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EFFECT OF BANK SPECIFIC AND MACRO-ECONOMIC FACTORS ON NONPERFORMING LOANS OF LISTED DEPOSIT MONEY BANKS IN NIGERIA

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Abstract

The level of non-performing loan in Nigeria has been on the increase without adequate empirical evidence to explain or arrest this ugly situation. Credit risk is one of the prominent areas of focus both by the individual money deposit banks as well as the regulatory bodies. The risk of default is often associated with loan disbursement. Hence, this study considered the Impact of Bank specific and Macroeconomic factors on Nonperforming Loans in Nigeria from 2008-2020. The study made use of time series data obtained from the central bank of Nigeria statistical bulletin and disaggregated data collected from 12 quoted money deposit banks in Nigeria. Regression analysis was employed after all diagnostic tests have been well accounted for. The stata13 output revealed that capital adequacy ratio and lending rate has insignificant and significant negative impact on nonperforming loans respectively while, loan-deposit-ratio and crude oil price has insignificant and significant positive impact on nonperforming loans of the commercial banks. The study recommends diversification of loan portfolios, increase in prime lending rate among others.

Key Words: Nonperforming loans, Crude oil price, Lending rate, Loan-deposit ratio, Nigeria

1. Introduction

Commercial banks play a vital role in financial intermediation which focuses on accepting deposit from the surplus spender and making such fund available in form of loan and advances to the deficit spender. To simply put, lending is a fundamental function of commercial banks. “Customers” who have a contractual relationship by virtue of being an account holder can apply for loans either for investments, consumptions and other purposes considered satisfactory by the bank. The credit facilities may be in form of loan and advances, overdraft, business funding arrangements and local purchasing order financing amid others. (EL-maude, Abdul-Rahman & Ibrahim, 2017). To ensure sustainability, stability and profitability, bank procure cheaper loanable funds from customers in form of deposits and lend these funds to borrowing customers at a relatively higher rate of interest (lending rate) than the depositors interest rate paid to the depositors by the bank (Warue, 2013). In the opinion of Warue, one of the difficulties in lending is the possibility of loans going bad. This suggests that lending involves credit risk especially the risk of default. Banks use diverse methods such as loan appraisal, client screening and follow-ups to reduce the level of loan default.

The Basel Committee (2001), defines nonperforming loans as loans whose principal and interest remain unpaid after 90 days of maturation. There are so many factors that determines the level of nonperforming loan. This includes factors within the control of the bank (internal factors such as Capital adequacy ratio, loan-deposit ratio) and macroeconomic factors such as inflation rate, oil price fluctuations, lending rate among others (CBN Report, 2020).

Nonperforming loan is an issue around the world and Africa. World Bank (2019), revealed that San Marina holds 61.69% of Npls, Eq. Guinea 48.81%, Ukraine 48.36%, Greece 36.45%, Congo 23.07%, Chad 22.86 Ghana 13.94 % among other given figures.

In Nigeria, extract from the banks financial statement shows that nonperforming loan grew from ₦1.639 trillion in December 2016 to 2.424trillion by September 2017 (CBN, 2017). This represents an increase of 50%. Also, in the third quarter of 2020, nonperforming loan rose by ₦333bn to ₦1.7trn with an increase in nonperforming loan ratio 6.3% which is above the prudential guideline of 5% (CBN Monetary Policy Comminique, 2021). About (₦ 238bn) 11% of the loan was attributed to loan given to the oil and gas sector and the economic circumstances arising from the outbreak of the raging coronavirus pandemic (Popoola, 2021). Studies such as Al-Khazali and Mirzaei (2017), Idris and Nyan (2016), found a positive relationship between crude oil price and nonperforming loan.

Similarly, capital adequacy ratio (CAR) is an important factor when considering the level of nonperforming loan. The lower the ratio, the higher the level of NPLs. The CBN (2017) report revealed that CAR was 11.5% at the end of June, 2017 and further decline to 10.2% in December of the same year which is below the regulatory threshold of 15% as specified by the CBN. Studies such as Islam and Islam (2018), Wood and Skinner (2018); established a negative relationship between the variable of capital adequacy and nonperforming loan.

Likewise, Loan-Deposit ratio (LDR) is another recent and strong determinant of nonperforming loan. The CBN as at September 30th, 2019 increased the loan-deposit ratio of banks from 60% to 65% to boast credit mainly to farmers, small and medium scale business and individuals (CBN Circular, 2019). Increase in this ratio, may force banks to start given out loans to unqualified customers just to meet up with the requirement of the CBN and to avoid possible penalties. Literatures such as Rahman et al. (2017); Jimenez and Saurian (2006) established a positive relationship between loan-deposit ratio and nonperforming loan.

Equally, Lending rate is a major determinant of nonperforming in Nigeria (Akinlo& Emmanuel, 2014). This is because higher lending rate makes it difficult for borrower to pay back their loans as at when due. The prime lending rate in Nigeria as at December, 2020 was 11.35% and hit its maximum of 28.31% in the same year (CBN, Report, 2021) Many studies found a positive relationship between lending rate and nonperforming loan such as Amah (2017), Gezu (2014), Adeola and Ikesu (2017) and a host of others. However, Chege (2014) and Mondal (2016), established a negative relationship between nonperforming loan and lending rate.

Many studies have been conducted on factors affecting non-performing loans in Nigeria; such as: Idris and Nayan (2016), Atio (2018), Rajha (2016), Ofori-Abebrese et al. (2016), Badar and Javid (2013) and a host of others. However, there is paucity of studies on the impact of

fluctuating crude oil price and loan-deposit ratio on nonperforming loan. Hence, this study seek to examine the Impact of Bank Specific and Macro-economic Factors on Nonperforming Loan of Quoted Money Deposit Banks in Nigeria between the periods of 2008-2020. This period is considered suitable for the study due to the global economic meltdown in 2008 and the ravaging effect of the Covid-19 pandemic in 2020.

H₀₁: Capital adequacy ratio has no significant impact on nonperforming loans of quoted commercial banks in Nigeria

H₀₂: Loan-depositratio has no significant impact on nonperforming loans of quoted commercial banks in Nigeria

H₀₃: Oil price movement has no significant impact on Nonperforming loans of quoted commercial banks in Nigeria

H₀₄: Lending rate has no significant impact on nonperforming loans of quoted commercial banks in Nigeria

2. Review of Empirical Studies

Malaimi (2017) studied the effect of capital adequacy, loan growth and profitability on nonperforming loans of Tanzania Banking sector. The study made use of regression analysis, which found out that CAR and profitability posed an insignificant effect on nonperforming loan of Tanzania banking sector.

Rahman, et al. (2017) studied the Impact of Financial Ratio on nonperforming loans of quoted commercial banks in Bangladesh. The study observed 20 banks from 2010-2015; the result reveals that the variable of capital adequacy ratio and return on asset shows a negative influence on nonperforming loan. While the variable of loan-deposit ratio exerts positive influence on nonperforming loan.

Also, Seogeng et al. (2018) studied the effect of loan-deposit ratio among other variables on bank performance using ROA as proxy. The study established a significant negative relationship between loan-deposit ratio and bank performance.

Wood and Skinner (2018), looked at the causes of Nonperforming loan of banks in Bardados over the period of 1991-2015. The study found out that the variables of return on equity, return on asset, loan to deposit ratio and CAR are strong determinant of nonperforming loan. Also, Osuma et al. (2019), Examined the “Effect of global oil price decline on the financial performance of sampled deposit money banks in Nigeria”. The result shows that oil price has positive and significant effect on the financial performance of banks. Also, oil price decline has led to the dramatic increase in non-performing loans, revenue shortfalls, mass sacking of staff, deterioration of the banks’ asset quality, decrease in the bank deposit base, reduction in the banks’ profits and so on.

Similarly, Al-Khazali and Mirzaei (2017), investigated oil price movement and its impact on the Nonperforming Loan of banks with evidence from oil-exporting countries. The study made use of data collected from 2310 commercial banks in 30 countries using a dynamic GMM model for the period 2000-2014. The result shows that oil price has significant impact on NPLs of banks and this asymmetric impact of oil price, tends to affect the nonperforming loans of larger banks more than the smaller once.

Similarly, lending rate is a strong determinant of nonperforming loan in Nigeria. Amah (2017) Studied on the factors responsible for non-performing loans in emerging economies with special attention on Nigeria banking industry. Time series data for the period 1993-2014 was collected for the study. OLS was employed in the study. The result shows that Bank lending rate had positive and direct effects on non-performing loan. Many empirical evidences show that lending interest rate has a positive and direct relationship with NPLs (Khan & Ahmad 2017, Khemraj & Pasha, 2009). Increase in lending interest rate will lead to a similar increase in the rate of NPLs. However, the study of Chege (2014) and Mondal (2016) among others shows a negative relationship between lending rate and nonperforming loan.

The moral hazard theory as developed by Akerlof (1976); later reviewed by Keeton and Morris (1987) as well as Berger and Deyong (1997). The theory put forward that bank with low capital base may be tempted to raise earning by giving loan and advances to borrowers do not meet up with the quality threshold. Hence, leading to nonperforming loan. That is, the assumption of the theory is that nonperforming loan increases when the capitalization of banks is decreasing; also, an increase in loan-deposit ratio increases the level of nonperforming loan among other factors (Auadit& Nguyen, 2016).

The Back-Luck Hypothesis is developed by Berger and DeYoung (1997). They hypothesized that external factors that affect the economy on the aggregate will equally exert its effect on the level of nonperforming loans either positively or negatively. Bad luck in this context mean unexpected occurrences or changes in the macro-economic variables that lead to an uncontrollable variation in the level of nonperforming loan. According to Podpiera and Weil (2008), when there is a paradigm shift in macroeconomic factors, banks will incur extra cost when it comes to managing loan portfolio which will subsequently weakens the efficiency of the bank.

3. Methodology and Model Specification

This study made use of longitudinal research design as recommended by Ameer (2015) for panel studies. This comprised of time series data collected from the CBN statistical bulletin as well as the disaggregated data collected from the published financial statements of 12 quoted Money Deposit Banks from 2008 - 2020. However, there were 13 quoted banks but 12 was selected due to availability of data. Hence, Unity Bank was dropped. The banks selected include: Access Bank Plc, First City Monument Bank, Union Bank Nigeria First Bank Plc, Guaranty Trust Bank Plc, Ecobank Transnational Incorporation, Stanbic IBTC, Sterling Bank Plc, Fidelity Bank Plc, United Bank for Africa Plc, Plc, Wema Bank Plc and Zenith Bank Plc. The data collected from these banks were analyzed using descriptive statistics, diverse diagnostic tests as well as regression analysis.

Nonperforming Loans (NPLs) is the dependent variable while the independent variables consist of crude oil price growth rate, lending rate and loan-deposit ratio which are measured and calculated as follows:

Table 1:Measurement of Variables

Variables	Symbols	Expected Sign	Measurement	Source
Nonperforming loan	NPL	+	Nonperforming loan/ total loan	Wurue,(2013), Rajha (2016)

Crude oil price	COP	+	Crude oil price growth rate	Idris and Nayan (2016).
Lending rate	LRT	+	Prime lending rate	Amah (2017), Sheefeni (2016)
Loan-Deposit Ratio	LDR	+	Total Loan/ Total Deposit	Rahman, Asaduzzaman and Hossin (2017)
Capital Adequacy Ratio	CAR	-	Tier1+Tier2/ Risk weighted asset	Malaimi (2017), Rahman etal (2017)

Source: Authors' Computation, 2021

To properly examine the impact of bank specific factors and macroeconomic variables on nonperforming loan of quoted deposit money banks in Nigeria, the model formulated by Wurue (2013) was modified to suit this study. The model is presented below:

Hence, from the Equation above;

Where Y_{it} = dependent variable, β_{it} = intercept term $\beta_1 - \beta_4$ = Coefficients of the regression, BS_{it} = Banks Specific factors; $B2Macro_{it}$ = macroeconomic factors and ε_{it} = error term

4. Result and Discussion

This include the summary of descriptive statistics, diagnostic test and regression results.

Table 2: Summary of Descriptive Statistics

Variable	Mean	Std.Dev.	Min	Max
NPLS	0.611649	0.0442204	0.10273	0.259855
COP	1.233077	33.13702	-50.87	63.75
CAR	0.2104459	0.0818426	0.049284	0.514536
LRT	16.23077	1.805782	11.35	19.55
LDR	69.85385	18.30762	10.00	99.20

Source: Stata13 Output, 2021.

The table 2 shows the level of deviation of the variables under study among the commercial banks. Comparing the mean value of 1.233%, 16.231% and 69.854% for the variable of crude oil price growth rate (COP), lending rate (LRT) and loan-deposit ratio (LDR) against their standard deviation of 33.137% for COP, 1.806% for LRT and 18.308% for LDR; it shows that there is a great variation in term of magnitude among the commercial banks in the period under study. Similarly, the variable of nonperforming loan (NPL) and capital adequacy ratio (CAR) shows moderate variation among the banks. The fluctuation in COP, LRT and LDR was noticeable given their minimum and maximum value of -50.87% and 63.73% for COP, 11.35% and 19.55% for LRT as well as 10% and 99.2% for LDR respectively.

Diagnostic Test

This includes: Multicollinearity test, Normality test, Heteroskedasticity test, Hausman test, Breusch and Pagan Lagrangian test for random effect and Woodridge Test for autocorrelation.

Table3: Summary of Diagnostic Test

Test	Purpose	Decision Rule	Result	Decision	Source
VIF(variance Inflation Factor)	To check for multicollinearity among the variables	VIF less than 5 and more than .10 shows absence of multicollinearity	VIF 1.34	No multicollinearity	Kothari &Garg (2014)
Shapiro-Wilk	To test for normality	*P<.05 is interpreted as significant	P-value .68912	Not-significant and shows normality.	Gujarati and Portal (2009)
Breusch-pagan/ Cook-Weisberg test	To check for homoskedasticity	If *P < .05; shows the presence of homoskedasticity	P-value 0.2162	Insignificant, and presence of heteroskedasticity	Gujarati and Portal (2009)
Hausman Specification Test / Sigmamore	To choose the prefer model between FE and RE regression	If *P<.05, pick FE, if *P>.05, pick RE reg.	P-value 0.8794	The random effect (RE) is selected	Green (2009)
Breusch & Pagan Langrangian Test	To choose between RE or Pooled reg. Model	If *P <.05, pick RE otherwise, pick Pooled.	P-value 0.00**	The RE model is picked for the study	Levin, Lin and Chu (2002)
Woodridge Test	Test for first order autocorrelation	If *P <.05 shows significance	P-value 0.6848	Not-Significant. I.e, no serial autocorrelation	Kothari &Garg (2014)

Source: Stata13 Output, 2021

The results of the Pooled, fixed and random effect model are presented in the table below

Table 4:Summary of Regression Results (POOLED, FEM and REM)

Variables	Coefficient	P-value	Coefficient	P-value	Coefficient	P-value
Model	Pooled OLS			Fixed Effect Model		Random Effect
Constant	0.17	0.00**	0.16	0.00**	0.16	0.00**
CAR	-0.05	0.26	-0.03	0.49	-0.40**	0.39**
LDR	0.00**	0.68	2.22	0.99	0.00**	0.89
COP	0.00**	0.03	0.00**	0.02	0.00**	0.02
LRT	-0.00**	0.03	-0.01	0.01	-0.06	0.01
R-Square- Adj R-Square-	0.0600 0.0351	0.0678 0.0582		0.067 0.0592		
F-Stat - Prob>F-	2.41 0.0519	2.54 0.0423		Wald Chi2 10.52 Prob>Chi2 0.032		

*Source: Stata13 Output, 2021.***Table 5: Result of Hypotheses Testing**

Relationship	Expected Sign	Actual Sign	Significant or not Sig.	Remark (H0)
CAR>NPL	Negative	Negative	Not significant	Fail to reject
LDR>NPL	Positive	Positive	Not significant	Failed to reject

COP>NPL	Positive	Positive	Significant	Reject
LRT>NPL	Positive	Negative	Significant	Reject

Source: Author's Computation, 2021.

The regression result displayed in table 4 and 5 shows that capital adequacy ratio (CAR) has a negative relationship with nonperforming loan. By, inference, it can be deduced that any unit increase in CAR will lead to a corresponding 0.4% decrease in nonperforming among the commercial banks. The probability value which is also higher than the alpha value 0.05 shows that it is statistically insignificant. Hence, the study failed to reject the null hypothesis that says capital adequacy does not have any significant impact on nonperforming loan of the quoted commercial banks. This finding is in consonance with the study of Wood & Skinner (2018), Islam and Islam (2018).

Similarly, Loan to deposit ratio has a positive relationship with nonperforming loan. However, the exhibited relationship was not statistically significant as it shows zero impact on NPLs. This outcome is in tandem with Asaduzzamanetal (2017), Jimenenezetal (2006) among others. In addition to the foregoing, the variable of crude oil price growth rate shows a positive and significant impact on NPLs. It can be inferred that any unit increase in crude oil price will lead to a significant corresponding increase in the NPLs of commercial banks in Nigeria. This result support the study of Idris and Nayan (2016), Osamah and Ali (2017) among others.

Also, prime lending rate have a negative coefficient of -0.06 and a corresponding P-value of 0.01. This shows that there is a negative significant relationship between prime lending rate and NPLs among the commercial banks. Increase in prime lending rate mean less liquid fund for the banks which also connote reduced ability to lend out to potential borrowers. Also, many borrowers will be discouraged to take loan as it come at a very unbearable cost to them. As such, they may be plunged to seek for alternative fund through other means. Hence, reducing the level of possible nonperforming loans of the commercial banks. This finding is consistent with the findings of Chege (2014) and Mondal (2016).

5. Conclusion and Recommendations

The study resolved that nonperforming loan in Nigeria is a serious issue that requires special concern. Although a lot of efforts have been made to curb this menace, but the approach was more conventional and democratic as few variables whose importance have been over-dressed in literatures are being recycled by different authors at the neglect of other important variables like the crude oil price that are more culpable for the increase in NPLs. This study realized that the impact of crude oil price fluctuation has become quite unbearable for most commercial banks in Nigeria with respect to loan disbursement and subsequent servicing. Hence, the following are recommended by this study:

- i. Diversification of loans is very crucial. As a matter of necessity, other sectors should be considered when disbursing loan rather than focusing solely on the oil and gas industry.
- ii. Borrowers should undergo thorough screening and evaluation before loan approval.
- iii. Favourable lending rate is recommended. If banks must lend, they should do it at a more concessionary and reasonable lending rate.

- iv. Upward review of lending rate by the apex bank base on the findings of this study. If the hike in nonperforming loan continues, the CBN as a matter of monetary policy can increase the lending rate.
- v. Loan-deposit ratio should constantly be on check. This is because it exert direct and positive impact on nonperforming loan. Any unit increase in the ratio equally mean a possible increase in the level of nonperforming loans of the banks.

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