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INTEREST RATE DEREGULATION AND NON-PERFORMING LOANS IN NIGERIA

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Abstract
Interest rate is one key factor that determines the quality and quantity of loans extended by Deposit Money Banks (DMBs) and by extension it affects the performance of these banks. Generally, the value and volume of non-performing loans (NPL) is determined by economic, borrower and lender related factors. Accordingly, this study investigated the effects of these factors like maximum lending rate, foreign exchange rate, real GDP and inflation rate on the ratio of non-performing loan to the total loan value of DMBs in Nigeria between 1992 and 2023. Thus, foreign exchange rate, real GDP and inflation rate were used as control variables to lending (interest) rate. Relying on data from the World bank and Central Bank of Nigeria (CBN) statistical bulletin, the data collected were subjected to descriptive analysis, unit root test, bounds cointegration test, ARDL short and long run analysis, ECM estimation and a couple of diagnostic tests. Basically, result revealed that there is a long run relationship between the variables while in the short run, maximum lending rate, exchange rate and real GDP have negative but significant effects on NPL. However, in the long run, only lending rate and real GDP have negative and significant effects on NPL. The study as such inferred that interest rate deregulation has a negative but significant effect on non-performing loans in Nigeria. Hence, it was suggested amongst others that there is need to completely deregulate interest rate in the Nigerian banking sector in order to further reduce the volume and value of non-performing loans in the Nigerian banking system. Also, a holistic approach that cuts across economic, borrower and lender-related factors should not be taken for granted.

Keywords: Interest Rate Deregulation, Non-performing Loans, Lending Rate, Deposit Rate.

Introduction

Deposit money banks attract funds and make profitable use of such funds. These funds are attracted by way of accepting deposits from customers who do not have immediate needs for such funds at a cost to the bank. These same funds are given to borrowers that have pressing needs for these funds at a higher cost to these borrowers, thereby intermediating between the deficit and surplus units. Lending performs a lot of functions for banks. For instance, it is the highest earning assets in banks' balance sheet. It contributes materially to the banks' achievement and fulfillment of the objectives of profitability by providing a higher return than other financial assets. It helps bank management to satisfy the legal and other regulatory objectives of the monetary authorities. It is the key element in the creation and maintenance of bank-customer relationship, particularly with business firms. It is also a vehicle through which bank management attempts to satisfy the credit needs of the community or the credit markets the bank serves or intend to serve (Eniafe, 2020).

The importance of lending in banking cannot be over emphasized. The wide spread nature of bank loans and advances today is not unconnected with the fact that lending is the nucleus of banking business. Such loans may be in the form of overdraft, loan and advances, business funding arrangements, local purchasing order financing etc. Thus, lending is one of the fundamental functions of deposit money banks. Loans symbolize investments and typically constitute the major asset of banks. Individuals, business organizations and the government request for loans. The households seek loans from banks when their excess of income over expenditure is negative (Atoi, 2018). Besides, individual business firms especially small scale enterprise request for loans from deposit money banks for working capital drives and re-investment. In granting loans, banks take into consideration factors such as liquidity risk, repayment method, sources of repayment and the purpose of such loans (Atoi, 2018). Bank loans and advances are habitually short-term in nature. Mostly, in deposit money banks in Nigeria, the worth of loan portfolio rests on credit analysis carried out by the loan officer. The credit expert's role is to make sure that loans granted have a decent qualitative composition. The qualitative features of bank loans include high liquidity quotient, minimum risk and appropriate maturity structure. These qualitative elements are necessary to guarantee repayment on demand or maturity (Akpan, 2023). Though, in some instances, there may be default, where the customer may fail to pay the interest and principal as they mature or as they fall due within the specified period as agreed between the bank and the borrower (customer). Once there is default and the debtor defaults as scheduled or retrieval is highly doubtful or it is probable to be protracted, the loan turns out to be a non-performing loan which at last leads to bad debts.

There are so many factors that cause a loan not to perform as expected. One of such factors is high regulated interest rate, which is the rate at which deposit money banks lend to customers (Arikewuyo & Akingunola, 2019). On this front, the Nigerian government introduced the Structural Adjustment Programme (SAP) in 1986, which ushered in the deregulation of the financial system and in particular of the banking system in Nigeria. Deregulation of interest rate was aimed at allowing interest rate to be set by the forces of demand and supply. According to Ene, Agok and Ene (2015), the ultimate objective of the policy under SAP was to bring about improved financial intermediation by enhancing the role of banks in effectively mobilizing domestic savings and optimally allocating investable resources. It provides a platform for greater competitiveness in mobilization and utilization of funds, an efficient financial industry and more productive organization within the financial industry. They added that interest rate deregulation helps to enhance savings, boost investment and consequently help to enhance

economic growth. Thus, in August 1987, all controls on interest rates were removed, while the CBN adopted the policy of fixing only its minimum rediscount rate to indicate the desired direction of interest rate changes. While the country further experienced variations in interest rate regimes, total deregulation of interest rates (deposit and lending rates) was again adopted in October 1996. It has remained so since then.

The deregulation of interest rate in Nigeria has been met with divergent views by financial experts both in academia and in the banking sector. While some commended the policy, others deprecated the decision. For instance, Abiodun (2017) decried the deregulation policy because it has the tendency of slowing down investment as borrowing will be cut down due to high interest rate. Supporting this view, Akpan (2023) described the Nigerian domestic financial markets as being structurally oligopolistic, therefore if interest rate is left uncontrolled, it might lead to sharp increase in lending rate, leading to increase in cost of capital and discouraging investment. On the contrary, Ikhide (2020) argued that interest rate deregulation will not only bring relief to the financially repressed economy, but it will ensure a real return on deposit which had previously yielded negative results. Adeleke (2023) and Aderiga (2015) collaborated by stating that financial repression arises mostly where a country imposes ceiling on deposit and lending nominal interest rates at a low level relative to inflation. The resulting low or negative interest rates discourage savings mobilization and channeling of mobilized savings through the financial system. This has negative impact on the quality and quantity of investment and hence economic growth in view of the empirical link between savings, investment and economic growth. Similarly, Enoh (2019) believe that interest rate deregulation will definitely lead to more efficient allocation of financial resources because interest rate will now reflect scarcity and relative efficiency in different use. That is, only efficient investors will have access to scarce financial resources.

Thus, related studies have been undertaken on interest rate deregulation and non-performing loans and these studies have produced different and contrasting results. However, in a bid to ascertain the true and current effects of interest rate deregulation on the value and volume of non-performing loans in the context of Nigeria, this study was undertaken.

Review of Related Literature

Conceptual Review

Interest Rate: In every transaction that involves borrowing and lending, there is always a borrower and a lender. When a lender lends to a borrower, there is an opportunity cost for such. In order to compensate the lender for parting with his money, a given agreed sum is paid to him. This agreed sum is called interest. When this amount is expressed as a percentage of the borrowed sum (principal), it is termed interest rate. Thus, interest rate is the reward for parting with liquidity or money for a specified period of time. It is the amount of money due per period, as a proportion of the amount lent, deposited or borrowed. Rate of interest is also seen as a measure of the unwillingness of those who possess money to part with their liquid control over it. It is as such referred to as the 'price or cost' of borrowing money (Enoh, 2019). In essence, total interest on an amount borrowed or lent depends on the principal sum, the interest rate, the compounding frequency, and the length of time over which it is lent, deposited or borrowed. There are different types of interest rates. In Nigeria, the popular ones are monetary policy rate (MPR), treasury bills rate, treasury certificates rates, bank lending and deposits rates. According to Eke, Eke and Inyang (2015), the Nigerian economy has at different times witnessed enormous interest rate swings in different sectors of the economy. They pointed out that prior to the introduction of Structural Adjustment Program (SAP) in Nigeria in 1986; the financial sector was

characterized by rigid exchange rate and interest rate controls, mandatory sectorial allocation of bank credit to the private sector, which engendered distortion and inefficiencies that results to low direct investment.

Interest Rate Deregulation in Nigeria: Interest rate deregulation implies the removal of rules and regulation that constrains the operation of market forces and controls over interest rate, with the aim to allow interest rate to be determined by the forces of demand and supply. In essence, other things being equal, in a deregulated setting, when the demand for loans is on the increase, lending rates will go up and vice versa when the demand for loans decreases. On the flip side, when deposits from customers shoot up, deposit rates go down and vice versa (Amauche, 2015). In Nigeria, prior to 1986, the Nigerian financial system was highly regulated. The introduction of Structural Adjustment Programme (SAP) in 1986 ushered in the deregulation of the financial system and in particular of the banking system and in August 1987, all controls on interest rates were removed, while the CBN adopted the policy of fixing only its minimum rediscount rate to indicate the desired direction of interest rate changes (Eke, Eke & Inyang (2015). They stated that this was modified in 1989, when the Central Bank of Nigeria (CBN) issued further directives on the required spreads between deposit and lending rates. In 1991, the government prescribed a maximum margin between each bank's average cost of funds and its maximum lending rates. Later, the CBN prescribed savings deposit rate and a maximum lending rate. Partial deregulation was, however, restored in 1992 when financial institutions were only required to maintain a specified spread between their average cost of funds and their maximum lending rates. The removal of the maximum lending rate ceiling in 1993 saw interest rates rising to unprecedented levels in sympathy with rising inflation rate which rendered banks' high lending rates negative in real terms (Okoronkwo & Eze, 2023). According to Andozi, Warribo and Olatunyi (2019), direct interest rate controls were restored in 1994 but as this and other controls introduced in 1994 and 1995 had negative economic effects, total deregulation of interest rates was again adopted in October 1996, and this has remained the case.

Loans: A loan is a given sum of money a party borrows from another with a promise to repay this given sum at an agreed date. The amount to be repaid may exceed the initial amount borrowed though it all depends on the terms of agreement between both parties. In a loan agreement, the party parting with the money is called the lender while the other party is called the borrower. In essence, a loan is the lending of money by one or more individuals, organizations, or other entities to other individuals, organizations or entities as the case may be. Wilkinson (2017) defined a loan as a sum of money transferred from one person (lender) to another person (borrower) for temporary use, with or without interest according to the terms of the loan agreement written in the accompanying bond, note, mortgage, or other documents of indebtedness. The recipient of a loan incurs a debt and as said earlier, is usually liable to pay interest on that debt until it is repaid. This implies that a loan is an asset for the lender and a liability for the borrower.

Non-Performing Loans (NPL): The concept of non-performing loans differs from one country to another. A loan maybe considered non-performing in one country and might not be considered as such in another country. However, opinions in some cases do match. The International Monetary Fund's (IMF) Compilation guide on financial soundness indicators (2015) stated that "a loan is non-performing when payments of interest and/or principal are past due by 90 days or more, or interest payments equal to 90 days or more have been capitalized, refinanced, or

delayed by agreement, or payments are less than 90 days overdue, but there are other good reasons, such as a debtor filing for bankruptcy, to doubt that payments will be made in full." According to Basel Committee on Banking Supervision (2001) as cited in Kargi (2021), a loan is considered default when a bank declares that a borrower cannot meet his/her obligation and repay the loan, or similarly to the first definition, the borrower past due more than 90 days on any payment of the bank credit. These definitions offer a sensible framework for identifying non-performing loans. In addition, the Nigerian banking regulation also defines NPL as loans whose credit quality has deteriorated and the full collection of principal and/or interest as per the contractual repayment terms of the loan and advances are in question (CBN, 2015). By and large, NPLs are loans that are outstanding both in its principal and interest for a long period of time, disagreeing to the terms and conditions under the loan contract (Gesu, 2024). Any loan facility that is not current in terms of repayment both on principal and interest conflicting to the terms of the loan agreement is a non-performing loan. Thus, the amount of nonperforming loan measures the quality of bank assets (Tseganesh, 2022). However, 2010 CBN prudential guidelines for money deposit banks in Nigeria, Section 15.1, classifies non-performing loan facilities into three distinct categories as sub-standard, doubtful and lost on the basis of time period and other criteria. It considers unpaid principal and/or interest remaining outstanding for more than 90 days but less than 180 days as a sub-standard loan, while doubtful loans (facilities) are those whose unpaid principal and/or interest remain outstanding for at least 180 days but less than 360 days. Finally, a facility is considered as lost when unpaid principal and/or interest remain outstanding for 360 days or more.

Theoretical Underpinning

Related theories include the Keynes theory of interest rate, loanable funds theory, and classical theory. Hence, this work is anchored on all three theories. Put differently, Keynes theory of interest rate states that "rate of interest is determined by the demand and supply of money, the loanable funds theory has it that interest rate is determined by the forces of demand and supply of loanable funds, while the classical theory of interest rate states that the rate of interest is determined by the supply and demand of capital" (Nwaru, 2014). These postulations underscore theoretical backings against a regulated system and renders full support for a deregulated system. Such a system puts no limit on the interest rate spread (lending rates minus deposit rates) of DMBs. This is because the higher the spread, the more the profit banks make. However, the downside of the whole thing is that more lending exposes banks to the problem of default in payment (higher incidences of non-performing loans) which is triggered by high lending rate, and economic factors like unfavorable exchange rate, downturn in economic activities and high inflation rates. This does not relegate the role of lender and borrower related factor like poor credit worthiness, insufficient collateral, poor credit risk assessment, ineffective debt recovery mechanism and poor risk management techniques (Bredl, 2018; Robert & Koori, 2022). Hence, operating a deregulated system increases the credit risk of banks due to economic, lender and borrower related factors.

Empirical Review

Juma and Jemaiyo (2025) examined the impact of non-performing loans on the financial performance of publicly listed commercial banks in Kenya by focusing on bank lending rate as a mediating variable. Adopting a document review methodology, ROA and ROE were considered measures of bank financial performance and result suggested that lending rate plays a mediating role in the relationship between non-performing loans (NPLs) and the financial

performance of commercial banks in Kenya. Sewanyina, Ongesa, Nyambane and Manyange (2024) examined the relationship between non-performing loans (NPLs) and financial disclosure of commercial banks in Uganda by relying on survey data generated from 189 banking professionals. The data were analysed using descriptive and Pearson correlation analysis. Results indicated that there is a weak, positive and significant relationship between financial disclosure and non-performing loans with interest rate playing a major role to this nexus.

Koskei and Samoei (2024) investigated the influence of bank lending rates on nonperforming loans in listed commercial banks in Kenya using secondary monthly data from November 2019 to September 2023. Ordinary Least Square (OLS) regression analysis was utilized for data analysis and results showed that bank lending rates have positive and significant effect on non-performing loans of listed commercial banks in Kenya. Robert and Koori (2022) examined the effects of bank lending rates on non-performing loans of commercial banks in Kenya between 2016 and 2020 using secondary data generated from all 39 commercial banks operating in Kenya as at the time of the study. Inferential and descriptive approaches were used for data analysis. The study revealed that bank lending rates has a significant and positive effect on non-performing loans of commercial banks in Kenya. Also, central bank rate has a moderating effect on the link between bank lending rates and non-performing loans in commercial banks in Kenya.

In a related study, Merhbene (2021) sought to ascertain the impact of non-performing loans on the profitability of banks in Tunisia between 2010Q1 and 2019Q4. The study estimated a threshold of non-performing loans (NPLs) using an econometric framework for ten Tunisian commercial banks. Results showed that banks with lower non-performing loan tend to have higher profitability. Eniafe (2020) examined the effects of non-performing loans on Deposit Money Banks' performance in Nigeria by using the Error Correction model approach and the Least Square method of analyses. The study showed that non-performing loans have impacted Deposit Money Banks performance; however, net interest margin and deposit to loan ratio had varied effects. Arikewuyo and Akingunola (2019) investigated the nexus between interest rate deregulation and fund mobilization of Deposit Money Banks (DMBs) in Nigeria between 1986 and 2016 by adopting the Autoregressive Distributed Lag (ARDL) Bound Test technique; and results demonstrated that interest rate has an insignificant influence on fund mobilization in the short run but the influence in the long run was significant. The study also demonstrated that money supply and inflation rate are the key drivers of fund mobilization of DMBs in both short and long run situations; and that government expenditure was statistically insignificant.

Atoi (2018) examined the effects of non-performing loans (NPLs) on the stability of Nigerian banks with national and international operational licenses from 2014(Q2) to 2017(Q2) by adopting a "restricted" dynamic GMM to estimate the macroeconomic and bank specific drivers of NPL for each licensed category. Z-Score was constructed to proxy banking stability, and its response to shocks as NPLs was examined in a panel vector autoregressive framework. The results reveal that drivers of NPLs vary across the two categories of banks, but weighted average lending rate was a vital macroeconomic driver of NPLs for both. The results also confirmed the moral hazard hypothesis and risk-return tradeoff of efficient market theory. Furthermore, international banks withstand NPLs shocks in the long run, despite temporary flux in the short horizon, while the stability of national banks is susceptible to NPLs shocks in the long run. Bredl (2018) investigated the role of non-performing loans (NPLs) for lending rates charged for newly granted loans in the euro area. More precisely, it looked for an effect that extends beyond losses caused by that stock which have already been incorporated into the banks' capital positions. The paper focused on the question of which channels are responsible

for such a potential effect. Adopting regression, descriptive and charts as analytical tools, results indicated that a higher stock of net NPLs is associated with higher lending rates, whereby there are indications that this relation tends to be offset by loan loss reserves. Although the NPL stock affects banks' idiosyncratic funding costs as well, the latter do not seem to constitute an important link between the stock of NPLs and lending behavior. Furthermore, NPLs do not strongly affect the banks' interest rate pass-through.

EL-Maude, Abdul-Rahman and Ibrahim (2017) examined the relationship between bank specific and macroeconomic determinant of non-performing loans of Deposit Money Banks in Nigeria over a period of 5 years (2010 to 2014). Using a sample of 10 banks, data generated were analyzed using descriptive statistics, correlation coefficient and multiple regressions and findings revealed a positive significant relationship between non-performing loans and loan to deposit ratio and bank size; whereas the relationship between capital adequacy ratio and inflation revealed a positive insignificant relationship; but return on asset has a negative insignificant relationship with the rate of non-performing loans. Sheefeni (2016) investigated the impact of interest rate spread on non-performing loans in Namibia. The study employed co-integration and error correction model on the quarterly data collected for the period 2001 to 2014. Findings showed that interest rate spread has a positive and statistical significant effect on non-performing loans in Namibia. The study also showed that inflation has a positive but statistically insignificant effect on non-performing loans in Namibia. Therefore, the positive impact of interest rate spread suggests that increase in interest margins has the potential of increasing the probability of defaulting on loans by clients.

Ene, Atong and Ene (2015) empirically examined the effect of interest rates deregulation on the performance of Deposit Money Banks in Nigeria between 1986 and 2014 using OLS regression method. Accordingly, finding revealed that deregulated interest rates have positive and significant impact on the ROA of Deposit Money Banks. The study further revealed that deregulated interest rates have positive and significant relationship with loans and advances of Deposit Money Banks. It further showed that the higher the rates of interests, the higher the performance of deposit money banks. Eke, Eke and Inyang (2015) used the classical least squares method to empirically examine interest rate deregulation effect on the lending operations of Deposit Money Banks in Nigeria for the period 1970 to 2013. The period was divided into two policies regime periods; the regulated interest rate era spanning 1970-1986 and the deregulated period 1987-2013. The Chow test was applied for data analysis and result obtained for interest rate regulation era showed that interest rate spread and statutory liquidity ratio have negative and significant effect on the volume of commercial banks' loans, while fixed exchange rate has a negative and insignificant impact on banks' loans and advances. It was also showed that monetary policy rate (MPR) and inflation rate exert positive and significant impacts on banks' loans for the period. For the deregulation era, the result showed that MPR and exchange rate have significant impacts on banks' loans and advances.

Methodology

Research Design: Quasi-experimental research design was adopted in this study. This is because of the need to establish the cause-effect relationship between interest rate deregulation and non-performing loans of deposit money banks' in Nigeria. In addition, this design was adopted because of the fact that the study was not based on a full scale experiment.

Sources of Data: This study used secondary data, which were time series in nature. These data were gathered solely from the World Bank and Central Bank of Nigeria (CBN) statistical bulletin, 2023 edition.

Method of Data Analysis: The ARDL (Autoregressive Distributed Lag) model was chosen for this work. This is because of its numerous benefits over other techniques, which are: efficiency in small samples analysis, a combination of linear variables with diverse orders of integration of I(0) and I(1), and the fact that it is less prone to autocorrelation (Pesaran, Shin and Smith, 2001). The analysis also covered:

Stationarity Test: Stationarity test was performed on the time series data generated using Phillip-Perron (PP) test criterion. Given that times series data tend to have stationarity problem, it was necessary to carry out this test. In addition, this test was conducted in order to avoid having spurious and fictitious estimates, which are misleading.

Co-integration Test: Bounds test approach to co-integration was adopted to examine if long run relationship exists among the underlying variables of the study. In this test, the null hypothesis of no co-integration was tested against the alternative hypothesis of co-integration with the application of F-test.

Model Specification

The model adopted for this study is that suggested by Koskei and Samoei (2024). This model in the context of Nigeria is functionally given as:

NPL = F (LNR, EXR, RGDP, INF) ..... (1)

$Log\_NPL = \beta_0 + \beta_1 Log\_LNR + \beta_2 Log\_EXR + \beta_3 Log\_RGDP + \beta_4 Log\_INF + \mu$ .... (2)

Where:

NPL	=	Non-Performing Loans ratio
LNR	=	Maximum Lending Rate
EXR	=	Foreign Exchange Rate
RGDP	=	Real Gross Domestic Product
INF	=	Inflation Rate
Log	=	Natural Logarithm
F	=	Functional relation

The ARDL version of the above functional model is formalized as:

$$NPL_t = P_0 + Q_1 NPL_{t-1} + Q_2 PLR_{t-1} + Q_3 MLR_{t-1} + Q_4 MIR_{t-1} + Q_5 MAR_{t-1} + \sum_{i=1}^{m} K_1 \Delta NPL_{t-1} + \sum_{i=1}^{m} K_2 \Delta PLR_{t-1} + \sum_{i=1}^{m} K_3 \Delta MLR_{t-1} + \sum_{i=1}^{m} K_4 \Delta MIR_{t-1} + \sum_{i=1}^{m} K_5 MAR_{t-1} + e_{it}$$

Where:

P_0	=	Constant Parameter
Q_1-Q_5	=	Long run multipliers
$K_1 - K_5$	=	Short run dynamic parameters of the regressors
e_{it}	=	Random disturbance
m	=	Optimal lag length
Δ	=	First difference operator

Data Analysis and Interpretation of Results

Descriptive Analysis

Statistics	NPL	LNR	EXR	RGDP	INF
Mean	15.60063	24.74094	170.8359	60878.30	18.78469
Median	13.88000	23.55500	132.8250	36930.55	13.06500
Maximum	43.21000	36.09000	645.1900	229912.9	72.84000
Minimum	2.960000	18.36000	17.30000	897.1200	5.390000
Std. Dev.	10.59953	4.404990	142.1835	64713.42	16.25423
Skewness	0.696251	0.501314	1.425274	1.036396	2.091959
Kurtosis	2.886022	2.548257	5.177734	3.073949	6.421406
Jarque-Bera	2.602740	1.612445	17.15753	5.735918	38.94825
Probability	0.272159	0.446542	0.000188	0.056815	0.000000
Sum	499.2200	791.7100	5466.750	1948106.	601.1100
Sum Sq. Dev.	3482.849	601.5221	626700.4	1.30E+11	8190.200
Observations	32	32	32	32	32

Source: E-Views 10 Output

Interpretation: The above result shows the descriptive statistics of variables used in the estimation. Non-performing loan (NPL) for the period 1992-2023, averages 15.60% and varies from 2.96% to 43.21% with a standard deviation of 10.60%. Average maximum lending rate for the period is 24.74% while foreign exchange rate is ₦170.84 per United States dollar. The mean of real GDP and inflation rate are ₦60878.30 and 18.78% respectively. However, while the variables NPL, LNR and RGDP were normally distributed, EXR and INF were not. Finally, all the variables were positively skewed.

Unit Root/Stationarity Test

Variables	ADF Test Statistics	Critical Values			Probability Value	Order of Integration	Remarks
		1%	5%	10%			
NPL	-5.350413	-3.670170	-2.963972	-2.621007	0.0001	I (1)	Stationary
LNR	-7.473199	-3.670170	-2.963972	-2.621007	0.0000	I (1)	Stationary
EXR	-5.328322	-3.670170	-2.963972	-2.621007	0.0001	I (1)	Stationary
RGDP	-4.527204	-3.661661	-2.960411	-2.619160	0.0011	I (0)	Stationary
INF	-	-	-	-	0.0027	I (1)	Stationary

	4.216581	3.679322	2.967767	2.622989			

Source: E-Views 10 Output

Interpretation: Stationarity test results revealed that at 5% critical value, the variables NPL (non-performing loans), LNR (maximum lending rate), EXR (foreign exchange rate) and INF inflation rate) were stationary at first difference, while the variable RGDP (real gross domestic product) was stationary at level. This informed the need to adopt auto-regressive distributed lag (ARDL) technique.

ARDL Bounds Test

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
			Asymptotic: n=1000	
F-statistic	4.347225	10%	2.2	3.09
K	4	5%	2.56	3.49
		2.5%	2.88	3.87
		1%	3.29	4.37
			Finite Sample: n=35	
Actual Sample Size	28			
		10%	2.46	3.46
		5%	2.947	4.088
		1%	4.093	5.532
			Finite Sample: n=30	
		10%	2.525	3.56
		5%	3.058	4.223
		1%	4.28	5.84

Source: E-Views 10 Output

Interpretation: ARDL Bounds test showed that there is a long run relationship between interest rate deregulation related variables (LNR, EXR, RGDP and INF) and the value of non-performing loans in Nigeria.

ARDL Short Run Estimation

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
LOG_NPL(-1)	0.738175	0.278350	2.651968	0.0453
LOG_NPL(-2)	-1.560446	0.497422	-3.137068	0.0258

LOG_NPL(-3)	0.513108	0.263526	1.947089	0.1091
LOG_NPL(-4)	-0.437248	0.231604	-1.887912	0.1177
LOG_LNR	-9.626404	3.292965	-2.923324	0.0329
LOG_LNR(-1)	-6.691420	2.312368	-2.893752	0.0340
LOG_LNR(-2)	5.497085	2.135888	2.573676	0.0498
LOG_LNR(-3)	-2.666709	1.400687	-1.903858	0.1153
LOG_EXR	-2.203684	0.858660	-2.566420	0.0503
LOG_EXR(-1)	4.071903	1.285191	3.168325	0.0249
LOG_EXR(-2)	-2.616756	0.853097	-3.067359	0.0279
LOG_EXR(-3)	7.458280	2.123482	3.512288	0.0171
LOG_EXR(-4)	-2.986824	1.383040	-2.159607	0.0832
LOG_RGDP	-29.84756	7.496131	-3.981728	0.0105
LOG_RGDP(-1)	16.98033	5.132978	3.308085	0.0213
LOG_RGDP(-2)	-11.05565	4.167609	-2.652757	0.0453
LOG_RGDP(-3)	10.72261	3.037213	3.530412	0.0167
LOG_RGDP(-4)	8.914365	4.108814	2.169571	0.0822
LOG_INF	0.443648	0.293267	1.512778	0.1907
LOG_INF(-1)	3.008144	0.752553	3.997251	0.0104
LOG_INF(-2)	0.742064	0.612897	1.210747	0.2801
LOG_INF(-3)	0.684487	0.553239	1.237235	0.2709
C	72.84313	19.02800	3.828208	0.0123

R-squared	0.972324	Mean dependent var	2.350603
Adjusted R-squared	0.850550	S.D. dependent var	0.753374
S.E. of regression	0.291245	Akaike info criterion	0.290785
Sum squared resid	0.424118	Schwarz criterion	1.385096
Log likelihood	18.92901	Hannan-Quinn criter.	0.625327
F-statistic	7.984668	Durbin-Watson stat	1.761416
Prob(F-statistic)	0.014827		

*__Note__: p-values and any subsequent tests do not account for model selection.

Source: E-Views 10 Output

Interpretation: ARDL short run analysis revealed basically that lending rate, exchange rate and real GDP have negative but significant effects on non-performing loans (NPL), while inflation rate has a positive insignificant effect on NPL in Nigeria. However, one year lagged values of NPL (non-performing loans), LNR (maximum lending rate), EXR (foreign exchange rate), RGDP (real gross domestic product) and INF (inflation rate) have significant effects on current value of non-performing loans.

ARDL Long Run Estimation

Levels Equation
Case 2: Restricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.

LOG_LNR	-7.722951	2.156689	-3.580929	0.0159
LOG_EXR	2.131754	0.471564	4.520603	0.0063
LOG_RGDP	-2.454121	0.502067	-4.888033	0.0045
LOG_INF	2.793353	0.741091	3.769247	0.0130
C	41.71018	9.461957	4.408198	0.0070

EC = LOG_NPL - (-7.7230*LOG_LNR + 2.1318*LOG_EXR -2.4541 *LOG_RGDP + 2.7934*LOG_INF + 41.7102)

Source: E-Views 10 Output

Interpretation: From our long run estimation, it was discovered that in the long run, only inflation rate has an insignificant effect on non-performing loans in Nigeria as maximum lending rate, foreign exchange rate and real GDP have significant effects on non-performing loans. However, in the long run, the effects of maximum lending rate and real GDP are negative while the effects of foreign exchange rate and inflation rate are positive.

ECM Estimation

ECM Regression
Case 2: Restricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LOG_NPL(-1))	1.484586	0.227813	6.516683	0.0013
D(LOG_NPL(-2))	-0.075860	0.097259	-0.779981	0.4707
D(LOG_NPL(-3))	0.437248	0.121424	3.600988	0.0155
D(LOG_LNR)	-9.626404	1.289010	-7.468057	0.0007
D(LOG_LNR(-1))	-2.830377	0.678600	-4.170904	0.0087
D(LOG_LNR(-2))	2.666709	0.637114	4.185609	0.0086
D(LOG_EXR)	-2.203684	0.442386	-4.981363	0.0042
D(LOG_EXR(-1))	-1.854700	0.498067	-3.723794	0.0137
D(LOG_EXR(-2))	-4.471456	0.603520	-7.408961	0.0007
D(LOG_EXR(-3))	2.986824	0.414227	7.210605	0.0008
D(LOG_RGDP)	-29.84756	3.281227	-9.096463	0.0003
D(LOG_RGDP(-1))	-8.581327	1.666282	-5.149983	0.0036
D(LOG_RGDP(-2))	-19.63698	2.961681	-6.630350	0.0012
D(LOG_RGDP(-3))	-8.914365	1.896907	-4.699421	0.0053
D(LOG_INF)	0.443648	0.137586	3.224528	0.0233
D(LOG_INF(-1))	-1.426551	0.388584	-3.671155	0.0144
D(LOG_INF(-2))	-0.684487	0.225303	-3.038075	0.0288
CointEq(-1)*	-0.746411	0.241796	-7.222652	0.0008

R-squared	0.950482	Mean dependent var	-0.059001
Adjusted R-squared	0.866302	S.D. dependent var	0.563223
S.E. of regression	0.205941	Akaike info criterion	-0.066358
Sum squared resid	0.424118	Schwarz criterion	0.790059
Log likelihood	18.92901	Hannan-Quinn criter.	0.195458
Durbin-Watson stat	2.761416		

* p-value incompatible with t-Bounds distribution.
Source: E-Views 10 Output

Interpretation: From the Error Correction Model, the co-integrating equation has the required negative and significant signs, which implies that the speed at which equilibrium can be restored in an event of any distortion in the long run relationship between interest rate deregulation and value of non-performing loan is about 74.6% annually.

Diagnostic/Econometric Tests

Test	Criterion	Test statistic Value	Probability Value
Autocorrelation	Q-Statistic	1.7201 ≤ Q ≥ 12.187	> 0.05
Normality	Jarque-Bera	0.616755	0.734638
Heteroscedasticity	Breusch-Pagan-Godfrey	2.065891	0.2156

Source: Extract from E-Views 10 Output

Interpretation: From the above table of summarized diagnostic tests results, it was observed that there is no presence of autocorrelation and heteroscedasticity in the errors of the model as the errors of the model were normally distributed.

Conclusion and Recommendations

Conclusion: From the foregoing, it was revealed that in the short run, maximum lending rate, foreign exchange rate and real GDP have negative and significant effects on non-performing loans while inflation rate has a positive insignificant effect on non-performing loans. However, in the long run, all variables were statistically significant while only foreign exchange and inflation rates have positive effects on non-performing loans. Nevertheless, these interest rate deregulation related variables, at different periods, have a combined significant influence of about 97.23% on non-performing loan-total loan ratio. Hence, it was inferred that interest rate deregulation has a negative but significant effect on the volume of non-performing loans in Nigeria. This aligns with the position expressed by the likes of Koskei and Samoei (2024), Robert and Koori (2022), and Sheefeni (2016) who agreed that lending rate has a significant effect on the value and volume of non-performing loans in different countries.

Recommendations

There is need to completely deregulate interest rate in the Nigerian banking sector in order to further reduce the volume and value of non-performing loans in the Nigerian banking system.

i. In addition to completely deregulate interest rate, there is the need to also focus on economic related factors like foreign exchange rate, economic condition and inflation rate in the country. This is because these factors have direct and indirect effects on the ability of borrowers to repay the loans they collected from banks.
ii. It is imperative to tight all possible ends as the need to consider borrower-related factors like poor credit worthiness and insufficient collateral cannot be over emphasized. Thus, to effectively curtail the incidences of non-performing loans in Nigeria, a holistic approach that cuts across economic, borrower and lender-related factors should not be taken for granted.

Contribution to Knowledge

This work will to a large extent contribute to bridging existing knowledge gap in the literature by way of introducing a model that captures maximum lending rate and other economic related variables like foreign exchange rate, real GDP and inflation rate as surrogates of interest rate deregulation. Also, the currency of this work is not in doubt.

Limitations of the Study

The major limitation of this study was availability of data on the variable non-performing loans. This is because the World Bank and other online sources only captured the ratio of non-performing loans to gross loans from 2009, while the Central Bank of Nigeria (CBN) on its own, lumped non-performing assets with reserves for depreciation, thereby making it difficult to get the actual value of non-performing assets (loans).

References

Abiodun, R. (2017). Implications of deregulating interest rates. *Business Times,* Sept. 7.

Adeleke, A. A. (2023). Interest rate deregulation and bank performance in Nigeria. *Journal of Finance and Accounting, 12*(2), 276-296.

Aderiga, M. A. (2015). Interest rate policy and growth of Nigerian banks. *International Journal of Finance and Economics, 6*(2), 67-82.

Akpan, U. A. (2023). Relevance of the Asset Management Corporation of Nigeria (AMCON) to the non-performing loans of Deposit Money Banks. *International Journal of Economics, Business and Finance*, *1*(8), 249 -261.

Amauche, K. A. (2015). *Bank management in the 21st century: Theories, policies and contemporary issues.* Awka: Kemjika Publishing Company.

Andozi, A. K., Wambo, D. O., & Olatunji, E. (2009). Interest rate and bank performance: Regulated and deregulated regime in Nigeria. *European International Journal of science and Humanities, 1*(2), 111-124.

Arikewuyo, K. A., & Akingunola, R. O. (2019). Impact of interest rate deregulation on fund mobilisation of Deposit Money Banks in Nigeria. *Izvestiya Journal of Varna University of Economics, 63*(2), 89 -103.

Atoi, N. V. (2018). Non-performing loan and its effects on banking stability: Evidence from national and international licensed banks in Nigeria. *CBN Journal of Applied Statistics, 9*(2), 43-74.

Bredl, S. (2018). The role of non-performing loans for bank lending rates*. Bundesbank Discussion Paper, No. 52/2018, Frankfurt, Germany.*

CBN (2015). Central Bank of Nigeria Banking Supervision Annual Report. Retrieved from *www.cbn.gov.ng.*

CBN (2023). *Central Bank of Nigeria statistical bulletin,* 34. Retrieved from www.cenbank.org.

Eke, F. A., Eke, I. C., & Inyang, O. G. (2015). Interest rate and commercial banks' lending operations in Nigeria: A structural break analysis using Chow test. *Global Journal of Social Sciences, 14*, 9-22.

El-Maude, J. G., Abdul-Rehman, A., & Ibrahim, M. (2017). Determinants of non-performing loans in Nigeria's Deposit Money Banks. *Archives of Business Research, 5*(1), 74-88.

Ene, E. E., Agok, S. A., & Ene, J. C. (2015). Effect of interest rates deregulation on the performance of Deposit Money Banks in Nigeria. *International Journal of Managerial Studies and Research, 3*(9), 187-192.

Eniafe, A. (2020). Impact of non-performing loan on bank performance in Nigeria: A case study of selected Deposit Money Banks. *Journal of Business & Economic Policy, 7*(4), 56-70.

Enoh, C. G. (2019). Empirical analysis on the impact of interest rate deregulation on the performance of Deposit Money Banks in Nigeria. *Journal of Finance and Accounting*, *12*(2), 137-151.

Gesu, G. (2024). Determinants of nonperforming loans: Empirical study of commercial banks in Ethiopia. *A Published M. Sc. Thesis, Jimma University.*

Ikhide, S. (2020). On the deregulation of interest rates in Nigeria- myths and realities. *Nigerian Financial Review, 3*(1), 209-231.

Juma O. E., & Jemaiyo B. (2025) Influence of Non-Performing Loans, Lending rate and Financial Performance of Commercial Banks in Kenya. A Review of the Literature, European Journal of Accounting, Auditing and Finance Research, Vol.13, No. 1, pp.,1-17

Kargi, H. S. (2021). *Credit risk and the performance of Nigerian banks*. Zaria: Ahmadu Bello University press.

Koskei, L., & Samoei, D. (2024). Bank Lending Rates and Nonperforming Loans of Listed Commercial Banks in Kenya. Asian Journal of Economics, Business and Accounting, 24(3), 19-25. Retrieved from https://www.sdiarticle5.com/review-history/112003

Merhbene, D. E. (2021). The relationship between non-performing loans, banking system stability and economic activity: The case of Tunisia. Graduate Institute of International and Development Studies, International Economics Department Working Paper Series, No. HEIDWP03-2021

Nwaru, N. M. (2014). Elements of Economics (2nd Ed.). Owerri: Kricel Publishers.

Okoronkwo, V., & Eze, O. (2023). Effect of bank lending rate on the performance of Nigerian Deposit Money Banks. *International Journal of Business and Management Review, 1*(1), 177-192.

Pesaran, M., Shin, Y., & Smith, R. (2001). Bounds testing approaches to the analysis of level relationships. *Journal of Applied Econometrics, 16*(3): 289-326.

Robert, E. K., & Koori, J. (2022). Bank lending rates and non-performing loans of commercial banks in Kenya. International Journal of Business Management & Finance, 2(1), 190-202.

Sewanyina, M., Ongesa, T., Nyambane, D., & Manyange, M. (2024). Does interest rates affect financial disclosure and non-performing loans? Evidences from commercial banks in Western Uganda. Asian Journal of Economics, Business and Accounting 24(12), 152-64. Retrieved from https://doi.org/10.9734/ajeba/2024/v24i121598.

Sheefeni, J. P. S. (2016). The effects of interest rate spread on non-performing loans in Namibia. *European Journal of Business, Economics and Accountancy*, *4*(5), 31-40.

Tseganesh, T. (2012). Determinants of banks liquidity and their impact on financial performance. *Published thesis (M. Sc), University Addis Ababa, Ethiopia.*

Wilkinson, C. (2017). *Academic's dictionary of banking (2nd Ed.).* New Delhi: Academic (India) Publishers.