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NON-PERFORMING LOANS, LOAN GROWTH AND THE LIQUIDITY OF DEPOSIT MONEY BANKS IN NIGERIA

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Abstract

This study examines the effect of Non-Performing Loan (NPLs) and Loan growth on liquidity of Deposit Money Banks (DMBs) in Nigeria. The study utilized documentary data collected from annual reports and accounts of the sampled Banks for the periods 2012 to 2022 Data was first analyzed by means of descriptive statistics to provide summary statistics for the variables and subsequently, correlation analysis was carried out using Pearson correlation technique for the correlation between the dependent and independent variables. A panel data regression technique was employed since the data has both time series and cross-sectional attributes. It was found that share of NPLs and loan growth in the total volume of loans had negative and statistically significant effect on banks liquidity whereas bank size being used as a controlled variable had positive and significant influence on the liquidity of the DMBs in Nigeria. Thus, based on these findings, the study recommends that DMBs in Nigeria should follow a balanced approach between loan portfolio growth and credit risk exposure and maintain in control the NPLs as well as Size of the bank which will aid in formulating strategies to enhance their liquidity position, and in this way to keep the banking system safe.

Keywords: Liquidity, Non-performing Loan, Loan Growth

Introduction

Banks are financial institutions that play intermediary role in the economy through channeling financial resources from surplus economic units to deficit economic units. In turn, they facilitate the saving and capital formation in the economy. Bank for International Settlements (2008) defines liquidity as the ability of bank to fund increases in assets and meet obligations as they come due, without incurring unacceptable losses. Hence, liquidity risk arises from the fundamental role of banks in the maturity transformation of short-term deposits into long-term loans. Therefore, banks have to hold optimal level of liquidity that can maximize their profit and enable them to meet their obligation (Tseganesh, 2012). A bank is considered liquid when it has assets and investments in securities that are effortlessly realizable at a short notice without a cost

to the bank together with the capacity to raise fund from other source, to help the bank to meet its obligation and commitments in an appropriate manner, meeting financial obligations when they fall due is also the meaning of liquidity (Chagwiza, 2014).

No sector of any economy can succeed without sufficient funds. Liquidity problems may adversely affect the financial performance of a bank as well as its solvency. Although, studies have it that lack of adequate liquidity in a bank is often characterized by the inability to meet daily financial obligations. At time, it may have the risk of losing deposits which erodes its supply of cash and thus forces the institution into disposal of its more liquid assets. As opined by Pandy (2015), managing monies of a firm in order to maximize cash availability and interest income on any idle cash is a function of liquidity management. However, the problems of weak poor capital base, increase in non–performing Loans, growth in loans, illiquidity and insolvency, poor asset quality and low earnings are some of the constraints faced by the banking sector in Nigeria. Some of these prior studies also include that of Vodova (2012), Kolapo (2012), Vodova (2013), Kanu and Hamilton (2014), Akinlo and Mofoluwaso (2014), Nsobilla (2015), Moussa (2015) Sumaila (2015), Ebenezer (2015), Odunayo et al (2015), Sheefani and Nyambe (2016) Umar and Sun (2016) as well as Lastuskova (2016).

Edem (2017), Kingu (2018) argue that loan growth and NPLs are found negative and significantly correlated to liquidity in some countries and a reverse case in others. A further motivation for this study was to examine whether these variables that researchers have found to be significant in influencing liquidity in developed countries, also apply in a developing country like Nigeria. Studies from emerging markets of Africa are conspicuously less in the wider context of this subject. In the case of Nigeria and other Sub-Saharan countries there is apparently paucity of literature on the effect of NPLs and loan growth on liquidity. Notably well that with the liquidity crisis in the country that began in the first quarter of 2015, the banking sector began 2017 on a negative note as banking stocks started the year with falling share prices. The increasing pressure on the banks with the falling value of the Naira depleting their capital base, with increases cases of NPLs amid high operational cost that has cost many banks to cut down on staff size and close branches in the face of low profit. The study stems from the fact that the Nigerian economy during recession as observed has been characterized by worsening economic fortunes in terms of reduced growth, increased unemployment, galloping inflation, high

incidence of poverty, worsening balance of payment conditions, high debt burden and increasing unsustainable fiscal deficit.

In the light of the fact that in reality, DMBs liquidity is of utmost importance with higher liquidity, DMBs will have remarkable performance encouraging public confidence and soundness among banks. Hence, the question tugged at mind - What are the effects of NPLs and loan growth that has cost a bank to maintain its liquidity level? No doubt, these have internal influences on the liquidity. According to past research, factors found to significantly affect liquidity position of a bank include bank specific factors consisting of profitability, bank size and capital adequacy among others. A study which seeks to identify other bank specific factor's effects such as NPLs and loan growth, their effect on liquidity of DMBs in Nigeria is deemed timely and appropriate to be embarked upon. The motivation to fill the above gaps necessitated these studies following the shortcoming. The current study, therefore, generally aimed at investigating the effect of NPLs and loan growth on liquidity of DMBs in Nigeria while specifically, sought to assess the Impact of NPLs on liquidity of DMBs in Nigeria.

In the light of the aforementioned objective, the remaining part of this paper is structured as follows. Following the introductory section is the review of relevant literature and hypotheses development. The next sections then present the variables definitions, econometric model and the preliminary empirical evidence. Finally, the last sections summarize the main findings and conclusion of the study. On the basis of the problem and objectives of the study, the following hypotheses were formed in Null form to guide the study.

$H_0$1: Non performing loans do not have significant effect on liquidity of Deposit Money Banks in Nigeria.

$H_0$2: Loan growth does not have significant effect on liquidity of Deposit Money Banks in Nigeria.

LITERATURE REVIEW

Bank Liquidity

Bank liquidity is referred to as the capacity of the bank to maintain adequate funds to meet its maturing obligations. It is the ability of the bank to immediately meet cash, cheques, other withdrawals commitments and new loan demand while abiding by existing reserve requirements

(Ibe, 2013). In another discovery, Ali (2016) argues that liquidity is a financial term that means the amount of capital that is accessible for investment. However, from the above definitions it is clear that insufficient liquidity is one of the major reasons of bank failure.

Loan Growth and liquidity

The loan portfolio is typically the largest asset and the predominant source of revenue to a bank, as reported by Moussa (2015). He stated that lending is the principal business activity for most commercial banks. As such, loan is one of the greatest sources of risk to a bank's safety and soundness (Kiyotaki & Moore, 2008). Since loans are illiquid assets, increase in the amount of loans means increase in illiquid assets in the asset portfolio of a bank.

Non-Performing loan and Liquidity

NPLs are loans that a bank customer fails to meet his/her contractual obligations on either principal or interest payments exceeding 90 days, they are loans that give negative impact to banks in developing the economy. Rise of NPLs portfolios significantly contribute to financial distress in the banking sector. (Ozili ,2019). Bank's NPLs to total gross loans are the value of NPLs divided by the total value of the loan portfolio (including NPLs before the deduction of specific loan-loss provisions). The loan amount recorded as non-performing should be the gross value of the loan as recorded on the balance sheet, not just the amount that is overdue. NPL is measured as ratio of NPLs over the Total Loan (Prince & Ifeanyi ,2014).

Bank Size and liquidity

As suggested by Chagwiza (2014) that large banks would benefit from the decrease cost of funding and allows them to invest in riskier assets through implicit guarantee, Therefore, "too big to fail" status of large banks could lead to moral hazard behavior and excessive risk exposure. If big banks are seeing themselves as "too big to fail", their motivation to hold liquid assets is limited. In case of a liquidity shortage, they rely on a liquidity assistance of Lender of Last Resort.

Theoretical Review

Bankruptcy and stakeholders Theory

This theory stipulates that Banks are largely exposed to various types of risks attributable to liquidity management, which affect the performance and activity of these banks. Admonishing that since the primary goal of the banking management is to maximize the shareholders' wealth, banks should assess the cash flows by identifying the factors which influences the liquidity and its assumed risks in order to direct its financial resources in different areas of utilization. For the aforementioned reason, any bank operating in Nigeria is statutorily required to comply with the reserve and liquidity requirements of the Central Bank of Nigeria, as a means of effectively managing the liquidity positions of banks in order to prevent bankruptcy. Considering the objective of the study, it is in line with bankruptcy and stakeholder theories**.** As argued by the proponent of stakeholder interest maximization as the main objective of an organization, DMBs would survive only if they are able to meet substantially the interest of their major stakeholders including management, shareholders, depositors, investors and regulatory agencies as and when due.

Empirical Review.

Bank's Non-performing Loans and Liquidity

Non-performing loans and liquidity relationship has been in the centre of banking studies due to its potential for regulatory policies. Based on previous studies, NPLs may have a negative influence on liquidity or making banks inefficient. Researcher on banks liquidity have started to consider asset quality, which includes non-performing assets.

Kolapo(2012) used a panel data set from 2000 to 2010 for 5 Nigerian commercial banks to conduct the research, the outcome implied that NPLs rate was statistically significant and negatively influenced banks profitability. Zeng (2012) analyzed NPLs in a Chinese banking system by using utility function based on optional control theory and concluded that the phenomenon of NPLs was mainly significant in state owned banks. The study revealed that equilibrium of NPLs in China was dependent on microeconomic factors but was influenced by macroeconomic factors. The study suggested that internal management efforts must be enhanced,

along with reforms in property rights, media policies and hidden guarantees provided by government to bring the level of NPLs down.

Kanu and Hamilton (2014) investigated macroeconomic determinants of NPLs in commercial banks in two fronts by employing simple OLS regression. The study established inverse relationship between NPL and GDP in Nigeria. In the same vein, Akinlo and Mofoluwaso(2014) examined the drivers of NPL in macroeconomic model using annual data from commercial banks in Nigeria .The result provides evidence of negative relationship between economic growth and NPL, while unemployment rate, credit to the private sector and exchange rate exert positive effect on NPLs.

Onwe (2015) investigated the relationship between liquidation and banking industry stability in Nigeria. The study used transformed Pearson correlation coefficient to separately determine the effect of bank failure and NPL on the banking system stability. the negative relationship of NPLs with profitability was statistically significant for rural banks in Ghana. According to the same study, if NPLs increased by 1% the revenue for the banks will decrease by 0.05%.In another study, Umar & Sun (2016) analyzed the impact of NPLs on bank liquidity creation to investigate the existence of moral hazard problem in Chinese banks. They used data from 197 listed and unlisted Chinese banks, spanning the period 2005 to 2014 Generalized method of moments (GMM) estimation, fixed and random effect model, and pool data techniques was used for analysis. The study found that liquidity creation by Chinese banks does not depend on NPLs ratio.

Kingu (2018), in his study in Tanzania with 16 commercial banks for a time span of 2007 to 2015, concluded that the is a negative and significant effect of NPL on ROA.The pool OLS regression showed that for each 1% increase on NPLs; The ROA is affected by -0.195%.

Ngozi (2018) examined NPLs and its effect on the stability of Nigerian banks and international license from 2014 to 2017.A restricted dynamic GMM is employed to estimate the macroeconomic and bank specific drivers of NPLs for each licensed category Z-score is constructed to proxy banking stability. The study confirms the moral hazard hypothesis and risk return tradeoff of efficient market theory.

Findings from empirical studies on NPLs (NPLs) reveal important insights, notably confirming the correlation between commercial banks' liquidity and NPLs. he extent to which the effect occurs varies from country to country. For example, in some instances the effect appears to be

positive while in other appears to be negative, however, the most notable trend observed is that NPLs appeared to negatively affect commercial bank's liquidity in most cases.

METHODOLOGY

The longitudinal research design specifically the panel study type, which is a study in which the unit of analysis is followed at specific intervals over a period (Tseganish, 2012) was used for this study. The data relevant to this study were obtained from the annual reports of DMBs in Nigeria. The study used the entire population of 13 DMBs, as against sampling; because the entire number of DMBs under examination is small, consisting of 13 Banks for the year 2012-2022. These secondary dta were subsequently tested using Stata, which is viewed as effective tool for analyzing panel data. Specifically, descriptive statistics, correlation and regression were used to analyze the collected data, measure the relationship and test the study's hypotheses.

The dependent Variable

Liquidity (LIQ)

The dependent variable in this research is the liquidity which was proxied by total liquid assets to total assets. This liquidity ratio which measures liquid assets to total assets has been used in literature as a measure of liquidity. The ratio measures the general liquidity shock absorption of banks. A higher ratio indicates more liquidity as seen in the work used

The Explanatory Variables

This consists of independent variables and control variables.

The Independent Variables

The independent variables in this study are the NPLs and the loan growth. As in Vodovo (2013), Sumaila (2015), Boardi et al. (2016) and Ebenezer (2015).

a) Non-performing Loan

NPLs are loans that a customer fails on his contractual obligations on either principal or interest payments exceeding 90 days. Banks play "Risk Transformation" (riskless deposit to risky loans) in order to survive. This measures the quality of banks asset and the proxy used for NPLs was the percentage of NPLs in the total amount of bank loan. This is in line with the work of Fola (2015) and Ozili (2019).

b) Loan Growth of Banks (LG)

The loan portfolio is typically the largest asset and the predominant source of revenue. Lending is the principal business activity for most commercial banks and loan is one of the greatest sources of risk to a banks safety and soundness. Since loans are illiquid assets, increase in the amount of loans means increase in illiquid assets in the asset portfolio of a bank. As it was made by various empirical studies such as in Vodova (2011) and Fola (2015), the proxy for loan growth was annual growth rate of gross loans and advances to customers.

The control variable

a) Bank Size

The bank size is used as the control variable which is measured as the natural log of total asset. as in the work of Lastuskova (2016) and Sumaila (2015). This is because, when the size of the bank increases, mobilizing deposits from customers becomes easier to meet maturing obligations. The size of the bank helps to obtain funding from different sources at a lower cost. As reported by Fola (2015) these make banks lend more as the size increases.

Model Specification A model was employed to examine the effect of NPLs and loan growth on the liquidity of DMBss in Nigeria. For the purpose of this work and based on the variables of the study, they are proxied by NPL, LG and Bsize. On the other hand, Liquidity is proxied by LIQ. The study adopted a model used by Moussa (2015), Ebenezer (2015) and Ozili (2019) with some modifications. The model for this study is as follows:

$LIQit = ß_0 + ß_1NPLit + ß_2LGit + ß_2Bsizeit + e$

Where: LIQ= Liquidity Ratio

NPL= Non performing loan

LG= Loan growth

Bsize=Bank size

β0= constant term (average value of the dependent variable when the sum of independent variables is zero)

β1, β2…β5 = Coefficients of the independent variables (estimated change in dependent variable for 1 unit increase in any of the independent variable, holding all other independent variables constant)

Ɛ = is the error term

i = Firm

t = time

Data Analysis and Interpretation.

Table 4.1: Descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
LIQ	168	0.540	0.859	0.129	0..879
NPL	168	0.025	0.009	0.003	0.040
LG	168	0.236	0.196	- 0.123	0.779
Bsize	168	22.26	1.29	19.56	26.007

Source: Generated by the Author using STATA 12

Table 4.1 provides the mean, maximum, minimum and standard deviation of all the study variables .The score of the mean for the liquid assets to total assets which is the measure of liquidity and the dependent variable is .540 with minimum value of .0129 and maximum value of 0.87. The standard deviation of 0.859 shows little dispersion of liquid assets to total assets ratio from its mean for the DMBs in Nigeria. This suggests that the banks under study have the mean value of the Liquidity to be 54% which was above the CBN directive Minimum Regulatory Liquidity Requirement of 30%. This however implies that the DMBs under study kept a considerable amount of liquidity and that it faced little liquidity risk during the period under study. This means that banks were able to meet maturing liabilities without difficulty during the period and its ability to meet maturing obligations remained fairly steady.

The Non performing loan, given as the NPL to total loan ratio registered the monthly average value of 2.57% with minimum of 0.3% (in Sep. 2010) and maximum of 4% (among listed DMBs in Nigeria.

The loan growth was measured as the annual percentage change in total loans & advances and this showed a mean of 23.60%. This indicates that, on average, growth rate was 23.60% during the study period and growth in total asset for the sample period ranged from -12.29% to 77.91% with standard deviation of 19.56%. The 19.56% of standard deviation indicates the existence of mild variation in growth rate among DMBs in Nigeria.

The size of banks (BSIZE) measured by the natural logarithm of total assets has a mean of 22.26 but the standard deviation of 1.29 suggests a considerable level of dispersion in size during the period in the total assets among the sampled DMBs in Nigeria.

Correlation Matrix

The results of the Pearson's correlation between the dependent variable (Liquidity ratio) and explanatory variables (Non performing loan, Loan growth and Bank size) are presented in Table 4.2.

Table 4.2: Correlation Matrix of LIQ and its Determinants- Model

liq	NPL	LG	BSIZE	VIF
liq | 1.0000				
NPL| -0.5229	1.0000		1.0	
LG | -0.1189	-0.0081	1.0000	2.3	
Bsize| 0.1936	-0.1175	-0.0934	1.0000	3.96

Source: Generated by the Author using STATA. 12

The table shows that all the values on the diagonal are 1.000 indicating that each variable is perfectly correlated with itself. Two of the explanatory variables namely; Non performing Loan and Loan growth had negative and strong relationship though, the relationship with loan growth was a weak one with the dependent variable (Liq), considering the coefficient values of -0.5229 and -0.1189, it can be observed from the table that Bsize is positively and weakly correlated with liquidity meaning that the variable strongly influences the liquidity. The result indicates absence of multicollinearity because the VIF values ranges from 1.04 to 3.96. Hence the predictive ability of the independent variable is not adversely affected by the relationship.

Table 4.3 presents the regression result of the fixed effect (FE) estimation technique.

variables	coefficient	Std.Err	T	p>|t |	{95% conf . .interval}
NPL	- .1277189	0508035	2.51	0.013	-0272453 - . 228192
LG	-.0216993	.0105872	3.66	0.042	-.0426374 - .0007612
BSIZ	.1277189	0508035	2.51	0.013	0272453 . 228192
_cons	-2.370959	1.048297	-2.26	0.025	-4.444169 .2977496
R –Squared	0 .369				

Adj R-squared	0.350
Within	
Between	
Overall	
F value	389.25
Prob>F	0.000
Hausman test (Prob>Chi)	0.000

Source: Generated by the Author using STATA (Version 12).

Table 4.3.1 shows the regression results of the dependent variable (Liquidity) proxied by Total Liquid Asset to Total Asset and the independent variables of the study (Non performing loan, Loan growth and bank size). A Hausman specification test was performed in order to make a choice between the Fixed Effect (FE) and Random Effect (RE) regressions. The result reveals Fixed effect (FE) is more efficient as affirmed by the p-value of 0.000 which is significant i.e less than 0.05. FE regression results reveals an overall coefficient of determination (R^2) of 0.36 which indicate that 36.9% variation or fluctuation of the liquidity of DMBs in Nigeria can be explained or caused by loan growth, and NPLs jointly. The remaining 63.2% can be explained by other variables that are not captured in this model. The explanatory variables NPLs has negative and significant impact on liquidity of DMBs in Nigeria implying that an increase in NPLs with other variable held constant will decrease the liquidity of DMBs in Nigeria. Thus, validating the fact that, a one percent increase in NPL of banks leads to 12.77% reduction in liquidity of the banks which may collectively suppress already slowing economic growth leading to a downward spiral bank invest in assets that yield high. This supports the findings of Choon et al, (2013) and Muhammad (2015). Nevertheless, studies such as Umar and Sun (2016) have found negative but not significant relationship between NPLs and bank liquidity.

The Loan Growth according to FE result in Table 4.3.1has negative and significant effect on the liquidity of DMBs in Nigeria. The negative sign indicates an inverse relationship between loan growth and liquidity position measured by liquid asset to total asset. Thus, it implies that an

increase in the loan growth rate, keeping other variable constant will lower the liquidity of the sampled banks. The result is consistent with the findings of Fola (2015), which is based on the argument of taking loans as illiquid assets of banks, according to this argument when the amount of loans provided by banks increases, the amount of illiquid assets in the total assets portfolio of banks increase and lead to the reduction in the level of liquid assets held by banks. However, Berihun and Moussa (2015) reported a positive relationship between loan growth and liquidity of banks.

Bank size (Bsize) is positively and significantly related with the liquidity of DMBs in Nigeria. The results revealed that higher banks have high amount of liquid assets. In other word, as the banks increase and grow in size, the liquidity of DMBs also increases. This result is supported by other studies like Almumani (2013), Ferrouhi and Abderrassoul (2013) .

Hypotheses Testing

In view of the results reported on the liquidity level of DMBs in Nigeria. This therefore provides evidence for the Rejection of hypothesis one (Ho_1) Which state that (NPLs has no significant impact on the liquidity of DMBs in Nigeria, the hypothesis one is therefore rejected, the hypothesis two (Ho_2) which state that Loan growth has no significant impact on the liquidity of DMBs in Nigeria is also not accepted.

Conclusion

This study evaluated the nature of NPLs and its impact on liquidity of DMBs in Nigeria. To achieve the goal, the study used panel data for the period of 2008 to 2019. The FE regression results for the model revealed that there exists Negative and significant relationship between liquidity and NPLs implying that uncontrolled profits were realized through issuing more loans and investing in riskier assets.

Recommendations

The following recommendations are made based on the empirical findings:

i. The banks should be vigilant to the increase in the NPLs ratio which is expected to grow as a result of slow economic growth. Therefore, there is need for the bank management of the banks to strike a balance between loans and liquidity.

ii. Follow a balanced approach between loan portfolio growth and credit risk exposure and maintain in control the NPLs of the banks which will aid in formulating strategies to enhance their liquidity position, and in this way to keep the banking system safe.

iii. Future studies should also use disaggregated data to uncover some of the macroeconomic determinant's effects on the liquidity of DMBs in Nigeria.

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