increase in deposits significantly improves loan capacity, which in turn supports profitability. Li and Sun (2023) analyzing data from rural banks in China, the authors conclude that a stable deposit base is critical to managing liquidity and maintaining operational efficiency, leading to improved profitability. Singh & Arora (2023) research on Indian rural banks demonstrates that deposit growth positively impacts loan availability and net interest margin (NIM), with deposits being key to funding low-cost lending. Kumar and Patel (2023)study assessed the effect of corporate tax on rural banks in India, finding that higher tax burdens reduce retained earnings, affecting reinvestment and lending potential. Chang and Lee (2022) analyzed rural banks in South Korea, the authors observed that corporate tax reduces profitability, though banks with high operational efficiency mitigate some of the negative effects. Nwankwo & Ajayi (2023) study indicates that increased CIT rates lead to lower profitability among rural banks, impacting capital accumulation for loan growth. Hassan and Rauf (2023) investigated the impact of CIT on Pakistani rural banks, noting that high tax burdens decrease profit margins but promote better cost management practices to offset reduced profitability. Mendez and Ruiz (2023) research in Mexican rural banks shows that while CIT negatively impacts net income, it also encourages efficiency improvements to counterbalance the reduced profits. Ghosh and Rahman (2023) study on Bangladeshi rural banks shows that loans to SSEs diversify income streams and contribute to profitability, though they come with higher credit risks. Wu et al. (2023) study finds that loans to SSEs help in community economic development, which leads to increased deposits and long-term profitability despite the increased risk. Johnson and Lee (2023) study on Korean rural banks, find that loans to SSEs enhance profitability but require higher provisions for bad debts, necessitating risk management measures. Musa and Abubakar (2022) research on Nigerian banks shows that SSE lending supports local economic growth and profitability, but defaults remain a concern due to small businesses' limited financial resilience. Kim and Park (2023) study on rural banks in Southeast Asia concludes that while SSE loans provide significant revenue opportunities, they also increase NPLs, prompting banks to improve credit assessment processes. Ahmed et al. (2023) study on Nigerian rural banks find that higher deposits help stabilize liquidity, reduce reliance on interbank loans, and improve overall financial performance.

Methods

The quantitative research design was chosen for the study due to the need to measure the data and arrive at objective conclusion. To ascertain the interplay of LOAS, LOSSE, DEPOTs and COITA on BROA, the study specifically considered commercial banks in Nigeria since they are basically licensed to grant loan and accept deposits. To this end, aggregate data for commercial banks and data on company income tax sought form CBN statistical bulletin and Federal Inland Revenue Services were used for the study during 2007 to 2023. The chosen period covers the recent era of regulatory changes in the country and its impact on banks. A variety of statistical was used to test (descriptive, correlation, Johansen cointegration, normality) the effect of the three-bank variable moderated by company income tax on bank return on asset. Chang and Lee [14] was modified and stated as:

$$\mathbf{BROA} = \mathbf{f(LOAS, LOSSE, DEPOTs, COITA)} \qquad \textbf{equation (1)}$$
$$\mathbf{BROA} = a_0 + a_1\mathbf{LOAS} + a_2\mathbf{LOSSE} + a_3\mathbf{DEPOTs} + a_4\mathbf{COITA} + \mathbf{U} \qquad \textbf{equation (2)}$$

BROA = Bank return on assets
LOAS = Loans
LOSSE = Loan to small scale enterprises
DEPOTS = Deposits
COITA = Company income tax
a_{0}- a_1 = Coefficients

Results

Table 1: Descriptive Statistics

	BROA	LOAS	LOSSE	DEPOTS	COITA
Mean	2.695882	197.3040	49.46604	168.4360	1155.644
Median	2.340000	107.5224	16.06927	87.93095	1173.491
Maximum	9.280000	988.5879	252.5900	518.3800	3348.750
Minimum	0.040000	15.59050	10.74789	0.019723	178.1000
Std. Dev.	2.079558	283.7937	62.76965	198.9286	855.5064
Skewness	1.772156	1.834304	2.205814	0.661894	1.112719
Kurtosis	7.057578	5.099162	7.507849	1.839348	3.865393
Jarque-Bera	20.56015	12.65449	28.17975	2.195500	4.038550
Probability	0.000034	0.001787	0.000001	0.333621	0.132752
Sum	45.83000	3354.168	840.9227	2863.411	19645.95
Sum Sq. Dev.	69.19301	1288622.	63040.46	633161.2	11710258

Source: Researchers' Computation Using Eviews, 9.0

The descriptive statistics shown in Table 1, reveals that BROA average is 2.69% during the period while the highest and lowest BROA were 9.28% and 4% respectively. Also, LOAS average was 197 billion naira. The highest and lowest loan rendered by rural commercial banks were 988 and 15 billion naira. The loan to small scale enterprise average was 49 billion naira. The lowest rendered was 10.7 billion though the peak was 252 billion naira. Interestingly, the deposit of the rural commercial bank average was168 billion, highest for the period was 518 billion while the lowest was approximately 2 billion naira. Remarkably, company income tax average was 1155-billion-naira, maximum of 3348 billion and smallest value of 178 billion. The Probability values of BROA, LOAS and LOSSE less than 5% shows data distribution are not normal. Unlike DEPOTS and COITA which are normally distributed.

Table 2: Correlation Analysis

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ISSN: 2643-976X
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	BROA	LOAS	LOSSE	DEPOTS	COITA
BROA	1.000000				
LOAS	0.683884	1.000000			
LOSSE	-0.390666	-0.127172	1.000000		
DEPOTS	-0.501604	-0.121823	0.792481	1.000000	
COITA	-0.314931	0.112623	0.835386	0.883619	1.000000

Source: Researchers' Computation Using Eviews, 9.0

The correlational analysis in Table 2 shows, LOAS has a positive and strong relationship on the return of bank assets confirmed by the coefficient (0.6838). The positive relationship goes to show that the loans offered by the bank were well-performed hence beneficial outcome. Remarkably, LOSSE, DEPOTS, and COITA show adverse relationship with BROA with coefficients of -0.3906, -0.5016, -0.3149 respectively. The negative relation could be as a result of nonperformance of the loans rendered to the small scale business, reduction of deposits by depositors as well as high tax burden on the banks.

Table 3: Johansen Cointegration Test

Date: 11/10/24 Time: 17:10
Sample (adjusted): 2009 2023
Included observations: 15 after adjustments
Trend assumption: No deterministic trend
Series: BROA LOAS LOSSE DEPOTS COITA
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.999957	213.0849	60.06141	0.0000
At most 1 *	0.942557	62.32455	40.17493	0.0001
At most 2	0.474964	19.47018	24.27596	0.1793
At most 3	0.433990	9.805838	12.32090	0.1273
At most 4	0.081100	1.268674	4.129906	0.3036

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

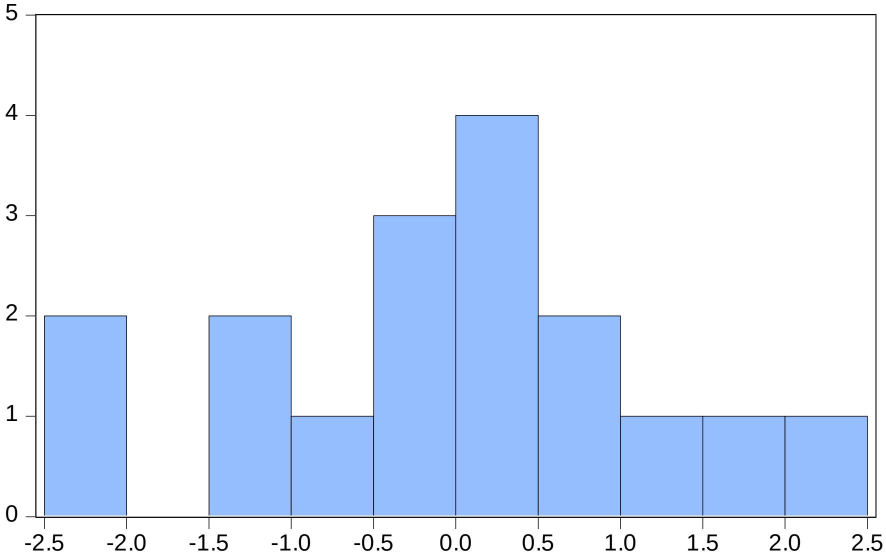
Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.999957	150.7604	30.43961	0.0001
At most 1 *	0.942557	42.85437	24.15921	0.0001
At most 2	0.474964	9.664340	17.79730	0.5211
At most 3	0.433990	8.537164	11.22480	0.1429
At most 4	0.081100	1.268674	4.129906	0.3036

Max-eigenvalue 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

Source: Researchers' Computation Using Eviews, 9.0

The Johansen cointegration test in Table 3shows that two Trace and Max-Eigen statistics. The values confirms at least I cointegrating relationship exist among the variables



Series: Residuals	
Sample 2007 2023	
Observations 17	
Mean	-6.14e-16
Median	0.141109
Maximum	2.171760
Minimum	-2.123692
Std. Dev.	1.228600
Skewness	-0.051312
Kurtosis	2.433657
Jarque-Bera	0.234654
Probability	0.889294

Figure 1: Normality Test
Source: Researchers' Computation Using Eviews, 9.0

The normality test in Figure 1 displays the Jarque Bera prob value of 0,8892 higher than 5% which is indicative of normal distribution. Hence regression analysis can be performed to ascertain the effect of LOAS, LOSSE, DEPOTS and COITA on BROA.

Table 4: Regression Result

Dependent Variable: BROA
Method: Least Squares
Date: 11/10/24 Time: 17:05
Sample: 2007 2023
Included observations: 17

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.648224	0.667523	3.967238	0.0019
LOAS	0.004961	0.001529	3.244473	0.0070
LOSSE	0.004640	0.011246	0.412590	0.6872
DEPOTS	-0.003866	0.004330	-0.892769	0.3895
COITA	-0.000441	0.001219	-0.361700	0.7239

R-squared	0.650957	Mean dependent var	2.695882
Adjusted R-squared	0.534609	S.D. dependent var	2.079558
S.E. of regression	1.418665	Akaike info criterion	3.777238
Sum squared resid	24.15133	Schwarz criterion	4.022301
Log likelihood	-27.10653	Hannan-Quinn criter.	3.801598
F-statistic	5.594932	Durbin-Watson stat	2.381786
Prob(F-statistic)	0.008871		

Source: Researchers' Computation Using Eviews, 9.0

The regression analysis in Table 4 shows that LOAS with coefficient of 0.4% is significant (0.007). Captivatingly, LOSSE exhibited positive 0.4% influence on BROA although the P-value was not significant (0.6872). Interestingly, DEPOTS shows undesirable (-0.3%) influence on BROA of which the P-value is not significant. COITA illustrated negative insignificant value (-0.004%, 0.7239). Judging from the coefficient of determination (0.6509). its adjusted value (0.5346), and F-statistics (0.00088), it is safe to conclude that the model is significant and to a reasonable extent explain changes in the return on assets of commercial banks in Nigeria.

Discussion

Sequel to the results of the study, the significancy of LOAS shows that the loans extended were properly scrutinize and proper follow up were made to ensure they are up to date hence positive upshot on bank return on asset. Also, the positive effect of LOSSE confirms productive loans to small scale enterprises has meaningful return to bank asset. Similarly, the adverse value of DEPOTS could be as a result of lack of incentive to attract deposits from customers. As well, the irrelevant values of COITA may be as a result of excessive tax burden on the operation of banks which hamper their return. Apart from DEPOTS and COITA that deviated from the expectation of positive influence on bank return on assets, LOAS and LOSSE are in line. The observed agrees to Zhang & Wang (2023), Kumar and Patel (2023) and Khalid and Hussain (2023) contravene Nguyen and Tran (2023) and Li and Sun (2023).

Base on that, the study recommends that future loans render by commercial banks should be closely monitored to ensure safety of loans. Only viable small business should be offered loan. There should be innovation on the part of banks to attracts better deposits while Government adjusts their tax policy in a way that precent double taxation at all levels so as to maintain bank asset return.

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