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Contents

EDITORIAL BOARD..... ii
INSTRUCTIONS TO CONTRIBUTORS..... iii
SUBSCRIPTION RATES..... vi
Contents..... vii

Industrial Friendly Support Facilities as Empowerment Option for Rural Farmers in Nigeria
Lucky Osaretin Odia **1-16**

Comparative Development Trajectories: Sub-Sahara Africa and Southeast Asia
Bolade M. Eyinla **17-50**

The Roles of Taboo (èèwọ̀) and Superstition in Resource Conservation in Southwestern Nigeria
Ajibade, L.T., Ajadi, B.S. & Ajibade, M.I. **51-66**

Challenges and Coping Strategies of Single Parenting in Lagos State, Nigeria
Ebobo Urowoli Christiana **67-88**

Effects of Corporate Governance Structure on Financial Performance of Quoted Deposit Money Banks in Nigeria
I.B. Abdullahi & A.I. Nafiu **89-104**

The Effects of Communal and Ethnic Conflicts on Rural Development in Tiv-Land, Benue State, Nigeria
Oravee Aule & Matthew Funsho Bello **105-120**

Relevance of the Early Theories of Mass Society in Today's Media Environment
Azeez, Adesina Lukuman & Omowumi Oluwayemisi Azeez **121-130**

The Influence of Self Esteem and Job Satisfaction on Job Involvement among Secondary School Teachers in Lagos State, Nigeria
Opayemi, A.S. & Akinbode James **131-142**

Macro-Economic Variables and Non-Performing Loans of Deposit Money Banks in Nigeria
Osemene, Olubunmi F.; Kolawole, Kayode D. & Salam, Mudathir O. **143-155**

MACRO-ECONOMIC VARIABLES AND NON-PERFORMING LOANS OF DEPOSIT MONEY BANKS IN NIGERIA

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Abstract

The importance of banking sector in the development of a nation's economy cannot be overemphasised. Although banks create no new wealth, their activities facilitate the process of production, distribution, exchange and consumption of wealth. Banks need to exercise caution in the performance of their statutory roles and core activities to avoid non-performing loans (NPLs). NPLs in Nigerian Deposit Money Banks (DMBS) were high to the tune of over ₦649 billion as at 2015; this can culminate into distress. This situation led to mismatch in maturities, liabilities and assets which further reduced liquidity of banks and distorted credit ratings. Hence, this study examined macro-economic variables and non-performing loans of DMBs in Nigeria. Specifically, the study examined the impact of interest rate on non-performing loans in Nigerian DMBs; the effect of the exchange rate on non-performing loans in Nigerian DMBs and the effect of banking reforms on non-performing loans in Nigerian DMBs. The study employed secondary data obtained from Central Bank of Nigeria's Statistical Bulletin and financial statement of selected banks in Nigeria covering a period of 15 years from 2000 to 2015. Panel least square method of multiple regression analysis was employed to achieve the objectives of the study. Results of the regression analysis revealed that exchange rate has significant impact on non-performing loans with coefficient value of 4.971265 and at 5% level of significance. The study concluded that macro-economic variables have significant impact on non-performing loans of DMBs in Nigeria. The study therefore, recommends that Central Bank of Nigeria should be proactive in determining the exchange rate and be anticipatory in their policy formulations on exchange rate so as to reduce non-performing loans in the Nigerian banking sector.

Keywords: Interest rates, Exchange rates, Inflation, Deposit money banks, Non-performing loans, Nigeria

Introduction

Banking sector enhances the flow of funds for productive purposes and helps in channeling funds from the surplus to the deficit sector. The effectiveness of the sector enhances the prosperity and economic growth of a country while the poor performance of this sector not only hampers the economic growth and structure of a particular region but also affects the economy of the whole world (Khan & Senhadji, 2001). The health of the economy is perceived to be closely related to the soundness of its banking system. Although banks are not known as creators of new wealth, by

borrowing, lending and related activities, they facilitate the process of production, distribution, exchange and consumption of wealth. In this way they become very effective partners in the process of economic development. Modern banks are very useful in the utilisation of resources of the country; therefore if there were no banks a great portion of any country's capital could be stagnant.

Credit creation is the main income generating activity of banks, but it exposes the banks to credit risk. It is expedient to note that the importance of credit management cannot be over-emphasised and this requires the establishment of sound and efficient credit policies by government. This has prompted the introduction of different reforms (such as bank consolidation reserve 2005 and bank credit reforms in 2006) over time which were targeted at making the system more effective and strengthening its growth potentials. These reforms were embraced as banks embarked on different services and products such as granting of loans and accepting deposits from customers. However, despite these reforms and policies by the Nigerian government, non-performing loans in the banking system were high to the tune of over 600 billion naira in 2016.

Other challengess include failures in critical gaps in the regulatory framework and regulations of Nigerian banks; unstructured governance and management processes at the central bank of Nigeria; and weaknesses in the business environment (Sanusi, 2012). The identified challenges propelled the need to determine the impact of macro-economic variables on non-performing loans in Nigerian deposit money banks. Specifically, the study examined the impact of interest rate, inflation rate, exchange rate and banking reforms on non-performing loans in Nigerian DMBs. The hypotheses for this study are: (i) interest rate does not impact significantly on non-performing loans (ii) inflation rate does not have significant effect on non-performing loans (iii) exchange rate does not have effect on non-performing loans; and (iv) banking reforms do not impact significantly on non-performing loans in Nigeria.

Literature Review

Conceptual Clarifications: Credit Risk

Credit risk is an investor's risk of loss arising from a borrower who does not make payment as promised (Bluhn, Overbeck and Wagner, 2003). According to Chen and Pan (2012), credit risk is the degree of value fluctuations in debt instruments and derivatives due to changes in the underlying credit quality of borrowers and counterparts.

According to Frederick (2012), the management of credit risk in the banking industry follows the process of risk identification, measurement, assessment, monitoring and control. It involves identification of potential risk factors, estimation of their consequences, monitoring of activities exposed to the identified risk factors and putting in place control measures to mitigate the undesirable effects arising there

from. In some instances, stringent policies would be in place to prevent individuals that had been involved in fraudulent activities or crimes previously from accessing credit facilities.

External factors affecting non-performing loans according to Frederick (2012) can be classified into two: firstly, the economic conditions such as change in national income, unemployment, exchange rate, interest rate, credit availability and credit quality may have impact on credit risk. Liquidity crunch or financial problems have the ability to impact borrowers' ability to fulfill their obligations. In addition, legal and regulatory change could cause financial institutions to change how they oversee a transaction, as well as the quality and ability of debt collection. Secondly, competition among financial institutions in terms of growth, profitability and the desire to be a market leader have the ability to cause financial institutions to lower their standards or improperly price their loan products. This could result in higher cost of increasing non- performing loans.

Concept of Non-performing loans

Non-performing loan is defined as an advance where payment of interest or repayment of installment of principal (in case of term loans) or both remains unpaid for a certain period. According to Luis, Claudia, Akihiro and Inwon (2000), non-performing loans or assets arise when principal or interest is due and unpaid for 90 days or more or interest payment equal to 90-day interest or more have been capitalised, refinanced or rolled over. However, for countries using standard classification systems, non-performing loans are often defined as loans in the three lowest categories (substandard, doubtful or loss). Bishnu (2012) asserted that non-performing loans refer to those financial assets from which banks no longer receive interest or installment payments as scheduled.

Kolapo, Ayeni, and Oke (2012) averred that a credit facility is said to be performing if payment of both principal and interest are up to date in accordance with agreed repayment terms. The non-performing loans (NPL) represent credits which the banks perceive as possible loss of funds due to loan defaults. They are further classified into substandard, doubtful or lost. Bank credit in lost category hinders banks from achieving their set targets.

The main cause of non-performing loans include limited institutional capacity, inappropriate credit policies, volatile interest rates, poor management, inappropriate laws, low capital and liquidity levels, direct lending, massive licensing of banks, poor loan underwriting, laxity in credit evaluation, poor lending practices, government interference and inadequate supervision by the central bank (Kithinji, 2010). According to Srinivas (2013), the impact of non-performing loans on banks can be summarised as reduction of earning capacity of the assets which makes the return on assets to get affected and blockage of capital. NPLs carry risk weight of 100% (to the extent it is uncovered). As NPLs do not earn any income, they

adversely affect the capital adequacy ratio of the bank and lead to incurrence of additional costs.

Economic Determinants and their Relationship with Non-Performing Loans

Interest rate is one of the primary economic determinants of non-performing loans or bad loans. An increase in interest rate weakens loan payment capacity of the borrower therefore non-performing loans and bad loans are positively correlated with interest rates (Nkusu, 2011). As far as interest rate policy is concerned, it plays a very important role in NPLs in a country. According to Hoque and Hossain (2008), non-performing loans are highly correlated with the high interest rates which enhance the debt burden of the borrowers and causes loan defaults. On the other hand, there exist a relationship between inflation and non-performing loans.

Nkusu (2011), opined that the relationship can either be positive or negative. He further opined that inflation can affect loan payment capacity of borrowers positively or negatively, higher inflation can enhance the loan payment capacity of borrower by reducing the real value of outstanding debt; moreover increased inflation can also weaken the loan payment capacity of the borrowers by reducing the real income. Nkusu (2011) further explained that inflation reduces the debt servicing capacity of the loan holders as lenders adjust the lending interest rates to adjust their real return.

Khemraj & Pasha (2009) asserted that as far as exchange rate and non-performing loans are concerned, there is a positive relationship between real effective exchange rate and non-performing loans. An appreciation in exchange rates may have different implications i.e. it can adversely affect the loan payment capacity of export oriented firms (Fofack, 2005). On the other hand it can positively affect the loan payment capacity of those borrowers who borrow in foreign currency.

Banking Reforms in Nigerian Deposit Money Banks

Banks recapitalisation reform in 2005 was designed to promote the viability, soundness and stability of the system to enable it adequately meet the aspirations of the economy in terms of enhanced economic growth and development (Ikechukwu, 2012).

The reform agenda was motivated by the need to proactively put the Nigerian banking industry on the path of global competitiveness to enable it effectively respond to the challenges of globalisation. The overall objective is to guarantee that the economy and Nigerians do not remain fringe players in the context of a globalising world. Banking reform is meant to address weak capital base. The issue of reform in the banking sector started with the deregulation of the rate of interest in both loans and deposits. Again, government set out new rules for the establishment of banks and issuing of bank licenses. The new rules made the entry into the banking system much easier than previously. The immediate effects of these policy changes

were the marked increase in banks from 56 (Merchant and Commercial banks) in 1986 to 109 by 1990 and 120 by 1992 (Kanu and Hamilton, 2014).

The banking recapitalisation in 2005 helped the commercial banks to increase their shareholders funds to a minimum of 25 billion naira by the end of December 2005 and consolidation through merger and acquisition.

Egwuatu (2004) also noted that prior to the year 2004, a bank's capital base was about two billion naira. A family can therefore contribute that sum, register and own a bank and begin to gather deposits from the public. Managing the fund becomes a problem because there may not be liquid enough to cater for the financial needs of the public. This led to frequent bank failure. The banks were not giving long term loans because they would want to get back their money on time to avoid the problem of bad and doubtful payment. Their aim therefore is to shore up the financial base of the banks in the country beyond fragile level.

Edozie (2005) pointed out that due to the frequency of bank failure in Nigeria, the CBN decided to increase the capital base of the banks to twenty five billion naira to make the banks stronger financially and to be more liquid. The banks that could not make it, merged with two or more banks to recapitalize; some acquired one or more banks. The recapitalisation reform sorted out the viable banks from non viable banks and led to twenty banks emerging from the eighty nine banks previously in existence and further reduced the commercial banks in Nigeria to 19 in year 2015.

Empirical Review

Ali (2013) studied the impact of macro-economic variables on the non-performing loans in the Albanian banking industry. Secondary data for a period of four years from 2008-2012 was used in the study. The variables adopted for the study were non-performing loans, gross domestic product, base interest rate, inflation and foreign interest rate. Ordinary least square was employed for the study. The findings of the study revealed that gross domestic product, and foreign interest rate have positive relationship on non-performing loans while inflation has negative relationship on non-performing loans.

Ahlem and Fathi (2013) investigated the impact of micro and macro determinants on non-performing loans in three European countries (Italy, Greece and Spain). Secondary data for a period of five years (2004 to 2008) was used in the study, while the variables for the study were non-performing loans, return on assets, loan losses reserves, change in loan granted, gross domestic product, unemployment and interest rate. Pearson correlation coefficient was used in analysing the variables. The findings of the study revealed 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.

Mohammadreza and Junaina (2013) investigated the sensitivity of non-performing loans to macroeconomic variables in the Malaysian banking sector. Secondary data from Malaysian banks for six years (1997 to 2012) was chosen for

the study while the variables in the study were interest rate, gross domestic product, total domestic credit to private sector and non-performing loans. Panel data was used in the study. It was found in the study that lending interest rate and foreign direct investment have positive effect and a reverse effect with one year delay on non-performing loans while total domestic credit with two year delay have positive effect on non-performing loans.

Inekwe (2013) examined the relationship between real gross domestic product and non-performing loans. The study employed secondary data from Central Bank of Nigeria for a period of fifteen years (1995 to 2009). The variables for the study were gross domestic product and non-performing loans. Pearson product moment correlation coefficient was used to analyse the study and the findings of the study revealed that at 5% level of significance there is a significant relationship between gross domestic product and non-performing loans.

Kanu and Hamilton (2014) investigated the rising incidence of non-performing loans and the nexus of economic performance in Nigeria. The study employed secondary data from Central Bank of Nigeria for a period of twenty nine years (1984 to 2012) and adopted non-performing loans, lending rate, inflation rate and gross domestic product. With the aid of ordinary least square, the findings of the study revealed that any increase in non-performing loans will decrease gross domestic product.

Research Gap and Contribution to the body of Knowledge

Methodologies used by various studies focused on impact of non-performing loans on various economies (Irum, Rehana and Muhammad 2012; Inekwe, 2013; Taiwo and Abayomi, 2013; Agu and Basil, 2013). Some of the variables used in previous studies were interest rate, inflation, gross domestic product, loan loss provisions and loans and advances. In the study of credit management and non-performing loans in Nigeria, it is important to add banking reforms as a variable in managing non-performing loans in deposit money banks. This gap was addressed in this study.

Theoretical Framework

Asymmetry information theory was adopted for this study. Asymmetry information theory was developed by Akerlof in 1970. The asymmetry information theory refers to situations in which some agent in a trade possesses information while other agents involved in the same trade do not. Information asymmetry describes the condition in which relevant information is not known to all parties involved in an undertaking (Ekumah and Essel, 2003). The theory of asymmetric information tells us that it may be difficult to distinguish good borrowers from bad borrowers (Auronen, 2003; Richard, 2011) which may result into adverse selection and moral hazard problems. The theory explains that in the market, the party that possesses

more information on a specific item to be transacted is in a position to negotiate optimal term for the transaction than the other party (Auronen, 2003).

The party that knows less about the same specific item to be transacted is therefore in a position of making either a right or wrong decision concerning the transaction. Adverse selection and moral hazards have led to significant accumulation of non-performing loans in banks (Bester, 1994).

Methodology

To examine the impact of macro-economic variables on NPLs in Nigerian DMBs, secondary data was obtained from Nigeria's Central Bank Statistical Bulletin and financial statements of the selected DMBs. The population comprises the 19 DMBs in Nigeria while a sample size of fourteen (14) banks were selected based on the following criteria: banks that are wholly or mainly owned by Nigerians; banks that retained their brand names over time; banks that experienced either universal reform or consolidation reform in Nigeria; and banks that experienced merger and acquisitions in Nigeria.

Based on the criteria listed, the fourteen banks that met the conditions above as at 31st December 2015 were used for the study; the banks represent 67 percent of the total population. The banks are Access Bank, Diamond Bank, Fidelity Bank, First Bank PLC, First City Monument Bank (FCMB), Guaranty Trust Bank (GTB), Skye Bank, Stanbic IBTC Bank, Sterling Bank, United Bank of Africa (UBA), Unity Bank, Union Bank, Wema Bank and Zenith Bank.

Panel least square method of multiple regression analysis was used to achieve the other objectives of the study. The model used for the study is stated as:

$NPL = f(MCV)$.....(i)

$NPL = f(EXCR, INTR, INFL, RFM)$ .....(ii)

Where:

NPL = Non-performing Loans (Dependent Variables)

MCV= Macro-economic Variables

EXCR= Exchange Rate

INTR = Interest Rate

INFR = Inflation Rate

RFM = Banking Reforms

The model was then estimated as:

$NPL_{it} = a_0 + a_1EXCR_{it} + a_2INTR_{it} + a_3INFR_{it} + a_4RFM_{it} + \mu_{it}$.....(iii)

Data Analysis and Interpretation of Results

The results obtained for the fixed and random effect models are similar. Hence, Hausman test was conducted to choose the most appropriate model between the two. The result of the test is presented in Table 4.1 which shows the chi-statistics (0.06) and the P-Value of the chi-statistics (0.9995). Since the p-value is greater than 5%, the null hypothesis for the test is accepted and it made the study to conclude that

random effect is more appropriate to be used. Therefore, the result and conclusion of this study is on the basis of the random effect result.

Table 4.1: Hausman Test

```
. hausman fix ran
```

	Coefficients (b) fix	(B) ran	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
intrate	-.0732961	-.0733341	.000038	.0073056
infrate	-.0117093	-.0118799	.0001706	.0012643
lnexrate	4.95045	4.971265	-.0208153	.3115064
dreform	.8969992	.9072553	-.0102561	.0484219

b = consistent under Ho and Ha; obtained from xtreg
B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(4) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= 0.06
Prob>chi2 = 0.9995

Source: Authors' Computation, (2016).

To evaluate the impact of macroeconomic variables and banking reforms on non-performing loans, the fixed and random effect regressions were estimated. The dependent variable is log of non-performing loans (LNPLs) while the independent variables are interest rate (intrate), inflation rate (infrate), log of exchange rate (lnexrate) and a dummy variable for banking reforms (dreform). The NPL and EXRATE are logged to neutralise the influence of large values and harmonise the units of measurement. Table 4.2 shows the result of the fixed effect model indicated to be a good fit given the f-statistics (34.47) with its probability value (0.0000) while the intra-class correlation (rho) shows that 75.1% of the fraction of variation in non-performing loans is due to difference across banks.

The result revealed that interest rate and inflation rate have negative relationship with non-performing loans while exchange rate and banking reforms have a positive relationship with NPLs. However, only exchange rate (EXRATE) and banking reforms (DREFORM) have significant impact on non-performing loans (NPL) of DMBs in Nigeria. This is indicated by the coefficients of LNEXRATE (4.95) and DREFORM (0.897) with their p-values 0.02 and 0.005 respectively. The p-values are less than 0.05 implying the significance of the two variables. It means that on the average, 1% increase in exchange rate will lead to 4.95% increase in non-performing loans. Equally, banking reforms averagely increase non-performing loans by 0.89% in Nigeria.

Table 4.2: Result of Fixed Effect Regression

```
. xtreg  lnpl intrate infrate lnexrate dreform, fe

Fixed-effects (within) regression               Number of obs      =       154
Group variable: cid                             Number of groups   =        14

R-sq:  within  = 0.1562                         Obs per group: min =         9
       between = 0.0299                                        avg =      11.0
       overall = 0.0558                                        max =        14

                                                F(4,136)           =      6.29
corr(u_i, Xb)  = 0.0324                         Prob > F           =    0.0001
```

lnpl	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
intrate	-.0732961	.0486443	-1.51	0.134	-.1694932	.022901
infrate	-.0117093	.0085301	-1.37	0.172	-.0285782	.0051595
lnexrate	4.95045	2.11142	2.34	0.020	.7749874	9.125912
dreform	.8969992	.3125803	2.87	0.005	.2788528	1.515146
_cons	-9.776843	9.673494	-1.01	0.314	-28.90677	9.353079
sigma_u	2.7279247					
sigma_e	1.5706903					
rho	.75101853	(fraction of variance due to u_i)				

```
F test that all u_i=0:     F(13, 136) =    34.47                 Prob > F = 0.0000
```

Source: Authors' Computation, (2016).

Similarly, using the same dependent variable and explanatory variables, the intra-class correlation (rho) shows that 79.58% of the fraction of variation in performance is due to difference across firms while the wald-statistics (25.91) with p-value (0.0000) indicates that the model is a good fit. The result of the random effect model presented in Table 4.3 shows that log of exchange rate (LNEXRATE) and banking reforms (DREFORM) variables are statistically significant. This is shown by the coefficient of LNEXRATE (4.97) with p-Value (0.017) and that of DREFORM (0.907) with p-value (0.003). By magnitude, banking reform averagely leads to increase in non-performing loans by 0.907% while 4.97% increase in non-performing loans of banks is induced by 1% increase in the exchange rate in Nigeria.

Table 4.3: Result of Random Effect Regression

```
Random-effects GLS regression                   Number of obs      =       154
Group variable: cid                             Number of groups   =        14

R-sq:  within  = 0.1562                         Obs per group: min =         9
       between = 0.0307                                        avg =      11.0
       overall = 0.0560                                        max =        14

Random effects u_i ~ Gaussian                   Wald chi2(4)       =     25.91
corr(u_i, X)       = 0 (assumed)                Prob > chi2        =    0.0000
```

lnpl	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
intrate	-.0733341	.0480926	-1.52	0.127	-.1675939	.0209256
infrate	-.0118799	.0084359	-1.41	0.159	-.028414	.0046542
lnexrate	4.971265	2.088315	2.38	0.017	.8782426	9.064287
dreform	.9072553	.3088069	2.94	0.003	.3020048	1.512506
_cons	-9.779356	9.603118	-1.02	0.309	-28.60112	9.042409
sigma_u	3.1009712					
sigma_e	1.5706903					
rho	.79582475	(fraction of variance due to u_i)				

Source: Authors' Computation, (2016)

Discussion of Findings

This study discovered that exchange rate has positive significant impact on non-performing loans, that is, an increase in exchange rate will have significant impact on the level of non-performing loans which is consistent with Ali (2013); and Muhammad and Abrar (2012) because exchange rate can positively affect the loan payment capacity of those borrowers who borrow in foreign currency. It was revealed in the study that inflation rate have negative relationship with non-performing loans because increased inflation can also weaken the loan payment capacity of the borrowers by reducing the real income. The findings support the previous study conducted by Ali (2013); Khemraj & Pasha (2009) and Fofack (2005). However, the study revealed that interest rate has a negative relationship with non-performing loans and is in line with the findings of Irum, Rehana and Muhammad, (2012).

The study also revealed that banking reforms have positive relationship with non-performing loans in Nigerian DMBs. This may be as a result of the increase in banks' recapitalisation which enhances the lending power of banks and in turn leads to an increase in non-performing loans in Nigerian DMBs. This study is consistent with asymmetry information theory i.e. government of Nigeria should be proactive in determining the exchange rate so as to negate the information hidden by foreign borrowers from Nigerian banks which may result in non-performing loans.

Conclusion and Recommendations

The study concludes that exchange rate has significant impact on non-performing loans (NPLs) of DMBs and the reforms of banking industry also have positive relationship with non-performing loans in Nigeria. Based on the conclusion, the study therefore recommends that each bank management and its corresponding credit department should take into account the effects of exchange rate when granting loans. Central Bank of Nigeria should be proactive in determining the exchange rate and be anticipatory in their policy formulations on exchange rate towards reduction of non-performing loans in the Nigerian banking sector. The regulatory authority should equally, as a matter of importance, continue to update the reforms to take care of happenings in the banking environment and the country at large.

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