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Banking industry specific and macroeconomic determinants of non performing loans in Nigeria

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Abstract
This study examined the specific and macroeconomic factors that cause non-performing loans in Nigerian deposit money banks. A sample of 18 deposit money banks out of the 32 listed on the flow of Nigerian Stock Exchange were selected on cross sectional basis. The study employed non-survey research design and secondary data was used generated from the Banks's annual reports and accounts, Central Bank of Nigeria and Nigerian Stock Exchange Facts Book. the data generated was analyzed using three techniques of analysis; Descriptive Statistics, Correlation analysis and Multiple regression analysis. The findings revealed that Return on Assets Ratio of the banks (ROA) has a positive and significant influence on NPLs in Nigeria. Loans to Deposit Ratio (LDR) and Capital Adequacy Ratio on the other hand were found to have a negative and significant effect on NPLs in the Nigerian banking sector. Meanwhile, the finding revealed that, Average Lending Rate (AVLR) has a positive and significant impact on NPLs. The study in line with its findings, concludes objectively the significant influence of the above variables on NPLs in the Nigerian banking sector. The study also concludes in line with its theoretical underpinnings and the methodology adopted that, proper management of the aforementioned factors (variables) reduces the rate of NPLs in the banking industry. In line with the findings, the study recommends for effective and efficient management of non-performing loans to achieve soundness and growth in Nigeria's banking sector.

Keywords: Non-performing loans, macroeconomic conditions, bank specific factors

Introduction

Banking business is mainly concerned with the acceptance of deposits from members of the public (Bank customers) which are then turned in to loanable funds to be accessed by borrowers for productive investments, consumption and other purposes (Skarica, 2013) [23]. The loans may be in the form of overdraft, loans and advances, business funding arrangements and local purchasing order financing. Therefore, lending is one of the major functions of Commercial Banks in Nigeria.

Loans implies investment and usually constitute the lengthened assets of banks. Individuals, business organizations and other corporate ventures request for loans for diverse purposes which are known to them. The individuals seek loanable funds from banks when their excess of income over expenditure is negative (Mbat, 2015). Business organizations on the other side seek for loanable funds from Commercial Banks for working capital drives and re-investment. In granting loans to individuals, business organizations and other corporate ventures, deposit money banks consider a number of factors which include among others; the liquidity risk, repayment method, source of repayment and purpose of the loans (Mbat, 2015).

Loans and advances are usually short- term in nature. Ordinarily, in deposit money banks in Nigeria, the worth of loan portfolio rests mainly on credit analysis carried out by the loan officer of the bank. The role of the credit expert is mainly to ensure that the loans granted have a decent qualitative composition. The qualitative features of bank loans include among others; high liquidity quotient, minimum risks and appropriate maturity structure. All these are indispensable to guarantee repayment on demand or maturity of the loan (Akpan, 2013). However, in some cases, there may be a default (where the customer may fail to pay the interest and the as they mature or as they fall due within the specified period as agreed between the lender (Creditor) and borrower (Debtor)). Therefore, once there is a default and the debtor fails as scheduled or retrieval happens to be highly doubtful or it is probable to be protected, the loan as such, turns out to be a non-performing loan which may eventually lead to bad debts (Akpan, 2013).

In Nigeria's banking sector, it is generally accepted that, the proportion of non- performing loan is mostly associated with bank failures and financial crises in both advanced and under-developed economies (Nkusu, 2011) [20]. In fact, a lot of empirical evidence implied that the banking crises in Nigeria was preceded by high proportion of non-performing loans, because, the injuries suffered as a result of the losses caused by the effect of non-performing loans have lessened the capital position of many banks. It is therefore, not refuting to assert that, high proportion of non- performing loans can cripple bank operation and survival. This has attracted the attention of researchers and policy makers to examine the determinants of non-performing loans in Nigeria.

Researches on banks' Non-Performing Loans proliferated following the Global Financial Meltdown of 2007/2008. Prior to the global financial crisis, there was relative stability of share of non-performing loans (NPL) to total gross loans across financial markets (Tanaskovic & Jandric, 2014). However, in the aftermath of the GFM, the world witnessed a considerable rise in share of NPLs across countries. An increasing ratio of NPLs in the loan portfolio of financial institutions signal a deteriorating balance sheet and greater risks affecting banks' liquidity and profitability.

Since the financial crisis, NPLs have taken the spotlight for researchers, banks and regulators as it has often been a

signal of banking crises and has been connected to bank failures. As expected, the concurrent rise in NPLs along with increase in loan defaults across different economies emphasizes the relationship between macro-economic factors and the vulnerability of the banking sector. This decline in the quality of bank assets does not only destabilize the banking system financially but may also negatively affect economic efficiency, weaken social welfare as well as reduce economic activities. As a matter of fact, due to their negative effect on the economy, NPLs have been often referred to as "financial pollution" by many banking analysts. Therefore, minimizing NPLs is essential to restore a sounder banking system and promote financial stability in the economy. Nevertheless, a deeper understanding of the underlying determinants of NPL in Nigeria is first required by the banking regulatory authorities in order to establish a suitable policy response.

It is hence, in the wake of this background that, this study examines both macro-economic, institutional and bank specific determinants of NPL in Nigeria spanning the period (2005-2017). Hence, this study presents a practical use in the macro- economic analysis of the dynamics of lending and asset quality in the Nigerian banking sector.

Problem Statement

An important function of the Central Bank or any banking supervisory authority is to ensure a stable and efficient financial system that protects the interest of all participating agents (Klein, 2013) [12]. A pillar of financial stability is a sound banking system that efficiently passes funds between savers and borrowers. It is in regard to prudential banking supervision bank stress tests are most useful. NPL modelling is frequently employed by central banks within the stress test methodology (Buncic and Melecky, 2012 [4]; Marcelo *et al*., 2008).

The Nigerian banking sector is marred with increasing rate of NPLs (Beck, 2013) [2]. Fitch Ratings predicted Nigerian banks will record high NPLs in 2018 while the Nigerian National Assembly believes that the rate of NPLs in the country today is worse than the 2008-2010 level. In a report, IMF stated that NPLs in Nigeria has more than doubled since 2015.

So, from the perspective of restoring both financial stability as well as confidence in financial markets in Nigeria, the findings of this study bear relevance for stress tests of loan quality. Moreover, insights can be gained about future levels of problem loans and probabilities of failure, which are of direct interest to both banking supervisors as well as market analysts.

Objectives of the Study

The broad objective of the studies is to determine the specific and macroeconomic factors that cause non-performing loans in Nigeria.

Conceptual framework and literature review

This section presents the concepts of non-performing loans and review of related literature on the determinants of Non-performing loans in Nigerian deposit money banks.

The Concept of Non-Performing Loans

The concept of Non-performing loans differs from one country to another (Macit, 2012) [16]. A loan may be considered non-performing in one country and may not be considered as such in another country. However, opinions in some cases do match. As such, the following is the definition suggested by the International Monetary Fund (IMF) Compilation guide on financial soundness indicators (2015):

"A loan is non-performing when payment of interest and/ or principal are past due by 90 days or more, or interest payment equal to 90 days or more have been capitalized, refinanced, or delayed by agreement, or payment are less than 90 days overdue, but there are other good reasons – such as a debtor filing- for bankruptcy – to doubt that payments will be made in full."

According to Basel Committee on Banking Supervision (2001), a loan is considered non-performing when bank declares that a borrower (Debtor) cannot meet his/her obligation and repay the loan. These two definitions no doubt offer a sensible framework for identifying for identifying non-performing loans which is the subject matter of this study. Moreover, Nigerian Banking Regulation also defines Non-performing loan as follows: Non-performing loan is that whose credit quality has deteriorated and the full collection of principal and/ or interest as per the contractual repayment terms of the loan are in question (Central Bank of Nigeria, 2015). Therefore, NPLs in a nutshell, are loans that are outstanding both in its principal and interest for a long period of time disagreeing to the terms and conditions under the loan contract. Thus, the amount of non-performing loans measures the quality of bank assets.

Classification of Non-Performing Loans

According to CBN (2010) Prudential Guidelines for deposit money banks, section 15.1 classified Non-Performing Loans in to three distinct categories as Substandard, Doubtful and Lost on the basis of the following criteria;

On sub-standard facilities as defined by section 15.1 (e) subsection 1 of the 2010 prudential guidelines for deposit money banks considers unpaid principal and / or interest remain outstanding for more than 90 days but less than 180 days as objective criteria. Whereas such loan facilities which display well defined weaknesses which could affect the ability of the borrowers to repay such as inadequate cash flow to service debt, under-capitalization or insufficient working capital, absence of adequate financial information or collateral documentation, irregular payment of principal and/ or interest and inactive accounts where withdrawals exceed repayment or where repayment can hardly cover interest charges as subjective criteria.

Doubtful facilities are considered objective when unpaid principal and/or interest remain outstanding for at least 180 days but less than 360 days and are not secured by legal title to leased assets or perfected realizable collateral in the process of collection or realization. It is subjective where in addition to the weaknesses associated with sub-standard credit facilities reflect that full repayment of the debt is not certain or that realizable collateral values will be insufficient to cover bank's exposure.

Loan lost facilities on the other hand are considered objective when unpaid principal and /or interest remain outstanding for 360 days or more and are not secured by legal title to leased assets or perfected realizable collateral in the course of collection or realization. However, facilities which in addition to the weaknesses associated with the doubtful credit facilities, are considered uncollectible and are of such little value that continuation as a bankable asset

is unrealistic such as facilities that have been abandoned, facilities secured with unmarketable and unrealizable securities and facilities extended to judgement debtors with no means or fore closable collateral to settle debts.

Meanwhile, paragraph (f) of the 2010 prudential guidelines specify that, banks are required to adopt the criteria identified in paragraph 15.1 (e) to classify their loan portfolios in order to show the true accounting principles of their loans facilities. As such, licenced banks should note that, the Central Bank of Nigeria reserves the right to object to the classification of any credit facility and to prescribe the classification it considers appropriate for such credit facility. Provisions for non-performing loans other than "Specialized Loans" as defined by 2010 prudential guidelines for deposit money banks, licenced banks are mandated to make sufficient provisions for apparent losses based on the loan portfolio arrangement system set in paragraph 12.1 of CBN prudential guidelines (2014) in order to reveal their true financial condition. Two types of provisions (that is specific and general) are considered sufficient to achieve this objective. Specific provisions are made on the basis of apparent risk default on specific loan facilities while general provision is made in respect of the fact that even performing loan facility harbours some risk of loss no matter how small. Thus, all licenced banks shall be mandated to make specific provisions for nonperforming loans as provided by section 12 of the CBN 2014 prudential guidelines.

The Concept of Bank Credit and Lending

Deposit money banks are specialized financial institutions that provides loanable funds to individuals, business enterprises and other corporate ventures for investment and other purposes (Lawrence, 1995) [13]. Deposit money banks are the most vital of all depository financial institutions. They perform the function of intermediation between the lenders and borrowers under the activities of financial market in the economy. Such depository institutions spread-out loans to diverse categories of borrowers for numerous purposes. As stated earlier, provision of loan to individuals, business people in the market, companies operating in various sectors of the economy and other corporate bodies is the key function of deposit money banks. Deposit money banks accept deposit from customers use the funds to other customers or invest in other assets that will yield a return higher than the amount the bank pays the depositor (Zewdu, 2010).

Bank credits or loans are the single major source of income to the banks. Bank loans involves personal relationship between the bankers and borrowers when it goes well up to the end. It has the highest possibility of default risk than the other bank assets. Loans yield the higher rate of return among the bank assets in compensation for lower liquidity and higher risk. A loan composition varies among the banks based on their size, location, trade area, and lending experts (Macdonald, 2006). According to Zewdu (2010), lending is the provision of resources (granting loan) by one party to another. The second party does not reimburse the first party immediately thereby generating a debt, and instead arranges either to repay or return those resources at a later date. Banks serving as financial intermediaries, collecting funds from depositors and then supplying the funds to the borrowers as loans such function benefits both the banks and borrowers. Lending therefore, represents the heart of the industry and loans are the dominant assets and represent about 50-75 % to total amount at most banks, generate the largest share of operating income and represent the bank's greatest risk exposure (Macdonald, 2006).

Factors affecting Bank Credit and Lending

According to Zewdu (2010), the sources of fund for lending are reserve, deposits and capital. All these sources may be influenced by different variables which will have a direct effect on lending. Therefore, lending being one of the key function of commercial banks, it is pertinent that, the bank managements should pay more attention to evaluate and take all the needed measures as soon as possible in relation to both internal and external factors that may hamper or affect their bank lending process. A fall in the rate of lending, may influence banks' incomes particularly interest income which consequently affect bank continuous survival. In this case, since nonperforming loans (NPLs) has a direct replication of poor asset quality, the factors that determine banks' lending have their own effect on NPLs (Rawlins *et al*. 2012).

According to Zewdu (2010), capital position, profitability, stability of deposits, economic conditions, influence of monetary and fiscal policies, ability and experience of bank personnel and credit needs of the area served has significant impact on bank credits which may have influence on NPLs. These infringe the opinions of Black and Daniel (1989) as cited in Zewdu (2010) that interest rate, liquidity of fund and Tax rate affect bank lending and investments. These are however, consistent with the findings of Aleman (2012), who has identified the aforementioned variables as factors affecting bank lending in his study.

Trien and Diep (2014), on the other hand opined that, inflation, consumer price index, interest rate, exchange rate are the main factors affecting Banks's lending. Contrary to these opinions, Korankye (2014) argued that late disbursement of the loan, business failure, unfavorable payment terms, high interest rate, and inadequate loan sizes, unforeseen contingencies, for instance illness and death of a family member, lack of training for the clients before and after disbursement as the factors affecting loans. This however, shows that factors affecting bank loans depends on the country where one belongs to and as such these factors to some extend are positive in one country and negative to another.

The Five C's of Non-Performing Loans

According to (MacDonald (2006), there are five C's considered as bad credits which represent the disputes used to guard against bad loans. These are as follows:

Complacency

Refers to propensity to which one assumes that things were decent in the past, so they will be decent in the future. For instance, Supposing the past loan settlement success since things have incessantly worked out previously.

Carelessness

Indicates the poor endorsement usually showed by scant loan documentation, lack of up-to-date financial information or other important information in the credit records, and

lack of protective arrangements in the loan agreement. Each of these makes it difficult to monitor a borrower`s progress and discover difficulties before they are uncontrollable.

Communication ineffectiveness

this deals with inability to visibly communicate the bank`s objectives and policies. This is when loan delinquency can arise. Hence, the bank management needs to efficiently communicate and impose the loan policies and loan officers should make the management aware of specific problems with existing loans as soon as they appear.

Contingencies

Refers to the lenders` tendency to ignore circumstances in which a loan may be defaulted. It emphasizes on trying to make a deal work rather than detecting down side risk.

Competition

Encompasses following the competitors` act rather than monitoring the bank`s own credit standards. Banks, however, still have required expertise, experiences, and customer focus to make them the preferred lender for many types of loan. Lending is not just a matter of making loan and waiting for repayment. Loan must be monitored and closely supervised to prevent loan losses (MacDonald, 2006).

Theoretical Framework

Interesting non-performing loans and their determinants has greatly increased since the last global financial meltdown. This has ranged from panel data or cross-country analysis to country-specific or time series studies. These literatures are built on theoretical models that deal with the business cycle with an explicit role for financial intermediation. A widely employed theoretical framework to relate a nation's macroeconomic environment with NPLs is the life-cycle consumption models such as popularized by Lawrence (1995) [13] which explicitly introduces the possibility of default. Such models suggest low income borrowers have higher rates of default due to increased risk of facing unemployment and being unable to settle their obligation. Also, riskier borrowers or clients are susceptible to higher bank interest rates. Hence, the probability of default depends on current income and the unemployment rate, which is linked to the uncertainty regarding future income and the lending rates. The macroeconomic determinants of NPLs can also be traced to financial accelerator theory as examined by Kiyotaki& Moore (1997) [11] and Bernanke &Gertler (1989) [3].

Empirical Literature

The banking industry in a number of countries around the world was afflicted recently by increase in NPLs. This has led to increasing body of literature in studying NPLs across the globe. Employing bank-level data, Klein (2013) [12] examined NPLs in 16 Central, Eastern and South-Eastern European countries, and found both bank-specific as well as macroeconomic factors to influence NPLs. Using quarterly data from 2007 to 2012 for 7 Central and East European countries, Skarica (2014) [24] investigated the macro-economic determinants of NPLs and find both unemployment and inflation rates to increase the growth of NPLs while real GDP growth negatively affects it. Examining the determinants of NPLs in 9 Central, Eastern and Southeastern European (CESEE) nations which comprises of Bulgaria, Croatia, the Czech Republic, Hungary, Poland, Romania, Russia, Slovakia and Ukraine using GMM estimations with quarterly data from 2004 to 2012, Jakubik and Reininger (2013) [10] found that a country's exchange rate, private credit-to-GDP and past NPLs increase current NPLs while real GDP growth and national stock price index reduce NPLs.

Skarica (2013) [23] examined the determinants of NPLs in Central and Eastern European countries. In the study, Fixed Effect Model for seven Central and Eastern European countries for 2007-2012 periods was applied. The study utilized loan growth, real GDP growth rate, market interest rate, Unemployment and inflation rate as determinants of NPLs. The finding revealed that GDP growth rate and unemployment rate has statistically significant negative association with NPLs with justification of rising recession and falling during expansions and growth has an impact on the levels of NPLs. This implies that economic developments have a strong impact on the financial stability. The finding also revealed that inflation has positive impact with justification as inflation might affect borrowers' debt servicing capacities.

Looking at the European zone, Makri *et al*. (2014) [17] investigated the role of both macroeconomic and bank-specific factors on NPLs in 14 countries and found a strong influence of both categories of variables on NPLs. Messai and Jouini (2013) [18] examined the issue for 85 banks in Italy, Greece and Spain, respectively, for 2004–2008 and found both economic growth and bank profitability to reduce NPLs while unemployment rates, real interest rates, and poor credit quality to positively influence NPLs.

Looking at some time series analyses on Europe, Louizis *et al*. (2012) [15] use data for 9 Greek commercial banks and examined NPLs in consumer, business and farm loan categories. The authors found NPLs to be mainly influenced by macroeconomic variables. Similarly, Saba, Kauser and Azeem (2012) [21] studied "Bank specific and macroeconomic variables of nonperforming loans on US financial sector from 1985 to 2010 period using OLS regression model". The researchers utilized total loans, lending rate and Real GDP per capital as independent variables. The finding revealed that real total loans have positive and significant impact while interest rate and GDP per capital have negative and significant association with NPLs.

Moreover, Mileris (2012) investigated "macroeconomic determinants of loan portfolio credit risk in banks" using multiple and polynomial regression model with cluster analysis, logistic regression, and factor analysis for the prediction. The finding indicated that NPLs are highly dependent of macroeconomic factors. Salas and Saurina (2002) [22] examined Spanish commercial and savings banks and find GDP growth to lower NPLs. Macit (2012) [16] investigated NPLs for 15 largest commercial banks in Turkey using quarterly data from 2005 to 2010. Both bank-specific and macro- economic variables significantly influence NPLs. Louzis, Vouldis and Metaxas (2010) studied the determinants of NPLs in the Greek financial

sector by applying fixed effect model from 2003-2009. The variables included were ROA, ROE, solvency ratio, loan to deposit ratio, inefficiency, credit growth, lending rate and size, GDP growth rate, unemployment rate and lending rates. The finding reveals that loan to deposit ratio, solvency ratio and credit growth has no significant effect on NPLs. However, ROA and ROE has negative significant effect while inflation and lending rate has positive and significant effect on NPLs. The findings justify that performance and inefficiency measures may serve as proxies of management quality. Similarly, Cifter *et al*. (2009) [6] found lagged industrial production to influence NPLs in the Turkish banking industry for 2001–2007

Looking at studies from other regions, Beck *et al*. (2013) [2] examined the role of key macroeconomic indicators in 75 countries (both advanced and emerging economies) for the period 2000–2010, and found real GDP, nominal effective exchange rates, share prices and real lending rates to significantly affect NPLs. Ali and Iva (2013) examined "the impact of bank specific factors on NPLs in Albanian banking system" the researchers utilized Interest rate in total loan, credit growth, inflation rate, and exchange rate and GDP growth rate as determinant factors. They applied OLS regression model for panel data from 2002 to 2012 period. The finding revealed a positive association of loan growth and real exchange rate, and negative association of GDP growth rate with NPLs. However, the association between interest rate and NPL is negative but weak, whereas inflation rate was found to have an insignificant effect on NPLs.

Espinoza and Prasad (2010) [8] used a panel dataset from 1995 to 2008 for 80 banks in the Gulf Co-operation Council region and found NPLs to worsen as economic growth lowers and interest rates and risk aversion increase. Likewise, Nkusu (2011) [20] examined the issue for 26 advanced economies for the period 1998–2009 and confirmed that adverse macroeconomic determinants are associated with rising NPLs. Buncic and Melecky (2012) [4] estimated the determinants of NPLs by using GMM estimations using annual data for 54 high- and middle-income countries from 1994 to 2004. Explanatory variables include the lagged NPL ratio, real GDP growth, CPI inflation, the (ex post) real interest rate and changes in the nominal U.S. dollar exchange rate for each country, while a vector of control variables comprising of the log of GDP per capita, the credit-to-GDP ratio and the share of foreign currency loans in total loans. Although not covering the Global Financial Meltdown years, the researchers found the changes in exchange rate and the control variables to be statistically insignificant. De Bock and Demyanets (2012) [7] estimated panel regressions again using annual data for 25 emerging market economies for 1996-2010 that include the lagged dependent variable and unobserved country effects. Real GDP contraction, currency depreciation against the US dollar, weaker terms of trade and outflows of debt-creating capital (portfolio debt and bank loans) lead to a higher aggregate NPLs of the banking sector. Evidently, combining these studies, a common finding is NPLs are countercyclical to overall country-specific macroeconomic conditions.

Empirical methodology

This research was carried out on the Nigerian banking sector with eighteen (18) sampled deposit money banks. The study employed non-survey research design. The research design was employed due to the fact that, the banks variables are pull out from annual reports and accounts of the sampled deposit money banks. The population of the study consists of all the quoted deposit money banks in Nigeria as at 31st December, 2022 which were thirty-two (32) in total (NSE, 2022). Out of this number, eighteen (18) were selected as sample. In order to take an appropriate sample, the researcher used this checklist for any bank to be eligible as sample of the study, first, it must be registered in and owned by the Nigerians. Second, it must be an active player on the floor of the Nigerian Stock Exchange as at 31st December, 2022. The study used two set of variables: dependent, explanatory variables as well as the control variables. The dependent variable is non-performing loan ratio. It is measured in terms nonperforming loans to gross loan (i.e, total loans).The explanatory and control variables are bank profitability (bank specific variables) and macro-economic determinants which form the independent variables for the study. The study used three techniques for the purpose of data analysis which are descriptive statistic, correlation and multiple regressions (OLS). EVIEWS software version 12 was used in carrying out the analyses.

Empirical Model

The model specified to achieve the objective of the study was adopted from the work of Skarica, (2013) [23] with slight modifications. The specification of the econometric form of the model is as follows:

NPL=f (ROA, LDR, CAR, AVLR, INF, BSZ, GFCF)

$$NPL_t = \beta_0 + \beta_1 ROA_t + \beta_2 LDR + \beta_3 CAR + \beta_4 AVLR_t + \beta_5 INF_t + \beta_6 BSZ_t + \beta_7 GFCF_t + \mu_t \quad (1)$$

Where
NPLs: Non-performing loans
ROA: Return on Asset Ratio of the Banks
LDR: Loans to Deposit Ratio of the Banks
CAR: Capital Adequacy Ratio of the Banks
AVLR: Average Lending Rate of the Banks
INF: Inflation Rate
BSZ: Bank Size
GFCF: Gross Fixed Capital Formation

Results and discussion

1 Summary of Descriptive Statistics

The summary of various descriptive statistics was presented in Table 1. The results revealed that, the data of this study is consistent, because, the mean and median are within the range of the maximum and minimum values.

Table 1: Summary of Descriptive Statistics

Variables/Stat.	NPL	ROA	LDR	CAR	AVLR	INF	BSZ	GFCF
Mean	26.4140	8.8771	7.6943	7.8360	1.6636	18.1543	11.6247	29.7265
Median	26.6342	9.3200	8.4365	7.7841	2.0255	17.5850	10.5325	29.7173
Maximum	26.9875	11.4162	11.0743	8.2480	3.3040	31.6500	23.2417	30.0687
Minimum	25.6168	3.7887	3.0301	7.0040	-1.9661	9.4333	5.6925	29.3660

Std. Dev.	0.4935	1.9614	2.2766	0.3602	1.4406	4.4778	3.8232	0.1793
Skewness	-0.4988	-1.0842	-0.5655	-0.7075	-1.1818	0.3888	0.9378	-0.0560
Kurtosis	1.6066	3.5774	1.8798	2.4414	3.5505	4.2484	3.8813	2.2925
Jarque-Bera	4.5274	7.7630	3.9065	3.5676	9.0804	3.3349	6.6203	0.7909
Probability	0.1040	0.0206	0.1418	0.1680	0.0107	0.1887	0.0365	0.6734
Obs.	40	40	40	40		40	40	40

Source: Author's computation, (2023).

From the result presented, the mean value, which is a measure of central tendency, represents the average value which a variable assumes over time. All the variables have the mean values ranged from 0.0000 to 29.7265. However, LGFCF seems to have the highest mean value, while AVLR has the lowest mean value. Similarly, INF possess the highest standard deviation (4.4778), while GFCF has the lowest standard deviation (0.1793). The standard deviation measures the variability of the data and the deviation of the actual values from the mean value. All the variables except AVLR have the standard deviations less than the mean values. This is an indication of the low variability and the possible absence of outliers in the data.

Other important characteristics of the data are the skewness which measures the degree of symmetry of the series and the Kurtosis which measures the peakedness or flatness of the distribution of the series around the mean value. Normal skewness has zero (0) value, which means the distribution is symmetry around the mean. Positive skewness indicates more high values (long right tail) above the sample mean. While negative skewness means lower values (long left tail) below the sample mean. From table 4.1, INF, BSZ and GFCF have positive skewness values. This means, the absolute values of the variables are highly skewed to the right (long right tail). Meanwhile, the skewness values of NPL, ROA, LDR, CAR and AVLR were found to be negative. This implies that, the distributions have long-left tail (skewed to the left). The kurtosis of the normal distribution is 3. If the kurtosis exceeds 3, the distribution is peaked (leptokurtic) relative to the normal distribution, if however, the kurtosis is less than 3, the distribution is flat (platykurtic) relative to the normal distribution. From table 4.1, the kurtosis value of ROA, AVLR, INF and BSZ exceed 3, which means that the distribution is peak (leptokurtic), while the kurtosis values of NPL, ROA, LDR, CAR and GFCF are less than 3, which means that, the distributions are flat (platykurtic).

The Jaque-Berra test result reveals that ROA, AVLR, and BSZ variables are normally distributed. On the other hand, NPL, LDR and CAR were found to be not normally distributed. All along, the variables are examined individually, but the relationship and association among the variables is among the major concern of this study. Therefore, in order to have a glimpse of such association, correlation analysis was conducted and the result was presented in the next section.

2. Results of Correlation Analysis

The linear associations among the pairs of the employed variables in the study were computed and the results are reported in Table 2.

Table 2: Results of Correlation Analysis

Variables/ Stat.	NPL	ROA	LDR	CAR	AVLR	INF	BSZ	GFCF	
NPL	1.0000								
ROA	0.8138	1.0000							
	(0.0000)								
LDR	-0.0176	0.1041	1.0000						
	(0.9176)	(0.5396)							
CAR	0.8782	0.9152	-0.0409	1.0000					
	(0.0000)	(0.0000)	(0.8099)						
AVLR	-0.6400	-0.5130	0.2969	-0.6478	1.0000				
	(0.0000)	(0.0012)	(0.0743)	(0.0000)					
INF	0.1319	0.3748	0.5201	0.2674	0.1875	1.0000			
	(0.4363)	(0.0223)	(0.0010)	(0.1097)	(0.2664)				
BSZ	-0.2941	-0.0640	0.6151	-0.1672	0.4109	0.8011	1.0000		
	(0.0773)	(0.7065)	(0.0001)	(0.3227)	(0.0115)	(0.0000)			
GFCF	(0.0032	(0.0000)	(0.0012)	(0.0743)	(0.0000)	(0.3258)	(0.0032)	(0.0075)	1.0000

Note: P-values are in parenthesis ().

Source: Author's computation, (2023).

Correlation is designed to test bi-variate association between variables. It also reveals the presence or absence of multi-collinearity among the independent variables which determines the possibility of studying independent variables under the same model.

The results of the correlation analysis in Table 4.2 showed that, there is a significant correlation between NPL and ROA, CAR, AVLR and GFCF. Similarly, there is also a correlation among the independent variables. The impact assessment of these relationships with respect to significance will be ascertained with the help of the regression result which will be presented and discussed later in the course of this study.

Evidently, it could also be seen from the correlation coefficients that, a significant association exists between NPL and almost all other independent variables except LDR and INF. The implication of this result is that, all the independent variables could be studied under the same model.

Regression Analysis

Table 3: Regression Result Dependent Variable: NPL

Regressor	Coefficient	Standard Error	t-Statistic	Prob.
ROA	5.2234	8.8859	2.8976	0.0077
LDR	-0.0034	9.8859	-2.4902	0.0018
CAR	-0.0149	0.0076	-1.9508	0.0796
AVLR	0.4661	0.1536	3.0336	0.0126
INF	0.4309	0.3834	1.1240	0.3428
BSZ	-0.0061	0.0034	-1.7582	0.1092
GFCF	-0.4620	0.3388	-1.3638	0.2659
R^2	0.9824			
F-stat	5.9115			0.0001
D.W-stat	1.8203			

Source: Researcher's computation, (2023).

Table 4.3 above presents the regression results on the dependent variable (NPLs) and the explanatory variables (ROA, LDR, CAR, AVLR, INF, BSZ and GFCF). The results reveal that, the value of R^2 is 0.9824. This implies that, the independent variables used in the model specified for the study have explained about 98% of the total variation in the dependent variable (NPLs). Therefore, the omitted variables in the model have accounted for less than 3% of the total variation in the dependent variable (NPLs). This means that, the explanatory variables that represent the determinants of Non-performing loans fully account for the variation of NPLs in the Nigeria's banking sector. The value of F-statistics from this model is (5.91) approximately with a P-value (0.0001). this implies that, the determinants of NPLs incorporated in the regression model are jointly significant in determining variation in NPLs.

Looking at the regression model, the result also reveals that, holding other factors constant, (ROA) as a determinant of NPLs in the Nigeria's banking sector has a positive and significant impact (P-value = 0.0077<0.05) on Non-Performing Loans in Nigeria in the long-run. Specifically, a 1% increase in Return on Assets Ratio of the Banks (ROA) leads to about 5.22% increase in NPLs in Nigeria. Therefore, ROA represents efficiency in assets utilization and poor assets utilization leads to high rate of NPLs for the banks which may be a threat to their continuous existence in the industry. This finding, although is not in conformity with the Apriori expectation of the model, it is consistent with the work of Skarica, (2013) [23] as highlighted earlier.

The regression result also reveals that, at about 99% level of confidence, Loans to Deposits Ratio of the Banks (LDR) has a negative and statistically significant impact (P-value= 0.0018<0.05) on Non-Performing Loans during the period covered by this study. The result implies that, other things being equal, a 1 % increase in LDR in Nigeria leads to a decrease in NPLs by 0.003 %. This implies that, the more deposit money banks increase LDR, the less will be the rate of NPLs recorded, other things remaining constant. This finding is consistent with the Apriori expectation of the model, and it also lends an empirical support to the findings of Skarica, (2013) [23]. Moreover, the regression results also signify that, Capital Adequacy Ratio of the Bank (CAR)also has a negative and statistically significant effect (P-value= 0.0796<0.05). on NPLs. Specifically, a 1% increase in CAR will lead to a decrease in the rate of NPLs by 0.014%. This shows that, a reduction in NPLs in the Nigerian Banking Sector is associated with the increase in the rate of Capital Adequacy Ratio of the banks. Capital Adequacy Ratio means the degree of banks solvency, ability to absorb risk, to protect depositors and to encourage stability as well as efficiency of financial systems.

The regression results also indicate that, Average Lending Rate of the bank (AVLR) also has a positive and significant influence (P-value= 0.0126<0.05) on Non-performing loans in Nigerian Banking sector. Specifically, a 1 % increase in AVLR will an increase in NPLs by 0.46%. therefore, according to this finding, increase in the rate of Non-Performing Loans in Nigeria is associated with increase in Average Lending Rate of the bank (AVLR). This finding however, is not in conformity with the Apriori expectation of the model, but it is consistent with the work of Mileris, (2012) and Makri *et al*. (2014) [17]. The regression results also signify that, Inflation Rate of the Bank (INF) and Bank Size (BSZ) have a positive but insignificant effect on NPLs in Nigeria. This is shown by their respective probability values which are (>0.05). the regression result also reveals that Gross Fixed Capital Formation (GFCF) has a positive but insignificant influence on NPLs which is also shown by the probability value (0.2659>0.05).

Conclusion and recommendations

This study examined the specific and macroeconomic factors that cause non-performing loans in Nigerian deposit money banks. From the result of extensive review of literature, several determinants of Non-performing loans were identified out of which seven determinants were selected for the purpose of this study. The seven variables were regressed against Non-performing loans. As expected, the main variables of interest (ROA, LDR, CAR and AVLR) are significant and are also consistent with the Apriori expectation. Therefore, this study in line with its findings, reiterates objectively the significant influence of the above variables on NPLs in the Nigerian banking sector. The study also concludes in line with its theoretical underpinnings and the methodology adopted that, proper management of the aforementioned factors (variables) reduces the rate of NPLs in the banking industry.

In line with the findings, the study recommends for effective and efficient management of non-performing loans to achieve soundness and growth in Nigeria's banking sector. Meanwhile, the CBN should for policy purposes frequently evaluate the lending habits of deposit money banks in Nigeria. Lastly, it is also recommended that the supervisory authorities should take part actively in capacity building to improve supervisory and regulatory functions efficiently.

References

1. Arellano M, Bond S. Some tests of specification for panel data. Monte Carlo evidence and an application to employment equations. Rev. Econ. Stud,1991:58:277-297.
2. Beck R, Jakubik P, Piloui A. Non-performing loans what matters in addition to the economic cycle? European Central Bank Working Paper Series, 2013, 1515.
3. Bernanke BS, Gertler M. Agency costs, net worth and business fluctuations. Am. Econ. Rev,1989:79:14–31.
4. Buncic D, Melecky M. Macroprudential Stress Testing of Credit Risk - A Practical Approach for Policy Makers. World Bank Policy Research Working Paper, 2012, 5936.

5. Central Bank of Nigeria. Prudential Guidelines for Deposit Money Banks in Nigeria, 2010. (available at www.cbn.gov.ng)
6. Cifter A, Yilmazer S, Cifter E. Analysis of sectoral credit default cycle dependency with wavelet networks: evidence from Turkey. Econ. Modell,2009:26:1382–1388.
7. De Bock R, Demyanets A. Bank Asset Quality in Emerging Markets: Determinants and Spillovers. International Monetary Fund Working Paper, 2012, 12/71.
8. Espinoza R, Prasad A. Nonperforming loans in the GCC Banking System and their Macroeconomic Effects. International Monetary Fund Working Paper, 2010, 10/224.
9. Federal Government of Nigeria. Nigeria Deposit Insurance Corporation Report 2011: Financial Conditions of Insured Deposit Money Banks in 2011, NDIC 2011 Annual Report & Statement of Accounts, 2011, 133-134.
10. Jakubik P, Reininger T. Determinants of Nonperforming Loans in Central, Eastern and South eastern Europe, Focus on European Economic Integration. Oesterreichische National Bank,2013:3:48-66.
11. Kiyotaki N, Moore J. Credit cycles. J. Pol. Econ,1997:105:211–248.
12. Klein N. Non-performing loans in CESEE: Determinants and Impact on Macroeconomic Performance. International Monetary Fund Working Paper, 2013, 13/72.
13. Lawrence E. Default and the life cycle model. J. Money Credit Bank,1995:27:939–954.
14. Loizis PD, Vouldis TA, Metaxas V. The Determinants of Non- Performing Mortgage, Business and Consumer Loans in Greece: Athens, Published thesis (MSc), Athens University, 2010.
15. Louizis D, Vouldis A, Metaxas V. Macroeconomic and bank-specific determinants on non-performing loans in Greece: A comparative study of mortgage, business and consumer loan portfolios. J. Bank. Finance,2012:36:1012-1027.
16. Macit F. What Determines the Non-Performing Loans Ratio: Evidence from Turkish Commercial Banks. Center for Economic Analysis J. Econ,2012:13:33-39.
17. Makri V, Tsagkanos A, Bellas A. Determinants of Non-Performing loans: The case of Eurozone. Panoeconomicus,2014:2:193-206.
18. Messai A, Jouini F. Micro and Macro Determinants of Non-Performing Loans. Int. J. Econ. Financ.2013:3:852-860.
19. Nigerian Stock Exchange, 2014. Annual Report & Accounts, (Available at www.nse.gov.ng).
20. Nkusu M. Nonperforming loans and Macrofinancial vulnerabilities in Advanced Economies. International Monetary Fund Working Paper, 2011, 11/161.
21. Saba I, Kouser R, Azeem M. Determinants of nonperforming Loans: Case of US Banking Sector. International Journal of Banking and Finance,2012:44:479-88.
22. Salas V, Saurina J. Credit risk in two institutional regimes: Spanish commercial and savings banks. J. Financ. Serv. Res,2002:22:203-224.
23. Skarica B. Determinants of Non-Performing Loans in Central and Eastern European Countries: Working Paper, 2013, 13-07.
24. Skarica B. Determinants of non-performing loans in Central and Eastern European countries. Financ. Theory Prac,2014:38:37-59.
25. Ali S, Iva S. Impact of Bank Specific Variables on the Nonperforming loans ratio in Albanian Banking System, Journal of Finance and Accounting,2013:(4):34-56.