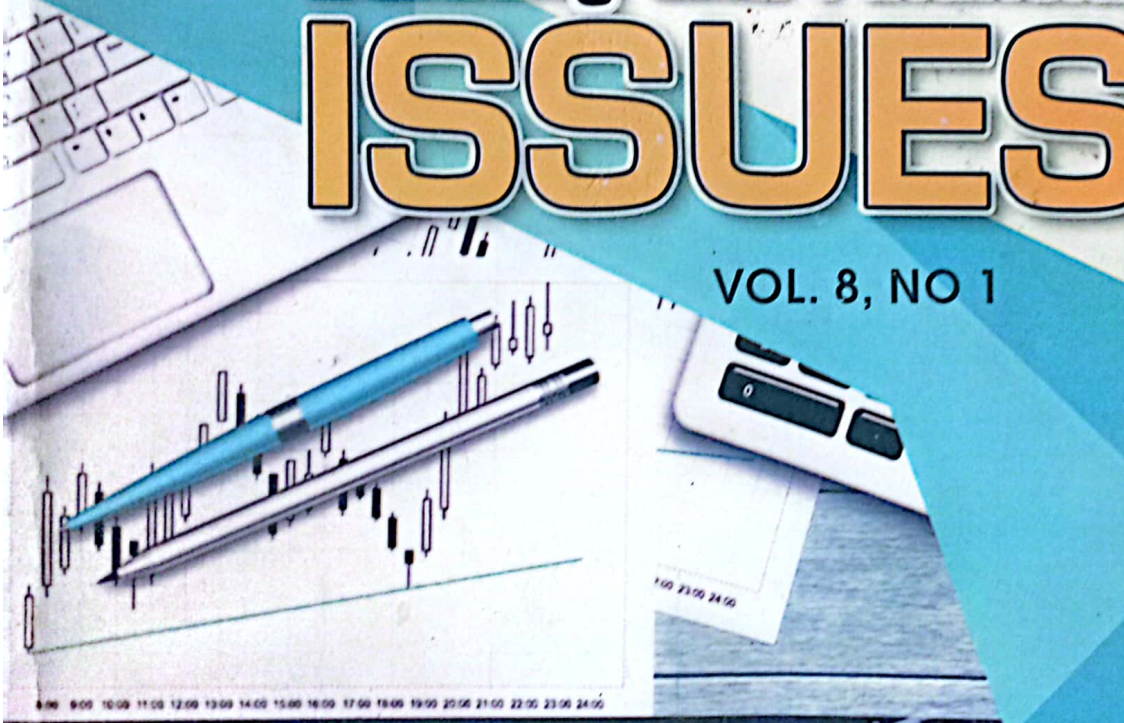
EKITI STATE UNIVERSITY

DEPARTMENT OF FINANCE

Nigerian Journal of Banking and Financial ISSUES

VOL. 8, NO 1





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The Nigerian Journa of Banking and Financial Issues (NJBFI) provides a unique forum for the articulation and dissemination of applied research by academics and professionals in the field of Banking and Finance or related disciplines. It is bi-annual journal published by the Department of Finance, Ekiti State University, Ado-Ekiti, Nigeria.

The Journal contains analysis of banking and financial issues relevant to the Nigeria economic experience and financial policies. Opinions expressed herein are those of the authors and not necessarily those of the Department of Finance.

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Subscription Rate: Nigeria:

Students	-	N1500.00
Others	-	N2000.00
Foreig	-	US $ 20

VOL. 8 NO.1 2019

ISSN 1119-8494

Printed in Nigeria by Eksu Printing Press
Ado-Ekiti
Tel: 09077612637 **OR** 08167935078

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BANK SPECIFIC DETERMINANTS OF NON-PERFORMING LOANS IN NIGERIAN COMMERCIAL BANKS

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Abstract

This study investigated the bank specific determinants of non-performing loans (NPLs) in the Nigerian commercial banks. The study employed ex-post factor research design and utilized a cross sectional time series data covering a period of eleven years (2006 to 2016). The study applied GMM technique based on a panel set from fifteen commercial banks in Nigeria. The findings from the whole sample estimation revealed a significant relationship between NPLs and bank specific factors of $NPLs_{t-1}$, loan to deposit ratio, banks size ratio, bank performance ratio (ROE), credit growth ratio as well as control factor of global financial crisis in Nigeria. Also, the sub-sampled estimation, showed that the effect of lag of NPLs, bank performance ratio (ROE), credit growth ratio and control factor of global financial crisis were significant across the various categories of commercial banks in Nigeria. The study hence, recommends among others that Central Bank of Nigeria (CBN) should come up with a monitoring mechanism or framework to guide against the policy of setting unattainable profit targets by commercial banks and also, that management of commercial banks in Nigeria should lay emphases on the magnitude of last period NPLs before granting new loans. In conclusion, the study ascertained that the effects of bank specific factors on NPLs varies across different categories of commercial banks in Nigeria.

Keywords: Commercial Banks; Bank-Specific Factors; Non-performing loans; GMM

Background of the Study

Banking institution as financial intermediaries play a crucial role in propelling economic growth through the mobilization of savings to finance productive economic sectors. Basically, the primary function of a bank is mobilizing deposits from surplus to deficit units in the form of credit to various sectors such as government, industry and agriculture. The main aim of every business is to generate profit and since this is also applicable to the banking sector, the banks give out loans and advances with the primary aim of making profits for their stakeholders. However, lending comes the risk of default where part or whole of the loan granted is not repaid as at when due. This risk is termed as credit risk.

In recent years, the Nigerian banking sector has witnessed deteriorating trend in the health of its loan portfolio. Mostly, one of the causes of bank failure in Nigeria before the consolidation exercise of 2005 was non-performing loans (Babalola, 2010). Though, some years after the consolidation of the banking sector, reports still indicated that some banks showed varying signs of NPLs (Sanusi, 2010). Specifically in 2014, banks that exceeded the regulatory limit of five (5) per cent for the ratio of bad loans to total loans rose from three (3) to eight (8) in 2015, with three (3) of the banks having above 10 per cent. As a result, five of the fifteen banks quoted on the Nigerian Stock Exchange (NSE) posted unfavorable profits (Daily Trust, 2016).

It is significant to appreciate the sensations and nature of non-performing loans (NPLs) which has many implications, as studies have shown that causes of NPLs usually occur as a result of the risky behavior of bank manager (Ahmad and Bashir, 2013). For instance, when they embark on cost efficiency measures by allocating little resources to monitor lending risk which may lead to bad loans. Also, the hazardous activities of banks when they mismanage and mismatch assets and liabilities due to extensive lending based on their access to excess term deposits. Similarly, the moral hazard behavior of banks with low capital allocating funds to low quality borrowers and

that of the "too-big-to-fail" banks' lending indiscriminately to clients based on their size. In addition, bank managers promise to their shareholders on the profitability of their lending and consequently adopting lenient credit policy to increase their current earnings (profit).

In consideration of the above stated problems, the researchers are interested in knowing the extent to which bank specific factors affect NPLs in the Nigerian commercial banks as well as whether these effects are the same across different categories of commercial banks in Nigeria. Therefore, the main objective of this study is to investigate the effect of bank specific determinants of non-performing loans (NPLs) in the Nigerian commercial banks. The specific objectives of the study are to: analyse the effect of bank-specific financial indicators on NPLs in the Nigerian deposit money banks; and examine the effect of bank specific financial indicators of NPLs across the categorized deposit money banks in Nigeria. The research hypotheses were stated as Ho_1: non-performing loans (NPLs) has no significant relationship with the specified banks specific determinants while Ho_2: bank specific determinants of non-performing loans (NPLs) are not significant across the categorized deposit money banks in Nigeria.

Therefore, this study will provide relevant information for various regulatory authorities such as the central bank of Nigeria (CBN) and Deposit Insurance Corporation (NDIC) in formulating their financial, economic and regulatory policies and other ongoing policies regarding financial institutions. It will also provide a directive input in developing regulatory standards regarding the lending policies of commercial banks in Nigeria. Thus, it will further provide an avenue for the management bodies to visualize the bank specific determinants of NPLs among different categories of Nigerian deposit money banks. Finally, for students and researchers, the study will provide information or literature on the topic and related banking research for study and further research.

Literature Review

This section is concerned with the systematic and explicit collection of documented views, ideas and empirical evidences of previous authors on the areas relating to the subject of this research.

Non-performing loans

As loans are the largest major source of income of banks, they are also very risky because of the high degree of default that may occur in the process. This is due to the fact that not all borrowers will repay their loan obligations as at when due. Some might arrange to repay at a later date or totally become bad (Johannes, 2015). The term "bad loans" as described by Basu (1998), can be used interchangeably with non-performing loans, impaired loans and credit risk. According to Berger and De Young, (1997) non-performing loans commonly occur in a situation when both principal and interest on loan are outstanding for a long time contrary to the terms and conditions contained in the loan contract agreement. Moreover, the Basel Committee on Banking Supervision, define credit risk as the potential that a bank's borrower or counterparty may fail to meet its obligations in accordance with agreed terms (Basel, 2006).

Theoretical Background

In an attempt to provide sound theoretical underpinning for the study, some theories were critically reviewed and adopted. These are: the moral hazard theory, adverse selection theory, and financial accelerator theory.

Moral Hazard Theory

According to Keeton and Morris (1987), banks with relatively low capital usually respond to moral hazard incentives by increasing the riskiness of their loan portfolio, which in turn results in higher non-performing loans on average in the future. Louzis, Vouldis and Metaxas (2011) also explained moral hazard from the perspective of too-big-to-fail banks represents another channel relating bank-specific features with non-performing loans. They explained that large banks may compromise and increase their leverage unnecessarily and in turn offer loans to lower quality borrowers. The also described the effects of deposit insurance as an incentive for banks to intentionally take on additional credit risk, possibly without limit.

Adverse Selection Theory

The adverse selection theory of credit markets originated with the paper by Stiglitz and Weiss (1981) as sighted in Ghosh and Mookherjee, (1999). The theory rests on two main

assumptions: that lenders cannot distinguish between borrowers of different degrees of risk, and that loan contracts are subject to limited liability. Adverse selection arises when borrowers have characteristics that are unobservable to the lender but affect the probability of being able to repay the loan (Karlan and Zinman, 2004). A lender can try to deal with this information problem directly, by trying to assess these characteristics, or indirectly by offering loan terms that only good risk will accept. The typical method for separating good risks from bad risks is to ask the borrower to pledge collateral.

Financial Accelerator Theory

The financial accelerator framework was developed by Bernanke and Gertler (1999), Kiyotaki and Moore (1997) and Bernanke *et al.* (1999). The theory provides the theoretical explanation of the role of banks in amplifying economic fluctuations. Most theoretical as well as empirical studies suggest that banks tend to behave pro-cyclically. As such, during expansionary periods, the financial profile of borrowers improves, asset prices rise and this euphoric situation paves the way for an increase in the demand for credit. This leads to an oversupply of credit, typically accompanied with relaxed lending standards, thus increasing credit risk. Once the downturn begins, triggered by some exogenous shock, borrowers' financial position deteriorates and as so does their debt-servicing capacity.

In view of the above, all the theories will be adopted for this study as they attempt to support the various factors responsible for non-performing loans in the Nigerian commercial banks.

Empirical Studies

The relationship between bank specific factors and NPLs has been widely studied in both developed and developing economies. Berger and DeYoung (1997) investigated the problem of NPLs in the United States' commercial banks from 1985 to 1994. They tested four hypotheses, namely the 'bad luck', 'bad management', 'skimping' behavior and 'moral hazard' hypotheses. The authors' findings supported all the hypotheses except the 'skimping' hypothesis through the use of a Granger Causality model and concluded that low cost efficiencies and thin capital ratios resulted in increasing NPLs. Also, Hyun and Zhang (2012) investigated the impact of macroeconomic and bank-specific factors of non-performing loans in US for two different sub-sample periods from 2002 to 2006 (pre financial crisis) and 2007 to 2010 (during financial crisis). The variables included both macroeconomic and bank specific variables. In the period of pre financial crisis, the study found that solvency ratio, ROE, lending rate, GDP growth rate and unemployment rate affected NPLs negatively. Though, bank size had no effect. During financial crisis also solvency ratio, GDP growth rate, unemployment rate and ROE all had a negative impact on NPLs while lending rate had no significant effect on NPLs.

Likewise, in the US context Ghosh (2015) studied the banking industry specific and regional economic parameters as the determinants of US banks stressed assets. The studies observed that greater capitalization, poor credit quality, liquidity risks, banking industry size and greater cost inefficiency positively impacted NPLs, whereas profits of the bank and economic parameters like real GDP, housing price index and real personal income lowered the bad assets of the banks. Although, Ghosh obtained a significant effect of bank size on NPLs, Hyun and Zhang (2012), reported a contrary view. Similarly, Saba *et al.* (2012) with the title "Determinants of Non-performing loans on US banking sector" also investigated the bank specific and macroeconomic variables of non-performing loans from 1985 to 2010 period using OLS regression model. They considered lending rate, total loans and Real GDP per capital as independent variables. The findings of the study revealed that real total loan had a positive significant effect while interest rate and GDP per capital had a negative significant relationship with NPLs.

In Czech Republic, Podpiera and Weill (2008) extended the work of Berger and De Young (1997) by applying dynamic panel estimator technique via the use of a Generalized Method of Moment (GMM) approach. They utilized data from Czech banks over the periods of 1994-2005 to study the validity of bad management and bad luck hypothesis. They found a strong support for bad management and partial support for bad luck hypothesis.

They thereby concluded that banking supervisory authorities should focus on the managerial performance and the cost efficiency in other to reduce NPLs and enhance the financial system and banks stability.

Adopting and modifying the Berger and DeYoung (1997) hypotheses, Salas and Saurina (2002) combined both macroeconomics and bank specific factor in the same model to study the determinants of NPLs. They applied panel data from Spanish banks (commercial) and savings over the period of 1985 to 1997. They found statistically insignificant correlation between NPLs and lagged efficiency, signifying no support for the bad management and skimping hypotheses. They further concluded an insignificant association. because of the opposite effect of bad management and skimping behavior. They also found positive impact of bad loans to lagged solvency, confirming the moral hazard hypothesis. Furthermore, they also studied the impact of bank size on the NPLs and found that larger size banks tend to have lower NPLs.

Also, Karim et al. (2010) researched the determinants of NPLs in Malaysia and Singapore between 1998 and 2007. However, different to the methodology of Berger and DeYoung (1997) which focused on Granger Causality and by Podiera and Weill (2008) which estimated a GMM model, Karim et al. (2010) applied a Tobit regression to assess the contributing factors to NPL. Also, as against using cost efficiency indicators like those used in other models, they derived a cost efficiency score index through the use of a stochastic cost frontier function. They found no major differences in cost efficiency between Malaysia and Singapore banks and decided that poor management of the banks added to the issue of bad loans. Similarly, Reddy (2011) estimated cost inefficiency using a stochastic frontier model and then employed the granger causality framework used by Berger and DeYoung (1997) hypotheses. Though, the commercial banks were sub-divided into three (3) categories, specifically public sector, foreign and private domestic. The analysis.showed the prevalence of the 'moral hazard' hypothesis and banks with low capitalization had lower cost efficiency. The results also submitted that there was no 'skimping' present in the commercial banking system in Indian. This is similar to the study of Karim et al. (2010).

Considering the effects of global financial crisis on non-performing loans, Rajha (2017) researched determinants of non-performing loans in the Jordanian banking sector through the period 2007 to 2012. The study used bank specific and macroeconomic factors to detect the determinants of NPLs of Jordanian banks using panel data regression. The results showed that amongst bank specific factors, the ratio of loans to total assets and the lagged of NPLs were the most significant factors that affected non-performing loans positively. The inflation rate, economic growth and macroeconomic factors were found to have negative significant effects on non-performing loans. However, contrary to international evidence the results showed that large banks were not necessarily more effective in screening loan customers when compared to their smaller counterparts and that global financial crisis lead to higher non-performing loans in Jordan.

In Ghana, Awuakwa-mensah and Boakye-adjei, (2015), studied the impact of non-performing loans (NPLs) in Ghana's banking industry. The study used panel regression model, and found that both bank-specific variables (i.e., previous year's NPL, bank size, net interest margin (NIM), and current year's loan growth) and macroeconomic variables (i.e., previous year's inflation, real GDP per capita growth and real effective exchange rate) significantly affected NPLs in the banking sector. The study introduced a sub sample to research the behavior of large banks from the original sample size. The sub-sample estimations showed that both bank specific (i.e., previous year's NPLs and current year's loan growth) and macroeconomic factors (i.e., real effective exchange rate, real GDP per capita growth, and previous year's inflation rate) affected NPLs of large banks. Also, in Ghana, Garr (2013) applied panel regression model to examine the risk of credit in Ghana banking industry and found out that credit risk is influenced by the management efficiency, per capita domestic product, government borrowing and the financial sector development.

In Nigeria, El-Maude, Abdul-Rehman and Ibrahim, (2017) examined the relationship between bank specific and macroeconomic determinant of non-performing loans in Nigerian deposit money banks over the period of 5 years (2010 to 2014). The study on a cross sectional basis examined 10 of the 15 banks on the Nigerian Stock Exchange (NSE). Data was generated from the Nigerian Stock Exchange fact book, Bank of Nigeria (CBN) and the bank's annual reports and accounts. The data were analyzed using descriptive statistics, correlation coefficient and multiple regressions. The findings revealed a positive significant relationship between non-performing loans and Loan to deposit and Bank size.

Finally, in Nigeria, Bebeji (2013) applied both historical and descriptive approaches, in his paper, "consolidation and asset quality of banks in Nigeria using t-test to test the research hypotheses based on the secondary data collected from 10 sampled banks over the period 2002 through 2008. The study found that consolidation had positive relationship with non-performing loans.

Gaps Identified in the Empirical Studies

The study has been researched by many authors but very scanty in Nigeria and all those who conducted this research work applied an aggregated data of banks. This implies that they conducted the research using a common coefficient by pooling all the banks together as one. This study added to the body of knowledge by looking at the determinants of non-performing loans in the Nigerian Deposit Money banks from the micro aspect. Hence, this study adopted the method used in Ghana by Awuakwa-mensah and Boakye-adjei, (2015) to categorize money deposit banks in Nigeria. That is, categorizing the banks into Large, Medium and Small Banks based on their total assets using a panel regression analysis. Furthermore, unlike previous studies in Nigeria this study applied the hypotheses proposed by Berger and DeYoung (1997), to explain the bank specific determinants of NPLs within the context of bank financial indicators.

Research Methodology

This section presents the crux of the research work. It deals with the method through which data is collected, analyzed and interpreted.

Research Design, Population and Sample Size

This study adopted ex-post factor research (after the fact) design which implied that the events observed have taken place already. Hence, the study utilized a cross sectional time series research design method (panel analysis) through a secondary data that covers the periods of eleven years (2006 to 2016). This was obtained from the annual reports and accounts of the sampled commercial banks in Nigeria. The population of the study consisted of all 25 deposit money banks in Nigeria as at 31st Dec, 2016 (NDIC, 2016). However, because of the need for availability, reliability and accuracy of data, only commercial banks quoted on the Nigerian Stocks Exchange as at 31st December, 2016 were considered for the study. Thus, by strictly adhering to this criterion a total of (15) banks emerged as the sample size representing about 60% of the total population of commercial banks in Nigeria as at 31st December, 2016. The qualified banks were thereafter divided into large, medium and small banks based on their published assets as at 31st Dec, 2016 (See appendix 1).

The large banks were the banks with total assets size ranging between #2.5 trillion and #6.2 trillion which amounted to 71% of the total assets of the selected banks. The banks were: Eco Bank Plc, First Bank Ltd, Zenith Bank PLc, Access Bank Plc, Guaranty Trust Bank Plc, and United Bank of Africa Plc, while medium banks were banks with assets size ranging between #1.05 trillion and #1.6 trillion which amount to 23% of the total assets of the selected banks. They were Diamond Bank Plc, Fidelity Bank Plc, Skye Bank Plc, First City Monument Bank Plc, Union Bank Plc, and Stanbic Ibtc Bank Plc. The remaining three banks were ranked as small banks with assets size ranging between #421 Billion and #830 Billion which amount to 6% of the total assets of the selected banks namely Sterling Bank Plc, Unity Bank Plc and Wema Bank Plc (See appendix 1).

Empirical Model

To examine the bank specific financial indicators of non-performing loans in Nigerian Deposit Money Banks, the study also intends to adopt the model of Berger and DeYoung (1997) as modified by Ahmad and Bashir

(2013). This is a panel data analysis which covers the period between 2006 and 2016 in Nigeria. The study however modified the model of Ahmad and Bashir (2013) by expressing the model in a dynamic form with the inclusion of lag of NPLs and also introducing a control variable "global financial crisis (GFC)". The modification is aimed at conducting an in-depth and extensive study based on the gap identified in literature.

Where: NPL= F (NPLt-1, CIR, LDR, CAR, BSR, BPR, CGR, DR, GFC)..... (3.1)

The Dynamic form of equation (3.1) above is represented as follows:

$NPL_{i,t} = \beta_0 + \beta_1 NPL_{i,t-1} + \beta_2 CIR_{it} + \beta_3 LDR_{it} + \beta_4 CAR_{it} + \beta_5 BSR_{it} + \beta_6 BP_{it} + \beta_7 CGR_{it} + \beta_8 DR_{it} + \beta_9 GFC_{it} + U_{it}$ .....(3.2)

Where:

NPL_{it}: is the non-performing loans of bank "i" at time "t" (dependent variable)

$NPL_{i,t-1}$: is the non-performing loans of bank "i" at time "t-1" (lag of the dependent variable)

CIR_{it}: is the cost inefficiency ratio of bank "i" at time "t".

LDR_{it}: is the loan to deposit ratio of bank "i" at time "t".

CAR_{it}: is capital adequacy ratio of bank "i" at time "t".

BSR_{it}: is the bank size "i" at time "t".

BPR_{it}: is bank performance is proxy with return on equity of bank "i" at time "t".

CGR_{it}: is credit growth of bank "i" at time "t".

DR_{it}: is deposit rate of bank "i" at time "t".

GFC_{it}: is the dummy control variable representing the effects of global financial crisis on bank "i" at time "t" Which is {0: time period "t" before and after the crisis and 1: time period "t" during the crisis from 2007 to 2009}

μ: error term controlling for unit-specific residual in the model

β_0: intercept of the regression line

"i" is the cross section units (selected banks)

"t" is the time period (2006 to 2016)

β (1 to 8) are the coefficients to be estimated and their a priori expectations are as described below see table 3.1.

Table 3.1: Bank Specific Factors, Definitions, Supporting Literatures

Variables	Definition	NPLs	Supporting Literature
Lag of Non-performing loans	Previous year NPL= NPL_{t-1}	Positive	Awuakwa-mensah and Boakyeadjei, (2015)
Cost Inefficiency Ratio	$IE_{it} = \frac{\text{operating Expenses}_{it}}{\text{Operating Income}_{it}}$	Positive	Berger and De Young, (1997) Podpiera (2008); Louzis et al., (2010)
		Negative	Berger and DeYoung, (1997); Louzis *et al.*, (2010)
Loans to Deposit Ratio	$LDR_{it} = \frac{\text{Total Loan}_{it}}{\text{Total Deposit}_{it}}$	Positive	Fofack, (2005); Ferreira, (2008) Louzis et al., (2010) and Festie et al., (2011)
Capital Adequacy Ratio	$CAR_{it} = \frac{\text{Shareholder's fund}_{it}}{\text{Total Assets}_{it}}$	Negative	Gunsel N. (2007)
Bank Size Ratio	BS_{it} = Lin (Total Asset)	Positive	Faical (2014)
	$BS_{it} = \frac{\text{Loan}_i}{\text{Total loans of all banks}_t}$	Negative	Festi *et al.*, (2011) Louzis *et al.*, (2010) Ahmad and Bashir (2013)
Bank Performance Ratio	$ROE_{it} = \frac{\text{NetProfits}_{it}}{\text{Total Equity}_{it}}$	Positive	Rajan, (1994); Louzis et al., (2010)
Credit growth Ratio	$GG^h_{it} = \frac{loans^t_{it} - loans^h_{it} 1}{Loans^h_{it} - 1}$	Positive	Rajan, (1994); Babihuga (2007); Louzis et al., (2010) and Festie et al., (2011)
Deposit Rate	$DR_{it} = \frac{\textit{Interest expenses}_{it}}{\text{Total deposits}_{it}}$	Positive	Berger et al., (20040; Uhde and Heimeshoff, (2009); Ahmad and Bashir (2013)
Global Financial Crisis	Dummy Variable of "0" before and after the crisis and "1" during the crisis.	Positive	Khaled (2017)

Source: *Authors research work, (2018)*

Data Analytical Techniques

This section explains the various methods adopted in the model analysis. The first aspect discussed the pre-estimation tests conducted by the study to establish the nature and characteristics of the variables adopted for the study. This is followed by the panel estimation techniques adopted on the sample and sub-sample aspect of the study. The pre estimations analysis conducted are panel unit root test on the variables in order to ascertain their stationarity and preclude the possibility of spurious regression. The Fisher-type based on Dickey Fuller test for individual unit root process is the panel unit root test adopted for this study, considering that banks are heterogeneous. The test assumes that unit root can differ across the cross sections in the model.

This study applied Arellano and Bond (1991) generalized method of moments (GMM) estimator that takes into account the lags of the dependent variable as explanatory variable. In order to ensure robustness of the results of this study, the validity tests of the instruments used in the GMM estimation was carried out (a scenario whereby the instruments are correlated with the error process makes the validity of the instruments questionable). One of the tests is Arellano and Bond's (1991) specification test for lack of second-order serial correlation in the first-difference residuals. The second specification test is the Sargan's test of over-identifying restrictions. Arellano, and Bond, (1991) suggests two methods to estimate System GMM models. These are one-step and two-step System GMM methods. However, this study adopted one-step method which assumed that the error terms are independent and homoskedastic between units.

Data Analysis and Presentation

This section presents the result of the data used in the study. The data covers the periods 2006 to 2016, a period of 11 years. The period will be considered for the bank specific factors responsible for NPLs in Nigeria using panel data. The period is chosen due to the high incidences of non-performing loans after the recapitalization and restructuring exercise of Nigerian banks in 2005 (Bebeji, 2013).

Unit Root Test

The result of the unit root test presented in Table 4.1 was the Fisher-type unit root test based on augmented Dickey-Fuller tests. It reports four test statistics namely inverse chi-squared P, inverse normal z, inverse logit L* and modified inverse chi-squared Pm. The table shows that all the four test statistics reject the null of the series having unit roots for variables such as cost inefficiency ratio, capital adequacy ratio, bank size ratio, bank performance ratio (return on equity), credit growth ratio, deposit rate, and non-performing loans. The only exception was in the cases of loans to deposit ratio and log of non-performing loans where all test statistics failed to reject the null. However, all test statistics reject the null hypothesis at first difference for the two variables. The results in table 4.1 therefore indicate that the variables used in the model are at least stationary at first difference stationary.

Table 4.1: Fisher-type Unit Root Test

	(1)	(2)	(3)	(4)
Variables	**P**	**Z**	**L***	**Pm**
CIR	59.6136***	-1.9384**	-2.3572**	3.8231***
LDR	36.0042	-0.4485	-0.3687	0.7751
CAR	50.6011**	-1.7730**	-1.6406*	2.6596***
BS	137.4029***	-6.0543***	-8.6491***	13.8657***
ROE	82.2377***	-5.0552***	-5.3580***	6.7439***
CG	179.0305***	-8.3479***	-12.4853***	19.2398***
DR	74.7337***	-5.0063***	-5.0871***	-5.0871***
NPL	33.0064	-1.0386	-0.9932	0.3681

Source: *Authors Computation, 2018.*

Regression Analysis

This section presents the analysis of the Panel One-Step System Generalized Method of Moments (GMM) regression results to achieve the objectives of this research work. Column 1, 2, 3 and 4 in Table 4.2 present the results of the determinants of non-performing loans in

Nigeria, for all banks, large banks, medium banks, and small banks respectively. Each of these models includes time dummies (although not presented in the body of the work) which is premised on the assumption that errors are only correlated within individuals, not across them. For this reason, it is almost always wise to include time dummies in order to remove universal time-related shocks from the errors (Roodman, 2009). In each of the models, impact of variables such as lag of NPLs, cost inefficiency ratio, loans to deposit ratio, capital adequacy ratio, bank size ratio, bank performance ratio (return on equity), credit growth ratio, and deposit ratio and global financial crisis were examined on non-performing loans.

The Sargan test of over identifying restrictions conducted for the four models shows chi-squared values of approximately 2.97, 15.68, 18.12 and 4.13, and p-values of 0.999, 0.547, 0.381, and 0.999 respectively. The underlying null hypothesis was that over identifying restrictions were valid. The results showed that, there was not enough evidence to reject the null hypothesis in the four models as each of the p-values were greater than the conventional significance levels (i.e. 0.01, 0.05, 0.1). If this was rejected, it implied that the model was over-identified and it does not fit into the GMM framework (Roodman, 2009). Not rejecting the null hypothesis in the four models implied that the set of instruments used were valid.

The Arellano and Bond test for autocorrelation was applied to the differenced residuals and has a null hypothesis of no autocorrelation. The first and second order test was considered but only the second other was reported. Arellano and Bond (1991) contend that instruments are valid only in the absence of no second order serial correlation in the residuals of AR (2) although negative first-order serial correlation is expected in the residuals of AR (1) by default (Roodman, 2009).The AR (2) result showed that there was not enough evidence to reject the null hypothesis of no second order autocorrelation for the four models. The goodness of fit of the model was measured with the Wald Chi-squared and the result showed that the four models fit the data well since there was enough evidence to reject its null hypothesis of joint insignificance of all independent variables.

Table 4.2: System Generalized Method of Moments Regression Estimates for Bank Specific Determinants of Non-Performing Loans

VARIABLES	(1) All Sample	p-value	(2) Large Banks	p-value	(3) Medium Banks	p-value	(4) Small Banks	p-value
NPL(-1)	0.593***	0.000	0.847***	0.000	0.389***	0.000	0.984***	0.000
	(0.089)		(0.090)		(0.085)		(0.040)	
CIR	-0.003	0.876	-0.006	0.842	0.278	0.294	-0.75***	0.000
	(0.022)		(0.031)		(0.265)		(0.209)	
LDR	0.001**	0.015	0.079**	0.045	-0.005	0.669	-0.483	0.622
	(0.001)		(0.043)		(0.013)		(0.980)	
CAR	0.005	0.424	-1.454**	0.036	1.377	0.659	3.457***	0.000
	(0.006)		(0.820)		(3.121)		(0.569)	
BS	0.307	0.070	1.841**	0.040	0.055	0.378	0.355	0.737
	(0.169)		(1.341)		(0.063)		(1.056)	
ROE	0.308***	0.000	2.908**	0.032	-0.21***	0.005	-0.38***	0.002
	(0.058)		(1.353)		(0.075)		(0.126)	
CG	0.013**	0.027	0.079**	0.029	0.006**	0.018	0.562***	0.005
	(0.144)		(0.476)		(0.151)		(0.201)	
DR	0.058	0.280	5.10**	0.051	0.106	0.119	7.98***	0.010
	(0.054)		(10.51)		(0.068)		(4.104)	
GFC	0.610***	0.000	0.722***	0.001	0.577**	0.035	-0.228**	0.022
	(0.131)		(0.223)		(0.273)		(0.356)	
Constant	-198.8***	0.000	18.730	0.890	-188.1**	0.049	195.34***	0.017
	(50.84)		(135.9)		(95.41)		(81.85)	
Diagnostics								

Observations	149	60	59	30
Wald Chi²	188.05***	18.59***	28.49***	123.15***
p-value	0.000	0.002	0.000	0.000
Sargan Test	2.9664	15.676	18.123	4.1294
p-value	0.9999	0.5469	0.3811	0.9994
AR test (2)	-0.8046	0.0284	1.5639	-1.001
p-value	0.4211	0.9774	0.1178	0.3167

Source: Authors Computation, (2018). *Robust standard errors in parentheses while *** implies p<0.01 and ** means p<0.05*

Discussion of Findings

The findings from table 4.2 revealed that the effect of last year non-performing loans (NPLt-1) has a significant (59.3%) coefficient at 1 per cent level of significance on the current non-performing loans of all the commercial banks when pooled together in Nigeria. This is the highest bank specific coefficient reported in this study when all the commercial banks are pooled together. In fact, the effect is significant on all the categories of large (84.7%), medium (38.9%) and small (98.4%) the commercial banks in Nigeria. This implied that commercial banks with high NPLs in the previous year were likely to have high NPLs in the current year. The implication was that NPLs ratio was likely to increase when it has increased in the previous year irrespective of the various categories of commercial banks in Nigeria. This finding can be linked to moral hazard theory which emphasized on the inability of banks to follow strictly their lending policies to recover bad loans and prevent new once especially serial loan defaulters that takes loans from several banks. The finding is in line with the study of Awuakwa-mensah and Boakye-adjei, (2015) but contrary to the findings of Louzis et al., (2012) who reported that lagged of NPLs have a negative significant effect on NPLs as a result of bad loans portfolio write-offs decisions by the management of banks. Although, the study showed significant effects of NPLt-1 across all the commercial banks in Nigeria, however, coefficient of NPLt-1 of large and small commercial banks revealed greater effects on the current NPLs compared to medium commercial banks in Nigeria.

This study also revealed that return on equity (ROE) proxy for the performance of the banks has a significant positive effect (31%) coefficient at 1 percent level of significance on non-performing loans of all the commercial banks when pooled together in Nigeria. However, considering the various categories of commercial banks, the study revealed that return on equity has a positive effect on non-performing loans of large commercial banks in Nigeria and this was consistent with the study of Makri, Tsagames and Bellas (2014). The positive effect of ROE on non-performing loans of large commercial banks in Nigeria implies that, managers of these banks usually adopt lenient credit policy to increase their current earnings (profit) so as to convince their shareholders on the profitability of their lending. Consequently, they select wrong clients (adverse selection) due to their inability to perform the expected delegated monitoring responsibilities and credit risk management processes. However, the current good performance of management can lead to future growth in NPLs. This is what Berger and DeYoung (1997); Ahmad and Bashir (2013) explained as bad management II hypothesis which states that bank's past performance is expected to have a positive relationship with NPLs.

On the other hand, the results showed that medium and small commercial banks reported a negative relationship between NPLs and ROE. This is an indication of bank manager's dedication to conducting proper appraisal on loan requests which means they are less constrained to engage in risky activities of granting risky loans. Hence, they are not under pressure to satisfy their shareholders in terms of (ROE) dividend which is a function of the current year profit. The negative effect of (ROE) on non-performing loans of medium and small commercial banks in Nigeria was consistent with the study of Kasana and Naveed (2016), Kjoseuski and Petkovski (2017), Hyun and Zhang (2012) and Louses et al (2010).

Furthermore, loan to deposit ratio has a negligible positive significant effect (0.1%) coefficient at 5% percent level of significance on non-performing loans of all the commercial banks when pooled together in Nigeria.

Similarly, the result revealed a positive significant effect (7.9%) coefficient at 5% level of significance on the large commercial banks in Nigeria. This finding is consistent with the study of El-mauda, Abdul-Rehman and Ibrahim (2017). The ratio is an indication of how large commercial banks are ready to give out loans to clients. Thus, it represents their preference to advance credit to clients. That is why Olokoyo (2011) hypothesized that deposit is the main determinants of loans in the Nigerian commercial banks. The positive association of large commercial banks' loans to deposit ratio with NPLs is a measure of moral hazard as it implies the mismatching or mismanagement of assets and liabilities due to extensive lending by the large banks when they have excess term deposits. Hence, Berger and DeYoung (1997); Fofack, (2005); and Ferreira, (2008) hypothesized that "high loan to deposit (LTD) ratio of banks will lead to an increase in problem loans". However, the study revealed that loan to deposit ratio does not have a significant effect on non-performing loans of medium and small commercial banks in Nigeria. This could be due to the minimal level of deposit they handle compared to the large commercial banks in Nigeria.

In addition, the result revealed that capital adequacy ratio has no significant effect on the entire commercial banks when pooled together in Nigeria. However, for large and small commercial banks the result revealed a significant impact of capital adequacy ratio on NPLs but with different level of relationships. The result revealed a negative (145.4%) coefficient relationship between capital adequacy ratio of large commercial banks and non-performing loans while a positive (345.7%) coefficient relationship was recorded for small commercial banks in Nigeria. This implied that large commercial banks were well capitalized and were able to resist the levels of credit risk. This also implied that large commercial banks were less motivated to the incentive of taking riskier loan activities perhaps due to CBN regulation on capital adequacy in Nigeria. In fact, Langrin (2001) and Molina (2002) argued that higher capital adequacy ratio indicates that there was sufficient capital to absorb unexpected shocks hence, longer survival time for the bank. The result of this finding was consistent with the study of Hyun and Zhang (2012); and Makri *et al.* (2014); Boudriga *et al.*(2009); Shingjerji (2013); Swamy (2012); Kasana and Naveed (2016); and Djiogap and Ngomsi (2012) who justified that when a bank is well capitalized it can easily diversify and be able to withstand credit risk shock.

On the other hand, it was revealed that capital adequacy ratio has a positive relationship on non-performing loans of the small commercial banks. The implication of this was that small commercial banks in Nigeria having low capital tends to increase earnings through increase in loan portfolio riskiness by allocating funds to low quality borrowers, resulting in the future growth in NPLs. This practice of banks comes under moral hazard, because small banks know that they were thinly capitalized but still increases the riskiness of loan portfolio. According to moral hazard hypothesis of Berger and DeYoung (1997) "low financial capital leads to the growth in future NPLs". This finding was consistent with the study of Salas and Saurina (2002); Makri, Tsagames and Bellas (2014); Boudriga et al (2009); and Ghosh (2015). However, the result revealed no significant relationship between capital adequacy and NPLs for medium scaled commercial banks in Nigeria.

The study also revealed that, deposit rate has no significant effect on the entire commercial banks when pooled together in Nigeria. Nevertheless, the result revealed a positive significant relationship between deposit rate and non-performing loans on larger and small commercial banks in Nigeria. Empirical literature has made it clear that banks usually embark on rigorous competition to attract funds from clients by charging competitive deposit rates. However, when a bank offers higher deposits rates to have greater share of deposits they usually end up charging lower interest rate spreads, while banks charging lower deposits rates will attract smaller share of deposits but higher interest rate spread. That is why Berger *et.al.* (2004) and Selma and Journi, (2013) stated that when banks attract new customers by offering higher competitive rate, there is high possibility of loan default because they end-up charging high interest rate on loan. Therefore, the increase in deposit rates which is positively correlated with growth of NPLs in larger and smaller commercial banks in Nigeria is supported by the findings of Erding and Abazi, (2014) and Selma and Journi, (2013).

The findings from the large and small commercial banks in Nigeria is also consistent with the results obtained by Ahmad and Bashir (2013) deposit rate hypothesis in which they concluded that deposit rate is a determinant of lending rate and growth in deposit rates has positive impact on the NPLs. Also, the study is similar to the study of Selma and Jeuimi (2013) and Louses et al (2010) but contrary to the studies of Hyun and Zhang (2012) and Saba et al (2012). However, the result revealed no significant relationship between deposit rate and NPLs for medium scaled commercial banks in Nigeria.

Furthermore, the study revealed that cost inefficiency ratio has no significant effect on the entire commercial banks NPLs when pooled together in Nigeria. However, cost inefficiency ratio has a significant negative relationship on non-performing loans for smaller commercial banks while the report was not significant for the selected large and medium commercial banks in Nigeria. The bank's cost inefficiency ratio is a measure of the bank's overhead (operational expenses) as a percent of its operating income. The negative cost inefficiency ratio sign is in line with the "skimping" hypothesis proposed by Berger and DeYoung (1997) that suggested a possible negative relationship between high cost efficiency and NPLs. In particular, this suggest that high cost inefficiency may reflect the deliberate allocation of little resources to monitor lending risks by the small commercial banks in Nigeria and therefore may result in higher NPLs in the future. The negative relationship between cost efficiency ratio and non-performing loans for small commercial banks in Nigeria is consistent with the study of Kasana and Naveed (2016), Karim et al (2010), Mashheuranbheda (2015), Gair (2012) and Asamoah and Adu (2016). This is however contrary to the "bad luck," hypothesis that explained the cost banks incurred to address the issue of NPL as a result of unfavorable macroeconomic conditions Williams (2004); Podpiera and Weil (2008); and Louzis, Vouldis and Metaxas (2011) or Ghosh (2015) that concluded that poor management on the part of the banks is responsible for NPLs.

It was revealed that credit growth ratio has a significant effect (1.3%) coefficient at 5% level of significance on the entire commercial banks' NPLs when pooled together in Nigeria. Similarly, credit growth is an important factor influencing non-performing loans of large, medium and small commercial banks in Nigeria. According to Rajan, (1994) banks usually adopt liberal credit policy during the time of economic boom and adopt rigid policy during economic recession. Moreover, the pro-cyclicality and high economic growth is usually responsible for the increase in demand for credit as the balance sheet value of household and firms increase during the time making it easy for banks to overvalue them and lend credit. However, a sudden slowdown or decline in the economic growth will lead to growth in NPLs as a result of the borrower's inability to repay their loans obligations. This situation can be explained in Nigeria with the high lending of all the commercial banks to the oil sector before the crash in international oil price in 2015 which led to huge NPLs in many commercial banks in Nigeria. Also, before the global financial crisis of 2007 to 2009 the level of credit growth of commercial banks in Nigeria was reportedly high as there were no perceived risks in the economy.

However, during the crisis most banks cut down their lending activities as they focused more on loan recovery strategies. This crisis among other issues led to the establishment of Asset Management Corporation of Nigeria (AMCON) in 2011 to buy toxic credit assets from banks. Thus, credit growth in boom tends to results in growth of NPLs in depression. This is supported by the pro-cyclical credit policy hypothesis of Ahmad and Bashir, (2013) that stated a positive relationship between credit growth and problem loans which implies that credit growth will results in the growth of future NPLs. This study also revealed that the effect of credit growth on NPLs is high on small commercial bank (56%) compared to large (7.9%) and medium (0.6%) scale commercial banks and this might be further attributed to the liberal credit policy of small banks to attract and retain old and new customers that might prefer to deal with the big and medium scale commercial banks in Nigeria. Generally credit growth effect on NPLs on all the commercial banks in Nigeria was however, not consistent with the study of Boudriga *et al.*, (2009).

Additionally, bank size has a positive insignificant effect on non-performing loans of all the commercial banks when pooled together in Nigeria. However, the result revealed a positive significant effect on the NPLs of large commercial banks. This suggests that as bank size increases there is the high tendency for large banks to expand their credit base which might expose them to credit risk. This positive relationship between bank size and NPLs is what Ahmad and Bashir (2013) referred to as "too-big-to-fail" hypothesis. This is similar to the findings of Ghosh (2015) and Kasana and Naveed (2016). The result is however, not supported by the studies of Salas and Saurian, (2002); El-mauda, Abdul-rehman and Ibrahim (2017); and Thi Minth Hue (2015) who reported a negative relationship between bank size and NPLs which implied that the size of larger banks is an advantage to have better access to additional financing, dealing with liquidity problems and diversification activities. The result however, revealed no significant relationship between bank size and NPLs for medium and small scaled commercial banks in Nigeria.

Furthermore, the study also revealed that the control variable "global financial crisis" was statistically significant with maximum (61%) coefficient at 5 per cent level of significance in influencing non-performing loans when all the commercial banks are pooled together. It was further revealed that global financial crisis has a positive effect on non-performing loans of all categories of commercial banks. This means that the effects of global financial crisis of 2007 to 2009 lead to major economic slowdown in Nigeria and it affected the commercial banks borrowers' ability to fulfill their loan obligations and thus lead to higher NPLs across the banks. The effect of global financial on all the commercial banks was expected due to the contagion macro-economic nature of the crisis on Nigerian economy. The effect of global financial crisis on NPLs of banks in Nigeria is consistent with the findings of Khaled, (2017). Nonetheless, the coefficient of large banks (72.2%), medium banks (57.7%) and small (22.8%) sized banks respectively explained the magnitude of the crisis on banks NPLs. Hence, the effect was prominent on large and medium commercial banks than the small commercial banks which could be due to their size.

From the above analysis the first null hypothesis which stated that "there is no significant functional relationship between Non-performing loans (NPLs) and banks specific determinants; one year lag of NPL (NPL_{t-1}), loan to deposit ratio, bank performance ratio (ROE), credit growth ratio and global financial crisis in the Nigerian commercial banks" should be rejected while the null hypotheses no significant functional relationship between non-performing loans (NPLs) and banks specific determinants; of cost inefficiency ratio, bank deposit rate, bank size and capital adequacy ratio should be accepted. This therefore, implied that banks specific determinants of one year lag of NPL (NPL_{t-1}), loan to deposit ratio, bank performance ratio (ROE), credit growth ratio and global financial crisis are the causes of NPLs in the Nigerian commercial banks when the banks are pooled together.

Table 4.3 provided a snap shot summary of the GMM dynamic regression model results for the first hypotheses that stated no significant relationships between the bank specific financial indicators and NPLs in the Nigerian commercial banks. The findings showed that the Null hypotheses Ho_{1acfgi} were all rejected and their alternative hypotheses were accepted while the Null hypotheses of Ho_{1bdeh}, were accepted and their alternative hypotheses rejected.

Table 4.3: Findings on Hypotheses Ho_{1a} to Ho_{1i}

Hypotheses	Variables	Findings	Decision
Ho_{1a}	There is no significant relationship between Non-performing loans (NPLs) and last year NPLs in the Nigerian banking industry.	**Significant**	**Reject**
Ho_{1b}	There is no significant relationship between Non-performing loans (NPLs) and cost inefficiency ratio in the Nigerian banking industry.	**Not Significant**	**Accept**
Ho_{1c}	There is no significant relationship between Non-performing loans (NPLs) and loan to deposit ratio in the Nigerian banking industry.	**Significant**	**Reject**
Ho_{1d}	There is no significant relationship between Non-performing loans (NPLs) and capital adequacy ratio in the Nigerian banking industry.	**Not Significant**	**Accept**
Ho_{1e}	There is no significant relationship between Non-performing loans (NPLs) and banks size ratio, in the Nigerian banking industry.	**Not Significant**	**Accept**
Ho_{1f}	There is no significant relationship between Non-performing loans (NPLs) and bank performance ratio (ROE) in the Nigerian banking industry.	**Significant**	**Reject**
Ho_{1g}	There is no significant relationship between Non-performing loans (NPLs) and credit growth ratio in the Nigerian banking industry.	**Significant**	**Reject**
Ho_{1h}	There is no significant relationship between Non-performing loans (NPLs) and bank deposit rate in the Nigerian banking industry.	**Not Significant**	**Accept**
Ho_{1i}	There is no significant relationship between Non-performing loans (NPLs) and global financial crisis in the Nigerian banking industry.	**Significant**	**Reject**

Source: *Researchers Design, (2018). Note: Significance level is at 1% and 5%*

Table 4.4 also provided a snap shot summary of the GMM dynamic regression model results for the second hypotheses which stated that the bank specific determinants of NPLs were not significant across the categories of banks in Nigeria. The findings showed that the Null hypotheses Ho_{2afgi} were rejected and their alternative hypotheses accepted while the Null hypotheses of Ho_{2bcdeh}, were accepted and the alternative hypothesis rejected.

Table 4.3: Findings on Hypotheses Ho_{2a} to Ho_{2i}

Hypotheses	Variables	Findings: Large Banks	Medium Banks	Small Banks	Decision
Ho_{2a}	The effect of lag of NPLs is not significant across the categories of banks in Nigeria	Sig	Sig	Sig	Reject
Ho_{2b}	The effect of cost inefficiency ratio is not significant across the categories of banks in Nigeria	Not Sig	Not Sig	Sig	Accept
Ho_{2c}	The effect of loan to deposit ratio is not significant across the categories of banks in Nigeria	Sig	Not Sig	Not Sig	Accept
Ho_{2d}	The effect of capital adequacy ratio is not significant across the categories of banks in Nigeria	Sig	Not Sig	Sig	Accept
Ho_{2e}	The effect of banks size ratio is not significant across the categories of banks in Nigeria	Sig	Not Sig	Not Sig	Accept
Ho_{2f}	The effect of bank performance ratio (ROE) is not significant across the categories of banks in Nigeria	Sig	Sig	Sig	Reject
Ho_{2g}	The effect of credit growth ratio is not significant across the categories of banks in Nigeria	Sig	Sig	Sig	Reject
Ho_{2h}	The effect of bank deposit ratio is not significant across the categories of banks in Nigeria	Sig	Not Sig	Sig	Accept
Ho_{2i}	The effects global financial crisis is not significant across the categories of banks in Nigeria	Sig	Sig	Sig	Reject

Source: Researchers Design, (2018). Note: Sig = Significance level is at 1% and 5%

Conclusion

Based on the findings of this study, it was concluded that bank specific determinants of one year lag of NPL (NPL_{t-1}), loan to deposit ratio, bank performance ratio (ROE), credit growth ratio and the control dummy variable of global financial crisis are the causes of NPLs in the Nigerian commercial banks when pooled together. In addition, the study examined the effects of the variables across the banks and observed that bank specific determinants of one year lag of NPL (NPL_{t-1}), bank performance ratio (ROE), credit growth ratio and global financial crisis are significant across the various categories of commercial banks in Nigeria. However, variables such as capital adequacy ratio and bank deposit ratio were significant on large and small commercial banks in Nigeria. Also, loan to deposit ratio and bank size ratio were only significant on large commercial banks while cost inefficiency ratio only affected small commercial banks based on the categorizations.

In conclusion, this study established that bank specific factors, which are associated with the activities of bank managers are responsible for non-performing loans in the Nigerian commercial banks. Moreover, the effect of these factors varies across different categories of commercial banks in Nigeria.

Recommendations

Based on the conclusion above, the study recommends the following:

i) The study discovered that high loan to deposit ratio often leads to an increase in non-performing loans among large banks. Therefore, management of large banks in Nigeria should always ensure that the ratio between total loans and total deposits of their banks are kept at minimum through effective assets and liability management and proper

appraisal of loan applications. Also, CBN should employ special directives aimed at controlling indiscriminate granting of loans by the large banks in Nigeria.

ii) Also that large banks should not rely on their size as a basis for granting large volume of loan requests which is associated with the assumption or syndrome of too big to fail. Therefore, regular investigation on credit policy compliance and adequate measures to monitor loans should be put in place by the banks' management. These actions will ultimately reduce the volume of non-performing loans of large commercial banks in Nigeria.

iii) The regulatory authority (CBN) should come up with a monitoring mechanism or framework for all categories of banks to check and guide against the policy of unattainable profit targets of commercial banks in Nigeria. Similarly, management of commercial banks in Nigeria should put in place a structure that can generate accurate information relating to riskiness level of their loan portfolio and future performance of the economy before lending to high risky projects and businesses.

iv) The study revealed that deposit rate of large and small commercial banks in Nigeria are associated with growth in NPLs. This suggested that NPLs of large and small commercial banks in Nigeria can be controlled if the management of these banks could adopt new marketing strategies to attract deposits from bank customer rather than the promise of high deposit rate which can influence high interest rate been paid on loans and consequently growth in NPLs. In the interim, management of these banks can reduce the level of NPLs caused by high interest rate by adopting credit policy which will only lend to potential borrowers who have good credit history to pay high interest rate.

v) This study also shown that non-performing loans of all commercial banks in Nigeria was highly dependent on its immediate past history. Therefore, CBN and management of all commercial banks in Nigeria should put into consideration the causes of last period NPLs before granting new loans by putting in place modalities to checkmate any form of contagion effects of NPLs from the last period.

vi) There is an evidence from the study that small commercial banks cost inefficiency in Nigeria may serve as leading indicator for future problem loans which implies that CBN should focus on small banks' cost reduction and management strategies especially in the management and monitoring of loans in other to detect banks with potential problem loans.

vii) CBN should lay emphasis on the capital adequacy ratio of commercial banks in Nigeria especially large and small commercial banks having severe credit risk exposures in order to prevent possible bank crisis and financial instability.

viii) The study showed a positive significant relationship between credit growth ratio and NPLs of all categories of commercial banks in Nigeria. Hence, CBN should continually monitor the credit growth ratio of all commercial banks especially during the time of economic boom. This will enable the regulatory authority to regularly advise banks to be cautious in their lending processes and to follow appropriate bank lending policy.

ix) Finally, management of all categories of banks in Nigeria should remain observant and come up with various mitigating strategies to manage any form of contagion risk that might arise from future global financial crisis.

Future Research

For further studies, the effects of bank specific variables on NPLs can be considered based on individual bank and also on banks' loan portfolios in Nigeria. This is expected to provide an in-depth knowledge on the causes of NPLs with specific focus on loan type and individual bank in Nigeria. Also, further investigations are needed to provide better understand on the relationships between NPLs and the different types of borrowers; individuals, small and medium enterprises, corporate and public sector entities. In addition, further study could also compare the effects of bank specific determinants of NPLs before and after consolidation of commercial banks in Nigeria as well as consider the bank specific operational variables based on the perception of the bankers. Finally, a cross country analysis on the effects of NPLs in Africa can be performed since such studies are very rare and scanty in literature.

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APPENDIX I

TOTAL ASSETS OF THE SELECTED COMMERCIAL BANKS IN NIGERIA, AS AT 31ST DEC., 2016

S/N	BANKS	Total Asset N,000	% of Total Asset	% of Total Asset By Rank
1	Eco Bank Plc	6,255,847,070	19.8	1
2	Zenith Bank Plc	4,283,736,000	13.5	2
2	First Bank Ltd	3,557,782,000	11.2	3
4	Access Bank Plc	3,094,960,515	9.79	4
5	Guaranty Trust Bank Plc	2,613,340,074	8.27	5
6	United Bank of Africa Plc	2,539,585,000	8.04	6
7	Diamond Bank Plc	1,662,508,825	5.26	7
8	Fidelity Bank Plc	1,298,141,000	4.11	8
9	Skye Bank Plc	1,181,504,000	3.74	9
10	First City Monument Bank Plc	1,172,778,078	3.71	10
11	Union Bank Plc	1,123,483,000	3.55	11
12	Stanbic Ibtc Bank Plc	1,053,523,000	3.33	12
13	Sterling Bank Plc	830,802,224	2.63	13
14	Unity Bank Plc	492,681,647	1.56	14
15	Wema Bank Plc	421,221,036	1.33	15

Authors' Computation, (2018)