

DIGITALES ARCHIV

ZBW – Leibniz-Informationszentrum Wirtschaft
ZBW – Leibniz Information Centre for Economics

Isedu, Mustafa; Erhabor, Osaruyi Jeffrey

Article

Non-performing loans (NPL) and loans and advances of commercial banks in Nigeria

Provided in Cooperation with:

University of Benin, Benin City, Nigeria

Reference: Isedu, Mustafa/Erhabor, Osaruyi Jeffrey (2020). Non-performing loans (NPL) and loans and advances of commercial banks in Nigeria. In: Accounting and taxation review 4 (1), S. 104 - 117.

This Version is available at:

<http://hdl.handle.net/11159/4459>

Kontakt/Contact

ZBW – Leibniz-Informationszentrum Wirtschaft/Leibniz Information Centre for Economics
Düsternbrooker Weg 120
24105 Kiel (Germany)
E-Mail: [rights\[at\]zbw.eu](mailto:rights[at]zbw.eu)
<https://www.zbw.eu/econis-archiv/>

Standard-Nutzungsbedingungen:

Dieses Dokument darf zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden. Sie dürfen dieses Dokument nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, aufführen, vertreiben oder anderweitig nutzen. Sofern für das Dokument eine Open-Content-Lizenz verwendet wurde, so gelten abweichend von diesen Nutzungsbedingungen die in der Lizenz gewährten Nutzungsrechte.

<https://zbw.eu/econis-archiv/termsfuse>

Terms of use:

This document may be saved and copied for your personal and scholarly purposes. You are not to copy it for public or commercial purposes, to exhibit the document in public, to perform, distribute or otherwise use the document in public. If the document is made available under a Creative Commons Licence you may exercise further usage rights as specified in the licence.

ISSN: 2635-2966 (Print), ISSN: 2635-2958 (Online).

©International Accounting and Taxation Research Group, Faculty of Management Sciences, University of Benin, Benin City, Nigeria.

Available online at <http://www.atreview.org>

Original Research Article

Non-Performing Loans (NPL) and Loans and Advances of Commercial Banks in Nigeria

ISEDU, Mustafa & ERHABOR, Osaruyi Jeffrey

Department of Banking and Finance, Faculty of Management Sciences, Ambrose Alli University, Ekpoma

Correspondence e-mail: isedumus@yahoo.com

Received: 19/03/2020

Accepted: 31/03/2020

Abstract

The main aim of this paper is to examine the impact of Non-Performing Loans (NPLs) on banks' loan and advance in Nigeria. Data were collected while the econometric statistical technique was used for preceding the co-integration analysis, we carried out unit root test using the Phillip – Peron approach, to determine the stationary of the data. From the analysis, the variable Non-performing loans (NPL) is positively signed, indicating that there is a direct relationship between Non-performing loans and banks' loan and advances. The variable capital adequacy and bank loan and advances are positively signed, indicating that there is a direct relationship between bank loan and capital adequacy. The coefficient of the variable capital adequacy is statistically significant. The result shows that the Gross Domestic Product has a positive sign which, implies that the relationship between banks' loan advances and Gross Domestic Product is positive and statistically significant. The variable Interest Rate has a negative sign which, means that the relationship between Interest Rate and Bank Loan and Advances is inverse, and it is statistically significant. From the result, the variable inflation rate and Bank Loan and Advances are negatively related. The result further shows that total deposit is positive, but has an insignificant statistical effect on bank loan and advances of commercial banks. The paper, therefore, recommended that there is a need for government to promulgate appropriate financial policies that will have a positive impact on non-performing loans, and consequently improve the financial sector. The paper also suggested that the Central Bank should fashion more effective oversight measures to address weak corporate governance, poor risk management and fraud that in the past played a significant role in non-performing loans and bank failures in Nigeria and other returns.

Keywords: Non-Performing Loans, Banks' loan advances, Unit roots, Cointegration

JEL Classification Codes: G210

This is an open access article that uses a funding model which does not charge readers or their institutions for access and is distributed under the terms of the Creative Commons Attribution License. (<http://creativecommons.org/licenses/by/4.0>) and the Budapest Open Access Initiative (<http://www.budapestopenaccessinitiative.org/read>), which permit unrestricted use, distribution, and reproduction in any medium, provided the original work is properly credited.

© 2020.The authors. This work is licensed under the Creative Commons Attribution 4.0 International License

Citation:Isedu, M. & Erhabor, O.J. (2020).Non-Performing loans (NPL) and loans and advancesof commercial banks in Nigeria. *Accounting and Taxation Review*, 4(1): 104-117.

1. INTRODUCTION

The financial system of a nation plays a vital role in the growth and development of the economy particularly by serving as the fulcrum for financial intermediation between the surplus unit and the deficit unit of the economy, the fulcrum of the role of intermediation rest on the banking sector of the economy. As financial intermediaries, banks main function is to receive deposits from the surplus unit and grant. Thus, while deposits are the main funding sources for banks assets, banking loans take up the most significant proportion in their asset portfolio; with expansion in asset size, banks will expand the volume of their loans to re-balance the asset portfolio. Under a normal situation, the loan growth rate is expected to move in the same direction as the growth of deposit. Still,these loans are risk output; there is always a foreseen (ex ant) risk of default in repayment or non-repayment,resulting in Non-Performing Loans (NPLs). High Non-Performing Loans (NPLs) can lead to a credit crunch, which can cause a bank to start avoiding further lending despite high demand from borrowers thus creating problem off growth both to the banks and the economy.

Cucinelli (2015) explains that the role of banks in the credit creation process is considered very relevant in sustaining

financial stability. Still,the strong financial foundation is often shaken by impaired loans referred to as Non-Performing Loans (NPLs). He argued that the success of a business enterprise, especially banks is to add value to shareholders' wealth by remaining in profit at the end of every financial year. Still, where defaults impair this profit or surplus in loan repayments, the degree of success becomes a challenge such that the health of the banks becomes doubtful. According to Barr and Siems (2004), to keep an appropriate coverage ratio and hence protect itself (that is, banks) against the risk associated to mounting NPLs, a bank must maintain loan Loss Provisions (LLPs). Still, high provisions can depress the bank's Return on Asset (ROA) and, if they are large or prolonged enough, may cause profits to become negative, depleting the capital base. Non-Performing Loans (NPLs) are necessary because they reflect the credit quality of the loan portfolio of banksas demonstrated by the 2007-2008 global financial crisis in the USA, that later spread across the world which led to the recognition that the volume of Non-Performing Loans (NPLs) is related to banks' failures (Panetta, 2013). As a result, the relationship between NPLs and the quality of bank assets has increasingly gained prominence in recent years in view

of its impact on the overall condition of the banking sector.

Given this backdrop, the present paper aimed to examine the relationship between Non-Performing Loans (NPLs) and growth in banks' loans and advances by commercial banks in Nigeria, more precisely, it will assess whether NPLs has an impact on loans and advances of the banks.

Statement of the Problem

One of the significant causes of bank failure in Nigeria is the continuous deterioration of the quality of assets held by the banks. The 2012 end of year reports of the Nigeria Deposit Insurance Corporation (NDIC, 2012), pointed out that in every ₦1.00 loan granted by Nigeria's deposit money banks (DMBs) only ₦0.57 kobo was capable of being recovered. The injuries suffered as a result of losses prompted by bad debts have lessened the capital position of many of the bank.

Increases in NPLs continued to be recorded till present date (2019), but interestingly, banks have consistently recorded a huge profit after tax on a yearly basis as shown in their statement of profit or loss and other comprehensive income. The question now is: does NPLs influence banks' loan advances, and more than other banks' loan advances related factors in Nigeria? Consequently, the paper seeks to examine the impact of non-performing loans on banks' loans and advances

Many studies have been carried out on Non-Performing Loans (NPLs) and banks' lending behaviour; while the outcome of some of these studies revealed a positive relationship (Salas & Saurina, 2012; Beck et al., 2015; Djiogap & Ngomsi, 2012; Amador et al., 2013; Kashif et al., 2016), others

revealed a negative relationship (Awdeh, 2017; Shingjergj & Hyseni, 2015; Rabab'ah, 2015. and Ivanovic, 2016). The outcome of this current contribution will, to a reasonable extent, help to reconcile this inconsistency in the existing literature.

To the best of our knowledge, there is no study yet that has examined the impact of Non-Performing Loans (NPLs) on banks' loan and advances of commercial banks within Nigeria's context. Therefore, this paper tries to fill the gap in the literature by providing a comprehensive study.

The paper is divided into five sections. Following the introduction, section three focuses on the research methodology. Section four presents the estimation results and discussion of findings, and section five focuses on the conclusion and policy and recommendations.

2. LITERATURE REVIEW

Conceptual Framework

The concept of non-performing loans (NPLs) has been expressed by different authors in the literature, and the idea differs from country to country. A loan maybe considered non-performing in one country and may not be regarded as such in another country. However, opinions in some cases do match. In the opinion of Gonzales (2015), non-performing loans or credit risk encapsulates the potential loss in the event of credit deterioration or default of a borrower. Similarly, according to Basel Committee on Banking Supervision (2001), a loan is considered as defaults when a bank declares that a borrower (that is, debtor) cannot meet his or her obligation and repay the loan. Thus, a sound credit appraisal of loans is critical to the creditor.

Caprio and Klinegebiel (2010), described NPLs as loans that do not generate income over a sustained period of at least three months. In the same vein, Alton and Hazen (2011), stress that NPLs are loans that are 90 days or more, past due and are no longer accruing interest, while the European Central Bank (2014), refers to it as loans that borrowers fail to pay the agreed instalments or interest after 90 days; they are also called bad debts.

The International Monetary Fund's (IMF) on financial soundness (2015), defined non-performing loans as loans whose payments of interest and principal are past-due by 90 days or more, or interest payments equal to 90 days or more on any payment of the bank credit, have been capitalised, refinanced, or delayed by agreement, or payments are less than 90 days overdue. Still, there are other good reasons – such as a debtor filing for bankruptcy – to doubt that payments will be made in full.

In Nigerian banking regulation, NPLs have been defined as a loan whose credit quality has deteriorated, and the full collection of principal and interest as per the contractual repayment terms of the loan and advances are in question (CBN, 2015). NPLs are loans that are outstanding both in its principal and interest payments for an extended period, disagreeing to the terms and conditions under the loan contract. As noted by Gonzales (2015), any loan facility that is not current in terms of repayment both in principal and interest conflicting with the terms of the loan or agreement is NPL. Thus, the amount of non-performing loans measures the quality of banks' assets (Tomak, 2013).

Theoretical Review

The relationship between non-performing loans (NPLs) and banks' loan advances rest on two theories. These are:

The Information Asymmetry Theory

This theory was first applied by Akerlof (1970). The theory state that it may be complex to differentiate between good and bad borrowers, as this may lead to adverse selection and moral hazard problems. In line with the theory, Cottarelli et al. (2005), show the role of loan growth in bank risk-taking and such resulting in bank failure. The theory also relates to contagious withdrawals when depositors are imperfectly informed about the type of stocks hitting the banks, and about interbank exposures.

The Theory of Adverse Selection

Propounded by Akerlof (1970) and later expanded by Stiglitz et al. (1976), the adverse selection theory described the situation where the probability of loan default increase with rising interest rate and the quality of borrowers worsens as the cost of borrowing increases Messai and Jouini, (2013). The theory is founded on the assumption that banks are not certain in selecting credit-worthy borrowers from a pool of loan seekers with different credit risk exposures ex-ante. Thus, financial intermediaries are more likely to lend to high-risk borrowers who are not concerned about the harsh lending conditions and are prone to loan defaults. Vogiazas and Nokolaidou (2011), argued that information sharing reduces adverse selection problems by enhancing information on loan applications.

Empirical Literature

This study examines the inter-temporal relationship between Non-Performing Loans

(NPLs) and banks' loan advances and asks whether the trend of credit risk (NPLs) has any impact on banks' loan advances.

Awdeh (2017), in his study: the determinants of credit growth in Lebanon, shows that a high degree of bank's risk would lay more substantial pressure on credit activities and eventually lead to a stressful situation. This result also relates to Hernanda and Villanueva. (2014) .published findings which highlighted that for banks' loan and advances to expand further, the banks should minimise toxic/bad loans as the highly critical source of credit risk (NPLs).

Accornero, Alessandri, Carpinelli, and Sorrentino (2017),argued on the basis of Italian borrower-level data, that only unexpected increases in NPLs and higher provisioning can reduce the supply of loan growth to the extent that NPLs build up are associated with weak fundamentals of the population of borrowers (that is, negative loan demand shock) and weak bank capitalisation it is claimed to have no additional effect on loan growth.

Similarly, Tomak (2013),studied the determination of bank loan advances, using a sample of Turkish banks and finds a significant relationship between non-performing loans (NPLs) and banks' loan advances in State-owned banks, but that NPLs shows a negative impact on the growth of total loans.

Furthermore, Berger and Udell (2014)., investigated the link between bank lending and macroeconomic uncertainty using annual and quarterly U.S bank-level data. The outcome of their findings revealed that in the presence of greater macroeconomic uncertainty, banks collectively become

more conservative, and this concerted action will lead to a narrowing of the cross-sectional distribution of banks' loan-to-asset (LTA) ratios.

Aiyar et al., (2016), in his study, argued that NPLs consume capital, reduces banks' ability to advances loans, and in a similar study by the Bank of International Settlement (2011),opined that risk-based capital ratio plays a significant role in restricting bank's risk lending in the face of the high-risk level of NPLs. That higher capital ratio gives banks more incentives to increase loan advances than low capital ratios when banks have less credit risk (NPLs) in their portfolios.

The existence of a relationship between loans advances and NPLs in a VAR framework has been variously supported. Klein (2013), using a large panel of countries, has shown that those countries which actively reduced their NPLs managed to achieve stronger macroeconomic performance than countries which did not reduce their NPLs. Siddique (2018), investigated the problem of increasing NPLs and its negative impacts on the banks' loan advances and the economy. The author assesses the level of NPLs in the Bangladesh banking sector. The result obtained revealed that NPLs as a percentage of total loans in Bangladesh in 2007 was 37.8%, that this level rose to 41.1% in 2009 and 2017 it dropped to 13.23%.

Gonzalez (2015), investigated 48 listed and unlisted Italian commercial banks during the 2007-2013 period and focused on how the NPL ratio and Loan Loss Provision ratio (LLPr) affected the new lending and supply of credit. His findings were that during the credit crunch period, the Italian banks, due to the increased credit risk and the

deteriorated quality of the credit portfolio stopped providing access loans. He concluded that loan advances by banks reduced because of the fear of credit risk during financial crises, while the GDP growth rate shows a positive impact on bank lending behaviour.

Hernando and Vikanueva (2014) used Spanish data on the banking industry level to assess the impact of current and anticipated changes in bank capital on loan growth. The outcome of their study revealed that an increase in the NPLs ratio is a suitable indicator for expected falls in bank capital but not instantaneous falls, due to peculiarities in the Spanish bank regulations linked to the system of dynamic provisioning. The instrument variable regression reveals a negative impact of the change in NPLs on loan growth. In a related study, Accornero, Alessandri, Carpinelli, and Sorrentino (2017), the study found that the impact of NPLs stock on loan growth vanishes as soon as borrowers' characteristics are adequately taken into account using time-borrower fixed effects. Their findings imply that the stock of NPLs has no effect on banks' loan advances that extend beyond losses connected to this stock that has already taken over and are already captured in the bank's capital.

In concurrence to the above, Panetta (2013), finds that the main obstacle to the growth of loans is the deterioration of the credit risk (NPLs) caused by the prolonged recession. From the same findings, the study revealed that in the first quarter of 2013, the annual rate of input non-performing loans rose to 28% of total credit, and 45% for business loans. The study also revealed a positive relationship between non-performing loans and credit reduction by banks on their lending behaviour.

3. METHODOLOGY

The data were obtained from the published financial reports of the various commercial banks in Nigeria as well as the statistical bulletin and annual reports (various years) of the Central Bank of Nigeria.

The population of the study is Nigeria's banking sector. As at December 31st 2018, this was made up of eighteen (18) deposit money banks (DMBs) with the exclusion of the Islamic banks (CBN, 2018); DMBs also constitute our sample size. While the period of coverage is ten years (that is, 2009 to 2018).

The model of the study is derived from the aggregate production function specified by Romer (1986, 1994) and Lucas (1998), which produces a new modified <<AK>>growth model from the neo-classical Cobb-Douglas production function. The new model with endogenous framework is specified as:

$$Q = \alpha K^\beta L^\Phi R^\eta \text{ ----- eq. 1}$$

Where:

- Q = growth,
- K = capital,
- L = labor, and
- R = knowledge/innovation.

η , β , Φ are growth parameters and α is the efficiency parameter.

As cited in the empirical literature, banks' loan advances are determined by internal and external variables. The internal variables or bank-specific factors are bank size, total deposit, capital adequacy ratio and non-performing loans. The external variables are factors reflecting the economic environment and development in addition to the monetary policies, in this regard are macroeconomic variables. These variables are GDP, inflation rate and bank lending

rate. Following the works of Aiyar et al., (2016), the model (equation 1) can be calibrated, by injecting the adopted variables into equation two the model will yield a normalized equation stated as:

$$BLAs = F(NPLs + Car + GDP + INTr + INFr + TD) \text{ -----eq.2}$$

For equation 2 is transform to linear form as:

$$BLAs_{it} = \beta_0 + \beta_1 \ln NPLS_{it} + \beta_2 \ln CAR_{it} + \beta_3 \ln GDP_{it} + \beta_4 \ln INTr_{it} + \beta_5 \ln INFr_{it} + \beta_6 \ln TD_{it} + \mu_{it}$$

Where:

- BLAs = banks' loan advances,
- NPLs = non-performing loans,
- CAR = capital adequacy ratio,
- GDP = gross domestic product,
- INTr/BLr = interest rate (bank lending rate),
- INFr = inflation rate,
- TD = total deposit.
- β_0 = constant value,
- β_1, \dots, β_7 = are coefficients, and
- u = error term.

The theoretical apriori expectations of the parameters are as follows:

$\beta_1 < 0, \beta_2 < 0, \beta_3 > 0, \beta_4 < 0, \beta_5 > 0, \beta_6 > 0$; all the endogenous variables in the model are expected to be significant in the long-run.

To estimate the long-run relationship between BLAs and the NPLs using the endogenous variables adopted, the empirical analysis was done in two parts. First, we define the order of interpretation in the series and explore the long-run relationship between the variables by using unit root test and co-integration test respectively; second, we conduct long-run and causal relationship between BLAs and NPLs in the context of the endogenous framework in a Vector error correlation model (VECM).

Unit Root Test

To test for unit root; we assume that:

$$\varphi_p(B) = (1-B)\varphi_{p-1}(B) \text{ ----- eq. 3}$$

Where;

$\varphi_{p-1}(B) = 1 - \varphi B - \dots - \varphi_{p-1} B^{p-1}$ has unit-roots lying outside the unit circle.

$$\varphi_{p-1}(B)(1-B)Y_t = \theta_0 + a_t$$

$$\varphi_{p-1}(B)\Delta Y_t = \theta_0 + a_t$$

$$\Delta Y_t - \sum_{j=1}^{p-1} \varphi_j \Delta Y_{t-j} = \theta_0 + a_t \text{ ----- eq. 4}$$

Hence, testing for a unit root is equivalent to testing $\varphi = 1$ in the following model;

$$Y_t = \varphi Y_{t-1} + \sum_{j=1}^{p-1} \varphi_j \Delta Y_{t-j} + \theta_0 + a_t \text{ ----- eq. 5}$$

$$\text{Or; } \Delta Y_t = (\varphi - 1)Y_{t-1} + \sum_{j=1}^{p-1} \varphi_j \Delta Y_{t-j} + \theta_0 + a_t ;$$

$$(\varphi - 1) = \delta \text{ ----- eq. 6}$$

The method of data analysis is the Vector Error Correction Model. The regression equation form for VECM is as follows:

$$\Delta Y_t = \alpha_1 + p_1 e_{t-1} + \sum_{i=0}^n \beta_i \Delta Y_{t-1} + \sum_{i=0}^n \delta_i \Delta X_{t-i} + \sum_{i=0}^n \gamma_i Z_{t-i} \text{ ----- eq.7}$$

$$\Delta X_t = \alpha_2 + p_2 e_{t-1} + \sum_{i=0}^n \beta_i \Delta Y_{t-1} + \sum_{i=0}^n \delta_i \Delta X_{t-i} + \sum_{i=0}^n \gamma_i Z_{t-i} \text{ ----- eq. 8}$$

In VECM, the co-integration rank shows the number of co-integrating vectors. A negative and significant coefficient of the ECM (i.e. e_{t-1} in the above equation) indicates that any short-term fluctuations between the independent variables and the dependent variables will give rise to a stable long-run relationship between the variables. VECM is to evaluate the short-run properties of the co-integrated series.

4 ESTIMATION RESULTS AND DISCUSSION OF FINDINGS

Unit Root Test

Table1: Unit Root Test Using Phillip Perron

Variables	PP Calculated	Critical values	Order of Integration
NPL	-9.945927*	1% = -4.2712 5% = -3.3562	1(1)
CA	-5.242203*	1% = -4.2505 5% = -3.5468	1(1)
GDP	-5.164786*	1% = -4.2605 5% = -3.5514	1(1)
INT	-7.000346*	1% = -4.2605 5% = -3.5514	1(1)
INF	-8.723636*	1% = -4.2605 5% = -3.4428	1(1)
TD	-5.424406*	1% = -4.2605 5% = -3.5514	1(1)

Source: Extracted from E-views 7.1 Computer prints out.

*Significant at 1 percent, **significant at 5 percent,

The results of the unit root test based on Phillip Perron’s (1988) technique are shown in table 1. Choice of Phillip Perron unit root technique was based on better results output. Table .1 shows that the null

hypothesis of the variables has a unit root against the alternative and cannot be rejected. This indicates that all the variables were stationary at first difference (order one (1) as indicated in table 1.

Table 2. Co-integrating Test

Cointegration with unrestricted intercepts and no trends in the VAR				
Cointegration LR Test Based on Maximal Eigenvalue of the Stochastic Matrix				

32 observations from 1980 to 2018. Order of VAR = 3.				
List of variables included in the cointegrating vector:				
NPLCAGDPINTINF TD				
List of eigenvalues in descending order:				
.87656 .90812 .72642 .36507 .018880				

Null	Alternative	Statistic	95% Critical Value	90% Critical Value
r = 0	r = 1	127.7845	34.7300	32.0200
r <= 1	r = 2	54.6266	27.5300	25.8800
r <= 2	r = 3	31.5452	21.1200	19.0200
r <= 3	r = 4	14.8818	14.7700	13.8700
r <= 4	r = 5	.6351	8.0800	6.7200

An examination of Table 2 reports the co-integration test results for the model. Maximal Eigen value statistics tests shows 4 co-integrating equation at the 5% significant level. To determine co-integrating equation, we compare the Maximal Eigen value statistics to the critical value. When statistics of the Maximal Eigen value is

greater than the critical value, means there is co-integrating equation. For example at rank 1 the Maximal Eigen value statistics is 127.7845 greater than the critical value 34.7300. The Maximal Eigen value statistics value test indicates 4 co-integrating equation at 5% level of significance.

Interpretation of Regression Result

Table 4.3: Regression result

Dependent Variable: BLA
 Method: Least Squares
 Date: 01/12/20 Time: 04:44
 Sample: 1980 2018
 Included observations: 38

Variable	Coefficient	Std. Error	t-Statistic	Prob.
NPL	4.19E-06	3.82E-06	1.097471	0.3225
CA	104.0453	17.43768	5.966693	0.0001
GDP	0.000538	0.00011	4.910489	0.0044
INT	-3.965087	0.858472	-4.61878	0.0057
INF	-0.053624	0.235232	-0.22796	0.8287
TD	106.0246	12.265436	4.855583	0.0602
C	71.73542	12.72932	5.635447	0.0024

R-squared	0.908952	Mean dependent var	14.72000
Adjusted R-squared	0.836114	S.D. dependent var	5.150146
S.E. of regression	2.084925	Akaike info criterion	4.614196
Sum squared resid	21.73457	Schwarz criterion	4.765489
Log likelihood	-18.07098	Hannan-Quinn criter.	4.448228
F-statistic	12.47905	Durbin-Watson stat	2.079065
Prob(F-statistic)	0.000005		

From the regression results in table 3, the variable Non-performing loan (NPLs) is positively signed, indicating that there is a direct relationship between Non-performing loans and banks' loan advances. This is not consistent with the study a priori expectation, which says that an increase in Non-performing loans (NPL) will lead to a

decrease in banks' loan advances. The coefficient is 4.19E-06, this implies that a unit increase in Non-performing loans (NPL) will increase banks' loan advances by 4%. The coefficient of the variable Non-performing loans (NPL) is not statistically significant at 5% level of significance. This is consistent with the results of previous

studies (Hernardo et al 2016; Vikinuera, 2014; and Panetta, 2013)

The capital adequacy ratio and Bank Loan advances as variables are positively signed, indicating that there is a direct relationship between Bank Loan advances and capital adequacy ratio. This is consistent with the study Apriori. The coefficient is **0.0046657**; this implies that a unit increase in capital adequacy ratio, will increase bank Loan and Advances by **0.0046657**. The coefficient of the variable CA is statistically significant, with a probability value of **.004**. This is in line with the a priori expectation of the study which state that an increase in CAR will increase bank Loans and Advances.

Gross Domestic Product (GDP) also has a positive sign which, implies that the relationship between banks' loan advances, (BLA) and Gross Domestic Product is positive. This is consistent with the theoretical expectation of the study, which says that an increase in Gross Domestic Product will lead to an increase in bank loan and advances. The value of the coefficient is positive, indicating that a unit increase in GDP will increase banks' loan advances (BLA) by 0.000538. The probability value is 0.0044, suggesting that it is statistically significant.

The variable Interest Rate (INT) has a negative sign which, implies that the relationship between Interest Rate and Bank Loan and Advances is inverse. This is consistent with the theoretical expectation of the study, which says that an increase in Interest Rate reduces Loan and Advances. The value of the coefficient is negative; indicating that a unit increase in Interest Rate will lead to -3.965087, decrease in Loan and Advances. The probability value

is 0.0057, suggesting that it is statistically significant.

From the result, the variable inflation rate (INF) and Bank Loan and Advances are negatively related. A unit change in inflation will reduce Bank Loan and Advances by to -0.053624; this is consistent with the a priori expectation of the study, which says that increase inflation will reduce Bank Loan and Advances.

The result further shows that total deposit is positive, but has a statistically insignificant effect on bank loan and advances of commercial banks. A unit increase in total deposit will increase bank loan and advances by 106.0246 units. The result is in line with the apriori expectation as we expect total deposit to be positively related to bank loan and advances. The probability value is 0.0602, indicating that it is not statistically significant.

The preliminary results show that The adjusted R^2 is **0.908952** showed that 91 per cent of the systematic changes in the bank loans and advances were explained by the explanatory variables of the model while the remaining **9%** is unexplained by the model due to error term and other variables not included in the model.

The adjusted coefficient of determination R^2 is 0.836114 implies the **84%** of the explanatory variable is explained by changes in the explained variables when the coefficient of determination is adjusted for the degree of freedom. The implication is that **16%** is unexplained due to the error term and other variables not included in the model. The high F-statistic value, coupled with its significant probability values indicated the overall significance of the model. Durbin Watson Statistic

of 2.079065 shows that there is absence autocorrelation.

5. Summary, Conclusion and Recommendations

The main aim of this paper is to empirically examine the impact of Non-Performing Loans (NPLs) on banks' loan advances in Nigeria. From the result analysis, the variable Non-performing loans (NPL) is positively signed, indicating that there is a direct relationship between Non-performing loans and banks' loan advances. This is not consistent with the study apriori expectation, which says that an increase in Non-performing loans (NPL) will lead to a decrease in banks' loan advances. Other variables that were also considered: capital adequacy, Gross Domestic Product and total bank loans, all are positively signed, indicating that there is a direct relationship with Bank Loan. Their coefficients are statistically significant; but the variable: Total bank deposit, has a statistically insignificant effect. These results are in line with the a priori expectation of the study.

However, the variables of interest and inflationary rates have a negative sign which, implies that the relationship between Interest Rate and inflation Rate and Bank Loan and Advances are inverse. This is consistent with the theoretical expectation of the study.

Conclusively, from the analysis, the variable Non-performing loans (NPL) does not impact negatively on banks' loans and advances; that NPLs is positively signed, indicating a direct relationship between Non-performing loans and banks' loan advances, meaning that an increase in NPLs will increase the level of banks' loans and advances. This is probably because of the enormous profit or loss and other

comprehensive income account being declared annually by the banks and the high capital adequacy ratios thus, were able to contain the adverse effects of NPLs in their portfolios. This is inconsistent with the study apriori expectation, which says that an increase in Non-performing loans (NPL) will lead to a decrease in banks' loan advances.

From the preceding discussions, the study recommended there is a need for government to fashion appropriate financial policies that will have a positive impact on non-performing loans, and consequently improve the financial sector. The regulatory authorities need to address several issues by putting in place measures aimed at tackling excessive risk-taking at the source. By so doing, prudential regulation and supervision of individual institutions could go a long way towards dealing with the origin of systemic disturbance to reduce the incidence of bank failures. The paper suggests that the Central Bank should fashion more effective oversight measures to address weak corporate governance, poor risk management and fraud that in the past played a significant role in non-performing loans and bank failures in Nigeria and other returns.

REFERENCES

- Accornero, M., Alessandri, P., Carpinelli, L., & Sorrentino, A.M. (2017). Non-performing loans and the supply of bank credit: evidence from Italy. *Banca d' Italia Working Paper*, 374. 312-389.
- Aiyar, S., Bergthaler, W., Garrido, J.M., Ilyina, A.I., Jobst, A., Kang, C., Kortun, D., Liu, Y., Monaghan, D., & Moretti, M. (2016). A strategy for resolving Europe's problem loans. *IMF Staff Discussion Note*, 15/19, 319-386.

- Aiyar, S., Calomiris, C.W., Hooley, J., Korniyenko, Y. & Wieladek, T. (2016). The international transmission of bank capital requirements: evidence from the UK. *Journal of Financial Economics*, 113(3), 368-382.
- Akerlof, G.A. (1970). The market for lemon: quality uncertainty and the market mechanism. *Quarterly Journal of Economic*, 84(3), 488-500.
- Alton, R.G., & Hazen, J.H. (2011). As economy flounders, do we see a rise in problem loans? *Federal Reserve Bank of St. Louis*, 34-67.
- Amador, J.S., Gomez-Gonzalez, J.E., & Pabon, A.M. (2013). Loans growth and banks' risk: new evidence. *Journal of Financial Markets and Portfolio Management*, 27(4). 365-379.
- Arrow, K. (1963). The theory of risk aversion: in essays in the theory of risk bearing. *New York, Markluam*. 90-120.
- Awdeh, A. (2017). The determinants of credit growth in Lebanon. *International Business Research*, 10(2) 9-19.
- Balgova, M., Nies, M., & Plekhanov, A. (2016). The economic impact of reducing non-performing loans. *European Bank for Reconstruction and Development Working Paper*, 193, 198-267.
- Barr, R.L.S., & Siems, T. (2004). Forecasting banking failure: a non-parametric frontier estimations approach. *Researches Economiques de Lovain*, 60. 417-429.
- Beck, R., Jakubik, P., & PiloIU, A. (2015). Non-performing loans: what matters in addition to the economic cycle. *European Central Bank Working Paper*, 1515. 231-296.
- Beck, R., Jakubik, P., & PiloIU, A. (2015). Key determinants of non-performing loans: new evidence from a global sample. *Open Economic Review*, 26(3). 525-550.
- Berger, A.N., & Udell, G.F. (2014). Did risk-based capital allocate bank credit and cause a credit crunch in the USA. *Journal of Money, Credit and Banking*, 26(3), 585-623.
- Bernanke, B.C., Lown, S., & Friedman, B.M. (2010). The credit crunch. *Brookings Papers on Economic Activity*, 19(2), 205-247.
- Berrospide, J.M., & Edge, R.M. (2010). The effects of bank capital on lending: what do we know, and what does it mean? *International Journal of Central Banking*, 6(4), 5-54.
- Bofondi, M. and Ropele, T. (2011). Macroeconomic determinants of bad loans: evidence from Italian banks. *Bank of Italy Occasional Paper Series*, 89. 167-243.
- Borio, C., Furfine, C., & Lowe, P. (2012). Assessing the risk of banking crises-revisited. *BIS Quarterly Review*, 29-46.
- Bridges, J., Gregory, D., Nielsen, M., Pezzini, S., Radin, A., & Spaltro, M. (2014). The impact of capital requirements on bank lending. *Bank of England Working Paper*, 486, 167-198.
- Bruno, E., Lacovielle, G., & Lazzini, A. (2015). On the possible tools for the prevention of non-performing loans: a case study of an Italian bank. *Journal of Corporate Ownership and Control*, 5(1), 7-19.
- Calem, P., & Rob, R. (2010). The impact of capital-based regulation on bank risk taking. *Journal of Financial Intermediation*, 8, 317-352.
- Caprio, G., and Klingebiel, O. (2010). Episode of systemic and borderline banking crisis: managing the real and fiscal effects of banking crises. *The World Bank, Washington, D.C.* 31-48.
- Cebenoyen, A.S., & Strahan, P.E. (2014). Risk management, capital structure and lending at banks. *Journal of Banking and Finance*, 28, 19-43.
- Cottarelli, C., Dell Ariccia, G., & Vladkova-Hollar, I. (2005). Early birds, late risers and sleeping beauties: bank credit growth to the

- private sector in Central and Easter Europe and in the Balkans. *Journal of Banking and Finance*, 29, 83-104.
- Cucinelli, D. (2015). The impact of non-performing loans on bank lending behavior: evidence from the Italian banking sector. *Eurasin Journal of Business and Economic*, 8(16), 59-71.
- Djiogap, C.F., & Ngomsi, A. (2012). Determinants of bank long-term lending behavior in the Central African Economic and Monetary Community (CEMAC). *Review of Economics and Finance*, 2(2), 107-114.
- Farhan, M., Sattor, A., Chaudhry, A.H., & Khalil, F. (2012). Economic determinants of non-performing loans: perceptions of Pakistani bankers. *European Journal of Business and Management*, 4(19), 87-100.
- Foos, D., Norden, L., & Weber, M. (2010). Loan growth and riskiness of bank. *Journal of Banking and Finance*, 34, 2929-2940.
- Furlong, F.T., & Keeley, M.C. (2009). Capital regulation and bank risk-taking: a note. *Journal of Banking and Finance*, 13, 883-891.
- Gonzalez, F. (2015). Bank regulation and risk taking incentives: an international comparison of bank risk. *Journal of Banking and Finance*, 29, 1153-1184.
- Harr, T., & Nielsen, M.J. (2005). The dynamic liquidation of banks' bad loans. *Journal of Corporate Ownership and Control*, 2(3), 79-87.
- Hernanda, I., & Villanueva, E. (2014). The recent slowdown in bank lending in Spain: are supply-side factors relevant? 5. 245-285.
- Hoggarth, G., Sorensen, S., & Zicchino, L. (2005). Stress tests of UK banks using a VAR approach. *Bank of England Working Paper*, 282, 59-96.
- Hou, Y., & Dickson, D. (2012). The non-performing loans: some bank-level evidence: in a paper presentation at *Research Conference on Safety and Efficiency of the Financial System*. 1-48.
- Ivanovic, M. (2016). Determinants of credit growth: the case of Montenegro. *Journal of Central Banking Theory and Practice*, 5(2), 101-118.
- Jimenez, G., & Saurina, I. (2005). Credit cycles, credit risk and prudential regulation. *International Journal of Central Banking*, 2(2), 5-98.
- Kashif, M., Iftikhar, S.F., & Iftikhar, K. (2016). Loan growth and bank solvency: evidence from the Pakistani banking sector. *Financial Innovation*, 2(22), 1-13.
- Keeton, W.R. (2006). Does faster loan growth lead to higher loan losses. *Economic Review*, 84(2), 57-75.
- Klein, N. (2013). Non-performing loans in CESEES: determinants and impact on macroeconomic performance. *International Monetary Funds' Working Paper*, 13/12, 56-79.
- Louzis, D.P., Vouldis, A.T., & Metaxas, V.L. (2012). Macroeconomic and banks-specific determinants of non-performing loans in Greece: a comparative study of mortgage, business and consumer loan portfolios. *Journal of Banking and Finance*, 36(4), 1012-1027.
- Lu, D., Shandre, M., Thangavelu, S., & Qing, H. (2015). The link between bank behavior and non-performing loans in China. *National University of Singapore, Department of Economic Working Paper*, 108, 36-78.
- Lu, D., Thangavelu, S.M., & Hu, O. (2015). Biased lending and non-performing loans in China's banking sector. *The Journal of Development Studies*, 41(6), 1071-1091.
- Messai, A.S., & Jouini, F. (2013). Micro and macro determinants of non-performing loans. *International Journal of Economic and Financial Issues*, 3(4), 852-860.

- NDIC (2011). The operating environment. *Annual Report and Statement of Account*. Abuja. 123-159.
- NDIC (2012). Bank shareholders' funds hit ₦2.37Trn. *Annual Reports and Statement of Accounts*. Abuja. 43-56.
- Panetta, F. (2013). Il credito e il finanziamento alle imprese federazione delle banche di credito cooperative Lazio umbria sardegna. *Intervento Del Vice Direttore Generale Della, Banca'Italia, Roma*.
- Rabab'ah, M. (2015). Factors affecting the bank credit: an empirical study on the Jordanian commercial banks. *International Journal of Economics and Finance*, 7(5). 166-178.
- Salas, V. & Saurina, J. (2002). Credit risk in two institutional regimes: Spanish commercial and savings bank. *Journal of Financial Services Research*, 22(3). 203-224.
- Shingjergji, A., & Hyseni, M. (2015). The impact of macroeconomic and banking factors on credit growth in the Albanian banking system. *European Journal of Economics and Business Studies*, 2(1). 113-120.
- Stiglitz, J.E., & Weiss, A. (1998). Credit rationing in markets with imperfect information. *American Economic Review*, 71(3), 393-410.
- Tomak, S. (2013). Determinants of commercial banks lending behavior: evidence from Turkey. *Asian Journal of Empirical Research*, 3(8), 933-943.
- Vogiazas, S.D., & Nokolaidou, E. (2011). Investigating the determinants of non-performing loans in the Romanian banking system: an empirical study with reference to the Greek crisis. *International Journal of Economic Research*, 241-297.