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IMPACT OF CREDIT MANAGEMENT ON NON-PERFORMING LOANS IN NIGERIAN COMMERCIAL BANKS

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Abstract

Banks occupy vital position in every economy Nevertheless, there exists corporate governance failure in banks that results largely from customers sophistication and non-performing loans. The study examined credit management and non-performing loans of commercial banks in Nigeria. Ordered probit regression was used test the impact of bank specific control measures on non-performing loans in Nigerian commercial banks and vector autoregressive model was employed to examine the impact of macro-economic variables on non-performing loans in Nigerian commercial banks. The result of the regression analysis revealed that monitoring of loans usage by borrowers has significant impact on non-performing loans at 10% level of significance. The study concluded that bank specific control measures have significant impact on non-performing loans in Nigerian commercial banks. Banks should therefore ensure that credit officers perform periodic follow-ups on borrowers to ensure that loans are used for intended purposes to reduce the incidence of non - performing loans.

Keywords: *loans, management, non-performing, commercial banks*
JEL: G 21

INTRODUCTION

Banking institutions have over the years maintained the leading role of enhancing the economic growth and development of nations. This is because they are the institutions that provide credits to the public. Bank lending is associated with the risk that borrowers may not be able or willing to honour their obligations and as such, it requires proper assessment (Martin, 2007). The inability of borrowers to honour credit obligations makes such loans to become non-performing. Thus, credit facilities are deemed performing when the payment of both the principal and interest are up to date in accordance with the terms of loans (Kolapo, Ayeni, Oke and 2012).

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Non- performing loans (NPLs) are loans which are susceptible to default. They are one of the major causes of insolvency in banking institutions and they can ultimately affect the entire economy (Hou, 2007).

Having realized the implication of this menace, many, commercial banks have tried to put in place measures to reduce non-performing loans. The Nigerian banking system has undergone various reforms such as the banking reforms of 1987 with the aim of setting out new rules for the establishment of banks and issuing of banks licenses (Kanu and Hamilton, 2014). Despite these advances and other measures such as the creation of special recovery cells by banks, credit monitoring, client appraisal and maintenance of capital adequacy requirements, some banks are still distressed due to poor credit management. Non-performing loans in the Nigerian banking system skyrocketed by 50 percent in 2017 amounting to over two trillion naira (Nigeria Deposit Insurance Corporation, 2017).

The mismanagement of these liabilities often has massive negative implications ranging from a slow Gross Domestic Product (GDP) growth which thereafter may lead to hyper-inflation and high interest rate. Other problems associated with non-performing loans include failures in corporate governance in banks, lack of investors, customer sophistication, critical gaps in the regulatory framework and regulations, uneven supervision and enforcement, unstructured governance and management processes at the central bank of Nigeria and weaknesses in the business environment (Sanusi, 2012).

Therefore, this study carries out an assessment of the impact of credit management on non-performing loans in Nigerian commercial banks. However, the specific objectives of the study are two: firstly, to examine the impact of bank specific control measures (i.e. client appraisal, monitoring, special recovery unit, repayment period and loan recovery policy) on non-performing loans in Nigerian commercial banks and to examine the impact of macro-economic variables (i.e. GDP, interest rate, inflation rate and exchange rate) on non-performing loans in Nigerian commercial banks. The study intends to provide answers to the following pertinent questions (i) what is the impact of bank specific control measures (i.e. client appraisal, monitoring, special recovery unit, repayment period and loan recovery policy) on non-performing loans in Nigerian commercial banks (ii) to what extent do macro-economic variables (i.e. GDP, interest rate, inflation rate and exchange rate) impact on non-performing loans in Nigerian commercial banks.

The next section is literature review. This is followed by methodology and discussions of findings. The last section covers the conclusion and recommendations of the study.

LITERATURE REVIEW

Conceptual Issues: Commercial Banks, Credit Management and Non-Performing Loans

Commercial banks are establishments that undertake certain economic transactions; majorly financial intermediation which involves the mobilization of deposits from surplus sectors of the economy and lending to the deficit sectors in order to finance their investments (Bernard, 2008). They are the main channel for executing government monetary policies; the principal source of

consumers' credit and also the main buyer of debt securities issued by government authorities (Mar, 2011). Commercial banks also deal with deposits and advances from organizations or large firms (Priyanka & Jyoti, 2014).

Greuning and Bratanovic (2003) asserted that commercial banks play a major role in emerging economies where borrowers have no access to capital markets. They accelerate economic growth through lending to farmers, manufacturers, traders and distributors. It is these productive investments that accelerate the pace of a nation's economic growth as well as the long-term sustainability of the banking industry (Kolapo, Ayeni, Oke and 2012; Mohammed, 2012). Thus, the major roles and functions of Nigerian commercial banks are fund mobilization, payment, credit allocation, settlement system and monetary policy implementation.

Generally, the functions of commercial banks are divided into two categories: primary and secondary functions. The primary functions include the different kinds of deposit and loan facilities. The deposit facilities include savings account, current account, and fixed account. The loan facilities are in the form of overdraft facility, term loans, bill discounting, cash credit, money at call, etc., with varying repayment periods. Through these loans, they automatically create deposits, known as credit creation in commercial banks.

The secondary functions according to Priyanka & Jyoti (2014), include agency functions and utility functions. The agency functions involves collection and clearing of cheques, dividends and interest warrant, payments of rent, insurance premium, foreign exchange transactions, purchasing and selling of securities etc. The utility functions involve provision of safety locker facility, money transfer facility, issuance of travellers' cheque, acting as referees and acceptance of various bills for payments, provision of merchant banking facilities and various cards such as credit cards, debit cards, smart cards, etc.

Meaning of Credit and Credit Management

Credit is the trust that enables one party of a transaction to provide resources to the other party, while the second party will not pay for the transaction immediately (leading to debt), but promising to repay or return the resources (or other material of equal value) at a later date (Sullivan & Rassel, 2003). Therefore, credit refers to any form of deferred payment which is extended by a creditor, also known as the lender, to a debtor also known as a borrower. Onyeagocha (2001) views credit as the faith that a creditor (lender) have in a debtor by giving loans mostly in the form of money, securities or goods to a debtor. Credit is defined as the transaction that exists between two parties in which the creditor supplies money, goods and services in exchange for a future promise that payments for the transaction will be made by the borrower (Aremu, Suberu and Oke, 2010).

Reasons for credit assessment differ among individuals, enterprises and other corporate entities. However, the purpose and the nature of credit have been categorized into short-term loans, medium-term and long-term loans. Short-term loans are the advances (e.g. personal loans) given with a repayment period of not more than five years. On the other hand, medium term

loans have a repayment period that falls between five and ten years while long-term loans have a repayment period of more than ten years.

Credit management is an important part of lending and in its absence, good loans may turn to bad loans. Therefore, it is expedient to note that the necessity of credit management cannot be over-emphasized and good credit management entails the establishment of and adherence to sound and efficient credit policies. For banks to be successful, their corporate credit appraisal, adequate monitoring, disbursement and repayment must be assured. It has been shown over the years that inadequate credit analysis and sound application of loans have resulted in non-performing loans (Agu & Basil, 2013). Loans are the main source of credit risk for most banks. However, other sources of credit risk occur throughout the activities of a bank, including the banking book and the trading book, as well as both on and off the statement of financial position.

The credit risks facing banks other than loans are acceptances, interbank transactions, trade financing, foreign exchange transactions, financial futures, swaps, bonds, equities, options, and in the extension of commitments and guarantees, and the settlement of transactions. However, the purpose of risk management is to reduce the impacts of different kinds of risks related to a preselected domain to the level accepted by society. From the above discussion, it is obvious that there are numbers of risks and uncertainties in the banking industry viz-a-viz a more stringent regulatory framework, deregulation, increasing competition, increasing customer sophistication and generally harsh economic environment. These challenges facing banking industry make the adoption of effective credit risk management strategies very important.

Risk can be classified as systematic and unsystematic. Systematic risk relates to the overall market or the economy, while unsystematic risk is associated with a specific firm. Systematic risk can be reduced through the use of risk mitigation and transmission techniques. Oldfield & Santomero (1997) proffer three generic risk-mitigation strategies: firstly, avoid risks through simple business practices; secondly, diverting risks to others; finally, actively managing risks at the bank level (acceptance of risk). Usually, banks try to eliminate or reduce credit risk in their portfolios.

There are different means of examining the credit worthiness of a borrower among them are: capacity, character, capital, condition and collateral otherwise known as the 5Cs. To Onyia & Oleka (2000), they are known as the canons of good lending. Aremu, Suberu and Oke (2010) described the three basic rules in assessing credit as safety, suitability and profitability. The trio opined that the safety of any credit is of utmost importance. Under this principle, the character, amount generated from cash flow and acceptable securities were equally emphasized. They added further that the reason for obtaining a loan must be legal and not conflicting with monetary policies of the government and also must be in line with the guidelines of the Central Bank of Nigeria (CBN) and the Banks and other Financial Institutions Act (BOFIA). Finally, that profitability should be the guiding force for any activities of a bank. Nigerian deposit money banks, commonly referred to as commercial banks are generally set up for profit-making, hence when they give out loan facilities, they expect profit in return.

Strategies of Credit Risk Management

Credit risk management strategies are the methods used by banks to eliminate or reduce the adverse effect of risk. A sound credit risk management structure is essential for banks so as to enhance profitability which in turn guarantees survival. Kolapo, Ayeni and Oke (2012) noted the main principles in credit risk management process as establishment of a clear framework, delegation of responsibility, prioritization of processes; while responsibilities must be clearly communicated and accountability assigned. The strategies for hedging credit risk include:

(i) Credit derivatives which provide banks with the methods that do not require them to alter their loan portfolio. Credit derivatives enable banks with a different means of fee income and give banks the privilege of reducing their regulatory capital (Shao & Yeager, 2007). The most common form of credit derivative is credit default swap thereby a seller agrees to transfer the credit risk of a loan to the protection buyer. Credit derivatives assist banks to offer more loans to riskier borrowers than they would, and at lower rates. Recent innovations in credit derivatives markets have enhanced lenders' abilities to shift credit risk to other financial institutions, while retaining their relationship with borrowers (Marsh, 2008); and

(ii) Credit securitization enables the transfer of credit risk to a factor or insurance firm. This relieves the bank from supervising the borrower and the fear of hazardous effect of classified assets. This method insures the lending activity of banks. The growing usage of credit risk securitization is because banks employ the instrument of securitization to spread the concentrated risk exposures and to employ an alternative source of funding by realizing regulatory arbitrage and improvement in the liquidity position when selling securitization transactions (Michalak & Uhde, 2009). The cash collateralized loan obligation is also a form of securitization whereby assets (i.e. bank loans) may be removed from the statement of financial position of a bank and then packaged as a marketable securities which could be sold to investors through a special purpose vehicle (SPV) (Marsh, 2008).

The Basel accord is an international principles and regulations guiding the activities of banks to ensure banking soundness and stability. The Basel accord was introduced in 1988 in Switzerland. Compliance with the accord enables banks to be able to identify, generate, track and report risk-related data in an integrated manner, with full auditability and transparency which creates the avenue that enhances the risk management processes of banking institutions. The new Basel capital accord emphasizes the need for banks to employ sound internal credit risk management practices to evaluate their capital adequacy requirements (Chen & Pan, 2012). Adherence to the sound internal lending policy is the cheapest and easiest method of banks' credit risk management. Lending policy must be in tune with the overall bank strategy, while the factors to be considered in designing a lending policy include the existing credit policy, industry norms, general economic conditions of the country and the prevailing economic climate (Kithinji, 2010).

Finally, adopting a credit bureau enables the compilation of information and selling the information to banks with regard to the lending profile of a borrower. The bureau awards a credit

score called statistical odd to the borrower that makes it easy for banks to make an instant lending decision. Example of a credit bureau is the Credit Risk Management System (CRMS) of the Central Bank of Nigeria (CBN).

Concept of Non-performing loans

NPLs can be defined as default loans, which banks are unable to profit from. Non-performing loans are loans that have not expired, but it is uncertain whether the borrowers would be able to repay their debts. Customers of banks in Nigeria consist of business people, civil servants, contractors, petty traders, government at large. Each in one way or another contributes to the poor performance of loans in the banking system. Goldstein and Turner (1996) stated that the accumulation of NPLs is generally attributable to a number of factors, including economic downturn, macroeconomic volatility, high interest rate, excessive reliance on overly high-priced inter-bank borrowings, insider borrowing and moral hazard. Civil servants who borrowed facilities from banks, when their salaries are delayed or denied for a specific period, their loans will stop performing and the consequence is rising non-performing loans. According to Kanu and Hamilton (2014), the issue of periodic strike actions in Nigeria undertaken by the Academic Staff Union of Universities (ASUU) and no payment of staff salaries resulting from there has tended to add to the volume of existing non-performing loans. Most of the retirees have borrowed from banks when they were in active service and hoping to complete the payment of the loan from their gratuities or monthly pensions. The non-payment of such gratuity and due pensions has frequently resulted in bad debts and non- performing loans.

Many contractors borrowed from the banks to execute their projects, some of these projects are often abandoned due to none or poor mobilizations from the government or individual who own the projects; the loans borrowed have also been classified as non-performing loans adding to the existing bad loans. Government who also borrowed from banks for some projects but due to the poor priority of projects, most of these projects are often abandoned and repayment of such borrowed amount often became difficult. NPL of both public and private sectors arises from the diversion of funds away from the original purpose for which they were granted, as well as the misappropriation of funds by borrowers. According to Kanu and Hamilton (2014), Non-performing loans can also be caused by the harshness of the economy of the nation. In some banks, governments have large amounts of non-performing loans and some Commercial banks tend to finance government fiscal deficits and sustain some unprofitable government ventures with large borrowings from banks. These actions increase the prospects of generating NPLs.

In Nigeria banking system, the issue of computerization has its effect; people rely much on the information generated by the computer without considering the capacity and carefulness of the persons whose responsibility it is to "feed" the computer with information. Poor documentation and carelessness have often impacted much on the validity of information in the system. Banks may not have the full names, addresses, occupations of their customers or even the amount borrowed. How can such banks recover the loan borrowed by these types of

customers? Correct information is therefore a "sine qua non" for reducing the incidence of NPLs. A decline of the net worth, which is a managerial buffer for banks, reduces banks' ability to take risks, such as acquiring new customers and investing in growth fields. Non-performing loans hinders banks' intermediary function thereby affecting productivity and performance of the economy in a very negative way.

Mohd, Sok-Gee and Sallahudin (2010), maintained that the management of non-performing loans are often associated with high operational costs leading to dwindling capital growths in the affected banks. Non-Performing Loans (NPLs) reduces the liquidity of banks, distorts credit expansion, and slows down the growth of the real sector with direct consequences for the performance of banks. Somoye, (2010) opined that NPLs also bring down investors' confidence in the banking system, thereby discouraging them from making reasonable investments. As far as the Nigeria banking sector is concern, something has to be done seriously and urgently to bring back the confidence of bank customers in the sector. Confidence is one of the things banks must offer in order to get the patronage of customers (Kanu and Hamilton, 2014).

Theoretical Framework

This study is hinged on adverse selection theory. The theory was developed by Akerlof in 1970. The theory is of the view that in the market, the party with more information on an item to be transacted (i.e. the borrower) is better placed to negotiate optimal terms for the transaction than the second party (i.e. the lender) (Auronen, 2003; cited in Richard, 2011). The party with lesser information on the specific item to be transacted is in a position of making either right or wrong decision concerning the transaction. The theory rests on two main assumptions: that lenders cannot distinguish the degree of risks between borrowers, and that loan contracts are limited (Wangai, Bosire and Gathogo, 2012).

Mwengei (2013) asserted that information sharing reduces adverse selection thereby enhancing banks information on credit applicants. However, it is restricted to involuntary default, that is, a borrowers repay loans when they are capable to do so. In a world with simple debt contacts between risk-neutral borrowers and lenders, the limited liability of borrowers impact a preference for risk among borrowers, and a corresponding aversion to risk among lenders. This is because limited liability of borrowers enables a lender to bear all the downside risk. While all returns on the loan repayment obligation accrue to borrowers (Wangai, Bosire and Gathogo, 2012). It is important for management of banks to put up a sound credit management tools so as to garner more information about borrowers which will in-turn reduce the menace of non-performing loans. Therefore, in line with this theory, commercial banks may find themselves in dilemma; whether to increase interest rates and lower the number of applicants, or reduce the rates and have many applicants some of which may default in servicing their loans. It is argued that in line with stipulations of the adverse selection theory, information sharing is said to reduce adverse selection by enhancing banks' information on credit applicants which will in-turn reduce the level of non-performing loans in Nigerian banking system.

Empirical Review

Rajiv & Sarat (2003) examined non-performing loans and terms of credit of public sector banks in India. It was revealed in the study that banks' deposit ratio and gross domestic product have negative influence on non-performing loans. Hu, Li and Chu (2004) carried out their own study on the impact of ownership structure on non-performing loans. Their findings revealed that increase in the government's shareholding induces political lobbying. On the other hand, private shareholding facilitate more non-performing loans (NPLs) to be manipulated by corrupt private owners. The findings of the study revealed that NPLs decreased as the ratio of government shareholding in a bank rose (up to 63.51%), while the rate thereafter increased. Bank size is negatively related to the rate of NPLs, which supports the argument that bigger banks have more resources for determining the quality of loans.

Ali (2013) examined the impact of macro-economic variables on the non-performing loans in the Albanian banking industry. The findings of the study revealed that gross domestic product, foreign interest rate have positive relationship on non-performing loans while inflation has negative relationship on non-performing loans.

Ahlem & Fathi (2013) investigated the effect of micro and macro economic variables on non-performing loans. The findings of the study revealed that gross domestic product, return on asset have negative relationship with non-performing loans while unemployment, interest rate and loan losses reserve have positive relationship with non-performing loans.

Research Gap and Contribution to the body of Knowledge

Methodologies used by various studies, focused on impact of non-performing loans on economy (Irum, Rehana and Muhammad 2012; Inekwe, 2013; Taiwo and Abayomi, 2013; Agu and Basil, 2013). Some of the variables used in other studies are interest rate, inflation, gross domestic product, loan loss provisions and loans and advances. It is important to state here that there still exists some gaps to be filled when investigating credit management and non-performing loans of commercial banks in Nigeria. There is a need to examine the impact of bank specific control measures on non-performing loans in commercial banks in Nigeria. This gap was addressed in this study. Previous studies employed secondary data while this study uniquely obtained both secondary and primary data. Furthermore, this study uniquely employed ordered probit regression as the statistical tool in achieving the objectives of the study. In this view, this study contributes to the existing knowledge by examining the impact of bank specific variables on non-performing loans in commercial banks.

RESEARCH METHODOLOGY

This study examined credit management and non-performing loans of commercial banks in Nigeria. Both primary and secondary data were employed. The primary data were obtained through copies of questionnaire administered on commercial banks officials in Lagos State. Lagos State was chosen because it is the biggest commercial center in Nigeria and also has the highest number of banks' branches in the country. One hundred and fifty copies of questionnaire

were administered and one hundred were fully filled and returned. The secondary data were however obtained from Central Bank of Nigerian Statistical Bulletin from 1989 to 2014.

Ordered probit regression technique was used to examine the impact of bank specific measures on non-performing loans in Nigeria. The method used in this study was unique because the dependent variable had more than two response categories and the responses are ordered. The hypotheses tested in this study were generated from the research questions and also derived from literature is stated null form as (i) bank specific control measures (i.e. client appraisal, monitoring, special recovery unit, repayment period and loan recovery policy) do not impact significantly on non-performing loans in Nigerian commercial banks (ii) macro-economic variables (i.e. GDP, interest rate, inflation rate and exchange rate) do not impact significantly on non-performing loans in Nigerian commercial banks.

The model used established a relationship between non-performing loans and some macroeconomic variables. Thus, our model is presented as follows:

$NPL = f(GDP, EXCR, INTR, INFL)$ .....(1)

When transformed into a linear regression equation it becomes:

$NPL_t = a_0 + a_1GDPit + a_2EXCRit + a_3INTRit + a_4INFRit + ut$.....(2)

Where:

NPLt = Non-performing Loans (Dependent Variable)
GDPt= Gross Domestic Product
EXCRt= Exchange rate
INTRt = Interest rate
INFRt= Inflation rate

We go ahead to analyze the effects of banking specific control measures on non-performing loans of commercial banks. Thus, using non-performing loans (NPL) as the dependent variable, we write the NPL as being determined

$NPL = f(BSCM)$ .....(3)

$BSCM = f(MTR, SRU, RYP, CLA, LRP)$.....(4)

Substituting equation (4) into equation (3) the equation thus gives a multivariate relationship.

$NPL = f(MTR, SRU, RYP, CLA, LRP)$.....(5)

Econometrically, it will be written thus:

$NPL = \alpha o + \alpha 1MTR + \alpha 2SRU + \alpha 3RYP + \alpha 4CLA + + \alpha 5LRP + \mu$.....(6)

Where:

NPL = Non-performing Loans (Dependent Variable)
BSCM= Bank Specific Control Measures
MTR= Monitoring and Review
SRU= Special Recovery Unit
RYP= Repayment Period
CLA= Client Appraisal

LRP= Loan Recovery Policies

u= Error term

Where a_0 is the constant and a_1 ..... a_5 are the parameters of the variables to be estimated and u is the error term that is normally distributed with a mean of zero and a constant variance.

DATA PRESENTATION AND ANALYSIS

TABLE 1
Reliability Statistics

Cronbach's Alpha	Number of Items
0.704006	6

Source: Author (2018)

Table 1 shows that there is internal consistency among each of the questions explaining the variables used in the study. The closer to 1, the more consistent and reliable the variables are. The Cronbach's Alpha gives a reliability coefficient of 0.704006. This therefore implies that all the variables used in the study are reliable and consistent.

TABLE 2
Result of Ordered Probit Regression

Ordered probit regression — Number of obs = 100
LR chi2(5) = 65.17
Prob > chi2 = 0.0000
Log likelihood = -99.410303 — Pseudo R2 = 0.2469

npl	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
mtr	-.1616823	.0958002	-1.69	0.091	-.3494472	.0260827
sru	-.0027261	.1177452	-0.02	0.982	-.2335025	.2280504
ryp	-.3608335	.1197916	-3.01	0.003	-.5956208	-.1260463
cla	-.1041049	.147349	-0.71	0.480	-.3929036	.1846939
lrp	-.635907	.1356345	-4.69	0.000	-.9017457	-.3700683
/cut1	-6.572696	.928573			-8.392666	-4.752726
/cut2	-6.052859	.91894			-7.853948	-4.25177
/cut3	-4.737503	.8911896			-6.484202	-2.990803
/cut4	-4.424793	.87218			-6.134235	-2.715352

Source: Author (2018)

The ordered probit model was employed to investigate the impact of bank specific control measures (i.e. client appraisal, monitoring and review, special recovery unit, repayment period and loan recovery policy) on non-performing loans in Nigerian commercial banks. The result of each of the control measures were obtained from the average of responses for series of questions asked under the each measure in the questionnaire. The response categories are coded 1 to 5 for responses (Strongly disagreed to Strongly Agreed) respectively. The use of this model was informed by the natural ordering of the response categories (Strongly agreed, Agreed, Indifferent, Disagree and strongly disagreed).

The result of the model is presented in Table 2 which displays the model as a good fit of the true relationship between the dependent and independent variables. This is indicated by the values of the log ratio Chi-statistics 64.67 whose probability value is 0.0000. This result illustrates on one hand, that monitoring and review (MTR), repayment period (RYP) and loan

recovery policies (LRP) are significant determinants of non-performing loans of the commercial banks in Nigeria. On the other hand, client appraisal (CLA) and special recovery unit (SRU) do not significantly affect the non-performing loans of commercial banks. All the independent variables are negatively related to the dependent variable. This implies that the stricter the monitoring, loan recovery policy and repayment period; the less is the probability of non-performing loans being Strongly Disagreed to be affected by these variables. That is, the firmer these policies the less the probability that the banks will have more of non-performing loans. Therefore, specific control measures negatively impacted on non-performing loans by reducing the probability of having non-performing loan in the banks.

TABLE 3

Marginal Effect after Ordered Probit Regression

```
Marginal effects after oprobit
      y  = Pr(npl==5) (predict, pr outcome ( 5))
         =  .45398948
```

variable	dy/dx	Std. Err.	z	P>|z|	[95% C.I.]		X
mtr	-.0640724	.03809	-1.68	0.093	-.138721	.010576	3.36
sru	-.0010803	.04666	-0.02	0.982	-.092537	.090377	3.67
ryp	-.1429933	.04761	-3.00	0.003	-.236307	-.04968	3.22
cla	-.0412553	.05851	-0.71	0.481	-.155924	.073413	4.11
lrp	-.2520011	.05452	-4.62	0.000	-.358864	-.145138	3.77

Source: Author (2018)

Nonetheless, the interpretation of the magnitude of the coefficients of ordered probit model can only be achieved by computing the marginal effect of the probit model. This is presented in Table 3 to discern how much impact each of the variables (client appraisal, monitoring and review, special recovery unit, repayment period and special recovery policy) has on non-performing loans of commercial banks in Nigeria. It is demonstrated that the probability of strongly agreeing that non-performing loan will be high reduces by 0.064, 0.142 and 0.252 with stricter control measures on monitoring, repayment period and loan recovery policies respectively. Therefore, each of the specific control measures reduces the probability of banks having more non-performing loans by the respective value of the marginal effect. In short, the specific control measures that significantly affect non-performing loans are monitoring, repayment period and loan recovery policy each of which has negative impact with non-performing loans of commercial banks.

TABLE 4
Unit Root Test

Variables	Test Statistics	5% Critical Value	Order of Integration	Stationary
logNPL	-3.460	-3.0000	I(1)	First Differencing
logINF	-3.199	-3.0000	I(1)	First Differencing
logGDP	-3.568	-3.0000	I(1)	First Differencing
logINTR	-3.440	-3.0000	I(1)	First Differencing
logEXTR	-3.832	-3.0000	I(1)	First Differencing

Source: Author (2018)

Augment Dickey Fuller test was used to test the stationarity of variables used in the study. Thus, table 4 shows that all the variables such as NPL, INF, GDP, INTR and EXTR test statistics were greater than critical value at 5% level of significance. This implies that all the variables used were stationary at first differencing. This also implies that all the variables were integrated in the same order I(1).

TABLE 5
Co-integrating Rank of a VECM on Non-Performing Loans

Maximum Rank	Eigen value	Trace Statistics	5% Critical Value
0		153.014	68.52
1	0.9689	76.7299	47.21
2	0.8223	38.113	29.68
3	0.5839	19.3207	15.41
4	0.4960	4.2434	3.76
5	0.1754		

Source: Author (2018)

Table 5 revealed that the trace statistic in each of the rank is greater than critical value at 5% level of significance. This therefore implies that there is no long-run relationship among the variables used in the study. That is the variables are not co-integrated. Based on this scenario, the study adopted vector autoregressive model since the variables are not co-integrated.

TABLE 6

Vector Autoregressive Model (VAR) on Non-Performing Loans

Variables	Coefficient	P Value	Remarks
NPL			
Lag 1	0.2590	0.068	Significant 10%
Lag 2	-0.3372	0.021	Significant 5%
Lag 3	-0.827	0.001	Significant 1 %
INF			
Lag 1	0.2515	0.001	Significant 1%
Lag 2	-0.2004	0.005	Significant 1%
Lag 3	0.0061	0.930	Not Significant
GDP			
Lag 1	-2.2312	0.000	Significant 1%
Lag 2	0.7539	0.279	Not Significant
Lag 3	1.6210	0.007	Significant 1%
INTR			
Lag 1	1.3083	0.000	Significant 1%
Lag 2	-1.2273	0.000	Significant 1%
Lag 3	2.460	0.000	Significant 1%
EXTR			
Lag 1	0.1174	0.335	Not Significant
Lag 2	-0.5460	0.000	Significant 1%
Lag 3	-0.0860	0.294	Not Significant

Source: Author (2018)

The table 6 that NPL lag 1, lag 2 and lag 3 were statistically significant in influencing the changes in the dependent variable NPL. It was also discovered that inflation is statistically significant at 1% in lag 1 and lag 2 to influence the variation in NPL, GDP is statistically significant at 1% in lag 1 and lag 3 in influencing the changes in NPL. INTR is statistically significant at 1% in lag 1, lag 2 and lag 3 in influencing the changes in NPL. EXTR is statistically significant at 1% in lag 2 in influencing the changes in NPL. This therefore implies that there is short-run relationship between independent variables (INF, GDP, INTR and EXTR) and dependent variable (NPL).

TABLE 7

Granger Causality Test on Non-Performing Loans

Equation	Excluded	Prob > Chi2
logNPL	LogINF	0.001
logNPL	LogGDP	0.000
logNPL	LogINTR	0.000
logNPL	LogEXTR	0.001
logNPL	ALL	0.000

Source: Author (2018)

The table 7 explains the short-run causality among the variables. It was discovered that all the lagged INFL, GDP, INTR, and EXTR were statistically significant at 1%. This therefore implies that there is a short-run relationship between INFL, GDP, INTR, EXTR and NPL. The implication is that all the variables influenced the changes in the dependent variable (NPL) in the short run.

TABLE 8

Jarque Bera Test on Non-Performing Loans

Equation	Prob> chi2	Distributions
logNPL	0.9366	Normally distributed
logINF	0.9573	Normally distributed
logGDP	0.6920	Normally distributed
logINTR	0.034	Not Normally distributed
logEXTR	0.8265	Normally distributed
ALL	0.6248	Normally distributed

Source: Author (2018)

Table 8 revealed that residuals in all the models except logINTR are normally distributed at 5%. In addition, it was also revealed that all the variables such as NPL, INF, GDP, INTR and EXTR are normally distributed at 5% giving a probability value of 0.6248. This implies that the model is desirable and statistically fit.

Discussion of Findings

The ordered probit model was employed to investigate the impact of bank specific controls measures (i.e. client appraisal, monitoring, special recovery unit, repayment period and special recovery policy) on non-performing loans in Nigerian commercial banks. The results of the study revealed that banks' specific control measures such as monitoring, special recovery unit and loan recovery policy have significant impact on the level of non-performing loans in commercial banks while, client appraisal techniques and special recovery unit do not significantly affect the level of non-performing loans in Nigerian commercial banks which is consistent with adverse selection theory that states that it may be difficult to distinguish good

borrowers from bad borrowers which may result into adverse selection and moral hazards problems.

This study also discovered that macro-economic variables have significant impact on non-performing loans that which is consistent with the study of (Ali 2013; Muhammad and Abrar, 2012). This study is consistent with the a-priori expectation and also consistent with the study of Kanu and Hamilton, 2014; Taiwo and Abayomi, 2013; Ali, 2013; Irum, Rehana and Muhammad, 2012; Muhammad and Abrar (2012), Khemraj and Pasha, 2009 and Fofack, 2005. However, the inconsistency of this study with other studies in Nigeria maybe as a result of sampled size and sampled years.

CONCLUSION AND RECOMMENDATIONS

The ordered probit model was employed to investigate the impact of bank specific controls measures (i.e. client appraisal, monitoring and review, special recovery unit, repayment period and special recovery policy) on non-performing loans in Nigerian commercial banks. The results of the study revealed that banks' specific control measures such as monitoring and review and loan recovery policy have significant impact on the level of non-performing loans in commercial banks while client appraisal techniques and special recovery unit do not significantly affect the level of non-performing loans in Nigerian commercial banks which is consistent with adverse selection theory which postulates that it may be difficult to distinguish good borrowers from the bad ones which may invariably result into adverse selection and moral hazards problems. Findings from the study revealed that macro-economic variables such as gross domestic product, interest rate, inflation and exchange rate have significant impact on non-performing loans. This result is consistent with the study of Ali (2013). The banks' specific control measures do have different impacts on non-performing loans.

The study concluded that monitoring and review of facilities, repayment period and loan recovery policies are significant determinants of non-performing loans in the Nigerian commercial banking sector. On the other hand, client appraisal (CLA) and special recovery unit (SRU) do not significantly affect the non-performing loan of the country's commercial banks. Finally, macro-economic variables (gross domestic variables, interest rate, inflation and exchange rate) are credit management tools.

The study therefore recommends that monitoring of borrowers should be intensified by the bank. There is also the need for bank management to ensure that credit officers perform periodic follow-ups on borrowers to ensure that loans are used for the intended purpose with the regular review of all classes of facilities. Management of commercial banks should ensure reasonable loan repayment periods are given to customers on loans and advances. Finally, bank should put in place proper loan recovery policy including court action as the last resort.

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