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The Effect of Interest and Non-Interest Income on the Profitability of Banks in Nigeria

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ABSTRACT

The study focuses on the analysis on the impact of interest and non-interest income on profitability of Money deposit banks in Nigeria. Secondary data was used for the study and were gotten from annual reports of the selected banks. The study spans a period of 12 years from 2010-2021. Descriptive and inferential statistics were used to analyze the data. generalized linear model (GLM) were used in testing these hypotheses. The findings of the study include that there is a significant relationship between interest income and profitability and an insignificant relationship between non-interest income and profitability. The study recommends that banks should make policies that will attract both interest and non-interest income the banking industry in Nigeria.

Keywords: Bank Profitability, interest income, non-interest income, Generalized Linear model, fees and commission, Panel Regression

1. Introduction

Money deposit banks play very important roles in modern economies by providing credit facilities and a safe, fast effective payment systems that facilitates the transfer of value by individuals, businesses, non-profit and public organizations alike. They serve as intermediaries, facilitating efficient financial interactions and offering valuable assistance in money management, investment, and savings.

The banking sector in Nigeria has experienced various reforms designed to restructure the industry, which aimed at stabilizing the sector. The dependence on income from interest on loan had been a problem in cases of poor economic performance and high loan default. But with the advent of digital banking payment channels, banks now have access to higher income from non-interest related services. The adoption of Universal banking allowed banks to partake in a variety of services thus diversifying their income base. But with the review universal banking system, banks were somewhat restricted.

Higher bank income significantly reduces instability at the individual firm level. Moreover, at the macro level, higher profitability leads to a stable banking industry capable of providing funds for economic development and fostering growth. Non-interest income refers to the revenue generated by banks and creditors through various fees and charges including transaction fee, transfer charges, account maintenance fees, card issuance charge, amongst others. Interest income on the other hand, which is the traditional source of income for banks stems from interest on loans, advances and other credit facilities. The cost of acquiring funds which includes interest paid on customer's deposit is a significant cost that impacts interest income of banks. Credit risk is another challenge that affects the stability of interest income and have been responsible for collapse of many banks. The main sources of income for banks in Nigeria have been interest income. However, since the liberalization of the banking sector, banks have become involved in a variety of non-interest earning activities like trading, investing, and money transfers. Moreover, the decrease in the feasibility of business operations has caused a reduction in revenue generated from loans and advances.

Consequently, non-interest income has emerged as a prominent component of banks' overall earnings. In the changing banking landscape, financial institutions now generate Unconventional services such investment banking, securities brokerage, insurance agencies, and underwriting account for a sizeable amount of their non-interest revenue.

The dependence on interest income being the traditional source of income for banks is a challenge to the orthodox banking model, since such stream of income is subjected to volatility and can lead to bank failure. There are however conflicting views about whether non-interest revenue is the best strategy for boosting deposit money institutions' profitability. While several studies look at the success of deposit-taking banks in Nigeria, very few of them expressly concentrate on the connection between non-interest revenue and profitability.

While interest income is considered the tradition source of income for banks, income from non-interest services seems to be on an increase. The purpose of this study is to comparatively evaluate the effect of interest and non-interest income on profitability in Nigerian banks,

2. Empirical Review

Aykut and Bunyamin (2013) conducted a study that investigated into the factors affecting banks' profit-making capability and the correlation among non-interest income and bank efficiency in the emerging market of Turkey. The study employed a dataset spanning six years from 2005 to 2010. The research examined how various factors, such as capital adequacy, bank size, credit ratios, general costs and the credit provision rate impacts on indicators of financial performance. The findings revealed that higher capital soundness, larger bank scale, and expanded loans positively affected financial performance, while higher general expenses had a negative influence. Furthermore, non-interest income was found to enhance equity capital adequacy.

Damankah, Anku-Tsede and Amankwaa (2014) carried out a study to identify and examine factors that are prevalent among banks involved in non-interest activities in Ghana. One key finding was that smaller banks tend to be more actively engaged in non-interest activities compared to larger banks. Furthermore, the research findings demonstrated that Ghanaian banks that focused more on non-interest income generation shared common features such as increased income, customer deposits,

Uniamikogbo, Okoye, Adeusi, and Aggreh (2020) investigate into the relationship between non-interest income and the financial performance of selected Deposit Money Banks in Nigeria. Non-interest income was captured using e-banking income, fee income and firm size while market value was used to capture financial performance. Eight listed domestic systematically important banks where selected for the study. The data spanned eleven years from 2008-2018. Results from the study revealed that e-banking income and fee income each has a significant positive effect on market value added of selected banks. Firm size on the other hand had a significant but inverse effect on market value of the banks.

Nguyen and Tran (2018) carried out a study to the impact of non-interest income on the performance of 26 Vietnamese commercial banks in the period of 2008 - 2017 using the Generalized Method of Moments (GMM) method. The research results indicate that the average non-interest income ratio of Vietnamese commercial banks is only 8.32%, a significantly low level compared with the interest income ratio of more than 90% of the total income of the banks. Furthermore, non-interest income was found to have a positive impact on the performance of Vietnamese commercial banks in the research period. The research results assist in confirming the trend of diversifying non-credit activities to increase non-interest income ratio of Vietnamese commercial banks.

Olowolaju (2018) assessed the relationship between non-interest income and the profitability of deposit money banks in Nigeria from 2006 to 2015. Five banks were selected for the study. The data was analyzed using multiple regressions. The result showed that there was a positive relationship between non-interest income and profitability in Nigerian banks. More so, the rate of growth of non-interest income was found to be been inconsistent over the years. Liquidity ratio, prime lending rate and inflation are found to have no significant relationship with non-interest income.

Phan et al (2023) evaluated how non-interest income impacts the performance of commercial banks in ASIA. Data from 36 commercial banks in across ASEAN countries between 2008 to 2020 were collected and analysed using and Bayesian analysis techniques alongside the quantile regression. The study revealed that non-interest income is inversely related to the performance of commercial banks in the ASEAN region. In addition, the quantile regression results demonstrated that non-interest income negatively affects commercial banks' performance in the ASEAN region at the 25th, 50th, and 75th percentiles.

It is evident from the literature that there is a dearth of empirical research concerning the subject of interest and non-interest income in the context of Nigeria. This knowledge gap underscores the importance and relevance of conducting the present study to fill this void and provide valuable insights into the subject matter.

3. Methodology

A longitudinal *expost facto* research design, which involves analyzing the actions of dependent and independent variables over a certain time was adopted for this study. The study employed a sample consisting of four well-known banks from banking industries in Nigeria. These selected banks were chosen based on their significant market capitalization, including Guaranty Trust Bank, Access Bank PLC, UBA PLC, and First Bank Nigeria. This selection ensures the representation of diverse perspectives within the Nigerian banking sector.

The selection of the aforementioned banks was based on a judgmental approach for the sake of convenience. While probability sampling techniques, such as random sampling, are typically preferred when dealing with individual respondents, In this case judgmental sampling was used to ensure that the sample accurately representing the population was deemed more appropriate. This is because all the banks under consideration adhere to the same regulatory guidelines, making them comparable and suitable for the study's objectives.

The study uses secondary data gotten from the annual financial statements of the four selected banks in order to determine the relationship between the dependent variable (banks' profitability) and the independent variables (interest income and non-interest income).

Model Specification

The model specification utilized in this study adheres to a multiple regression approach, and it is represented as follows:

PAT = f (NII, NOI)

By converting the growth equation's functional formulation into a linear version,

we obtain the following expression:

$$PAT = b_0 + b_1 NII + b_2 NOI + e$$

where;

PAT = Profit after Tax,

NII = Net Interest Income,

NOI = Non-interest Income,

In logarithm form we have;

LogPAT = Log of profit after tax

LogNII = Log of Net interest income

LogNOI = Log of Non-interest income

Apriori Expectations

$b_1 > 0$ and $b_2 > 0$

Both interest and non-interest income are expected to have a positive relationship alike with bank profitability.

Method of Data Analysis

The research will utilize regression analysis, specifically the generalized linear model, to analyze the data. Profit after taxes will be the dependent variable, and the independent variables will be Net Interest Income (NII) and Non-Interest Income (NOI). Descriptive statistics will be employed to summarize the data, helping to identify patterns and derive meaningful insights from the results. Additionally, the normality of the data was assessed through descriptive statistics.

4. Data Analysis and Discussions

The variables examined in this study are Profit after Tax (PAT), Net interest income (NII), and Non-Interest Income (NOI).

Descriptive Statistics and Test for Variables Normality

In order to display, illustrate, and summarize data in a meaningful fashion that might highlight possible patterns within the data, descriptive statistics are essential. But it's crucial to remember that descriptive statistics prevent us from drawing any inferences from any hypotheses that we may have developed. Instead, they serve the primary purpose of describing the facts without drawing any conclusions.

The data from the four banks reveals that the average values of profit after tax (PAT), net interest income (NII), and non-interest income (NOI) the variables under consideration during the investigation period (2010 - 2021) were 79474.46, 180500.2, and 61368.46, respectively. These figures also show a considerable dispersion from their respective means, as indicated by the standard deviations of 51843.73, 81552.09, and 34752.42 for PAT, NII, and NOI. Additionally, the skewness coefficients were calculated to be 0.660437, 0.012532, and 1.243307 for the variables PAT, NII, and NOI exhibited positive skewness, indicating that each of them had a right-skewed distribution.

Lastly, the Jaque-Bera test results indicate that the calculated Jaque-Bera statistics and their associated asymptotic significant probabilities were 3.492539 [0.174423], 3.194406 [0.202462], and 14.86185 [0.000593] for PAT, NII, and NOI, respectively.

Table 1. Descriptive Statistics

	PAT	NII	NOI
Mean	79474.46	180500.2	61368.46
Median	72964.50	173578.0	55151.00
Maximum	201439.0	331522.0	159184.0
Minimum	-9647.000	44166.00	14435.00
Std. Dev.	51843.73	81552.09	34752.42
Skewness	0.660437	0.012532	1.243307

Kurtosis	2.960516	1.736444	4.116993
Jarque-bera	3.492539	3.194406	14.86185
Profitability	0.174423	0.202462	0.000593
Sum	3814774.	8664011.	2945686.
Sum sq. Dev.	1.26E+11	3.13E+11	5.68E+10
Observation	48	48	48

Source: Authors' computation (2023)

Unit Root Test

To evaluate the stationarity of the time series data attributes of the variables (PAT, NII, and NOI), the study used the Augmented Dickey Fuller (ADF) unit root test. The Augmented Dickey-Fuller (ADF) unit root test findings are shown in the table, and they show that all variables are non-stationary, as shown by their probability being more than 0.05 or 5%. As a result, these variables are inappropriate in their present state.

.Table 2. Unit Root Test

ADF AT LEVEL		
VARIABLES	ADF STATISTICS	REMARK
PAT	0.0000	STATIONARY
NII	0.0004	STATIONARY
NOI	0.0015	STATIONARY

Source: Authors' computation (2023)

Panel Regression Analysis

The panel regression analysis as seen in *table 3* was conducted following the Hausman test rule, which states that if the cross-section random effect test comparison probability is equal to or less than 0.05, the appropriate analysis is the random effect model.

Regression coefficients for the NII and NOI are 0.301951 and 0.221187, respectively. This means that, when all other factors are kept constant, a one-unit increase in NII is connected to a about 0.221187-unit increase in PAT, and a one-unit increase in NOI is tied to a roughly 0.301951-unit increase in PAT. The model adds an idiosyncratic effect in addition to cross-section random effects. Since the fixed effects in the model have already considered any substantial variability across different cross-sectional regions, the predicted standard deviation of the cross-section random effect is 0.000000. On the other hand, the idiosyncratic random effect's estimated standard deviation is 30194.92.

Analysis of the weighted statistics reveals that the R-Squared value is 0.272475, indicating that the independent variables in the model, NII and NOI, are responsible for around 27.25% of the overall variance in PAT. The adjusted R-squared value, which accounts for the sample size and the number of predictors, is 0.240141.

In assessing the profitability of the four banks, this inquiry emphasizes the relationship between Profit after Tax (PAT), "the dependent variable", Net Interest Income (NII) and variable, and Non-Interest Income (NOI) "the independent variables".

Both NII and NOI coefficients are positive, indicating a direct relationship between NII, NOI, and profitability (PAT). The significance of a probability is determined by whether it is less than 5% (0.05), where it is considered significant, or greater than 5% (0.05), where it is deemed insignificant. Consequently, the probability of NII is significant because 0.0146 is below 0.05, while the probability of NOI is insignificant in this context because 0.1462 is above 0.05 as can be seen from table

Table 3. Panel Regression Analysis

Dependent Variable: PAT
Method: Panel EGLS (Cross-section random effects)
Date: 06/29/23   Time: 23:45
Sample: 2010 2021
Periods included: 12
Cross-sections included: 4
Total panel (balanced) observations: 48

Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	21019.91	10680.33	1.968095	0.0552
NII	0.221187	0.087030	2.541515	0.0146
NOI	0.301951	0.204229	1.478494	0.1462

Effects Specification			S.D.	Rho
Cross-section random			0.000000	0.0000
Idiosyncratic random			30194.92	1.0000

Weighted Statistics

R-squared	0.272475	Mean dependent var	79474.46
Adjusted R-squared	0.240141	S.D. dependent var	51843.73
S.E. of regression	45192.12	Sum squared resid	9.19E+10
F-statistic	8.426790	Durbin-Watson stat	0.273551
Prob(F-statistic)	0.000779		

Unweighted Statistics

R-squared	0.272475	Mean dependent var	79474.46
Sum squared resid	9.19E+10	Durbin-Watson stat	0.273551

Source: Authors computation (2023)

5. Discussion of Results

The results revealed that there was statistically significant positive relationship between profitability and interest income, but an insignificant relationship between non-interest income and profitability. The findings of this study is inline with previous studies by Aykut and Bunyamin (2013), as well as Damankah, Anku-Tsede and Amankwaa (2014), which found a positive relationsghip between non-interest income and bank performanc but totally at variance with the findings of Phan et al (2023) who found a negative relationship between non-interest income and bank performance. The finding of this study still is diverges from those of Aykut and Bunyamin (2013) and Damankah, Anku-Tsede and Amankwaa (2014) on the level of significance, since these prior studies found and significant positive relationship, while this current study finds an insignificant positive relationship between non-interest income and bank performance. The disparity in findings may be explained by difference in the sample size, sample period and the particular countries the studies were conducted.

6. Conclusion and Recommendations

The study set out to examining the effect of interest and non-interest income on the performance of money deposit banks in Nigeria using four selected banks. The study concludes that Interest income exerts a significant positive influence on the financial performance of Nigerian banks. Meanwhile, the financial performance of banks is positively but not significantly impacted by non-interest revenue in Nigeria.

The study recommends that banks should make more effort to increase non-interest sources of income in order to optimize the benefit from its positive relationship with profitability, while also fostering interest income, thereby ensuring that the revenue based of the bank is stable and diversified.

7. References

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