

Bank Specific Factors and Liquidity of Listed Deposit Money Banks in Nigeria

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ABSTRACT

This study examines the Determinants (Bank specific factors) of listed Deposit Money Bank's liquidity in Nigeria. The study utilized documentary data collected from annual reports and accounts of the sampled Banks for the periods 2008 to 2018. 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 the major determinants that positively and significantly influence the liquidity of the listed Deposit money banks in Nigeria were; Profitability, Capital adequacy and the size of the bank. Thus, based on these findings, the study recommends that listed Deposit money Banks should be more concerned with the internal environment or factors and continue closely monitor their Profitability, Capital adequacy and Size of the bank in formulating strategies to enhance their liquidity position. The Central Bank of Nigeria must critically review and follow-up or monitor the effectiveness of liquidity policy tools in the listed Deposit Money banks and where necessary, appropriate sanctions placed on erring banks to ensure effective implementation of these policy tools in an attempt to achieve desired liquidity.

Keywords: *Liquidity, profitability, capital adequacy and size*

1.0 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/BIS (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).

The Nigerian banking industry has been reported to have influenced the activities of the economy and thus liquidity issues have always been a concern of all the nation's stakeholders across the globe, the adequacy of liquidity plays very crucial roles in the successful functioning of all business firms. However, the issue of liquidity, though important to other businesses, is most paramount to banking institutions. Liquidity shortage, no matter how small, can cause great damage to a bank's operations (Ifeoma et al, 2013). This is because no sector of the economy can succeed without sufficient funds. The Central Bank of Nigeria, over the years, precisely since 1958, has formulated excellent policy thrusts to revamp the Nigerian financial system for sustainable economic growth. The policy which came in form of re-capitalization, merger and acquisition, consolidation all aimed at strengthening the financial system with little or no emphasis on liquidity management efficiency. This innovation and other banking reforms in Nigeria have not yielded sufficient effort in stabilizing banking industry due to poor implementation or sudden termination of reforms. Government directive to withdraw the deposits of governments and other public sector institutions in 1989 from banks to Central Bank of Nigeria and several historical distresses in the banking sector are instances of liquidity problems facing the banking industry in Nigeria (Kurotamunobaraomi et al., 2016).

Liquidity problems may adversely affect the financial performance of a bank as well as its solvency. The banking sector in Nigeria was rated strong in 2013 using the capital adequacy, asset quality, management quality, earnings and liquidity rating system (Ibe 2013).

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 Pandey (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, 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), Mugenyeh (2012), Tsenganesh (2012), Vodova (2013), Almumani (2013), Prince and ifeanyi (2014), Engida (2015), Fola (2015), Moussa (2015), Sumaila (2015), Ebenezer (2015), Odunayo et al (2015), Sheefani et al. (2016), Eric and Larrey (2016), Lastuskova (2016), Idowu et al (2017). Edem (2017), Mamunur (2017) argue that This bank specific factors are found negative and significantly correlated to liquidity in some countries and a reverse case in others. As a result, an investigation, in wider factors of determinant that correlate with the extent of liquidity seems justified. A further motivation for this study was to examine whether the 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 Bank specific factors or Determinants of liquidity. This study intends to focus on the Nigerian experience and integrate it into global discourse. Although, in Nigeria Most prior studies like that of Fadere (2011), Olarewanju et al (2015) and Kehinde (2013) have focused on determinants as well as different measures of liquidity. In contrast, this study intends to use Total liquid Asset to Total Asset to

measure liquidity. The statistical tools and methods adopted were not dynamic and robust enough to show the nature of relationship between the variables. 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 Non- performing loans amid high operational cost that has cost many banks to cut down on staff size and close branches in the face of low profit output. 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, listed Deposit Money banks 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 factors that allow a bank to maintain its liquidity level? No doubt, there are internal sources of liquidity. According to past research, factors found to significantly affect liquidity position of a bank include bank specific factors consisting of profitability, bank size, capital adequacy, and loan growth among others. A study which seeks to identify the bank specific factors or determinants and their impact on liquidity of listed deposit money banks 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 bank specific factors or determinants on liquidity of listed DMBs in

Nigeria while specifically, sought to assess the Impact of bank specific factors (Profitability, Capital adequacy, Loan growth and Bank size) on liquidity of listed deposit money banks 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.

H01: Bank specific factors (Profitability, Capital adequacy, Bank size and Loan growth) do not have significant impact on liquidity of listed Deposit money Banks in Nigeria.

2.0 Literature Review

2.1 Concept of 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. They are of the view that, most of this capital is credit not cash. Liquidity in Commercial Bank means the ability of the bank to finance all its contractual obligations and these obligations can include lending, investment and withdrawal of deposits and maturity of liabilities which occur in the normal course of the bank activities (Amengor, 2010). Contend that, liquidity includes three features namely Marketability,

Stability and Conservatism. Furthermore, Ali (2016) contends that, liquidity includes three features namely Marketability, Stability and Conservatism meaning that, the dimensions of liquidity as the time required to convert an asset into money, the certainty associated with the conversion and the price realized for the assets and the ability to meet obligations as and when they fall due without incurring losses.

However, from the above definitions it is clear that insufficient liquidity is one of the major reasons of bank failure. Therefore, Liquidity is necessary to enable banks providing funds on demand and credits needed by customers who are associated with the default risk .Hence, Liquidity is the capability to finance the increase in assets and meet liabilities when they fall due without any unanticipated losses.

2.1.1 Liquidity Components of Banks

Liquidity consists of the Vault Cash, Balances Held With CBN, Balances Held With Other Banks in Nigeria, Balances Held With Offices & Branches outside Nigeria, Money at Call in Nigeria, Inter-bank Placement, Placement with Discount Houses, Treasury Bills, Treasury Certificates, Investment in Stabilization Securities, Bills Discounted Payable in Nigeria, Negotiable Certificates of Deposits, Bankers Acceptances and Commercial Papers, Investments in FGN Development Stock and Industrial (Other) Investments (Olagunju et al., 2011).

2.1.2 Measures of liquidity

Various liquidity indicators have been developed to measure how liquid banks are. From the traditional current ratio, we now have the new liquidity standards, Liquidity Coverage ratio (LCR) and the Net Stable Funding ratio (NSFR) formulated by the Basel Committee. The importance of accurate liquidity measurement cannot be over stressed as it reveals the liquidity positions of the banks through which the operators of the financial

market, including regulators and other creditors adjudge liquidity status and the credit worthiness of the banks (Sumaila 2015). The question remains, what makes a good liquidity measure? Moussa (2015) argue that a liquidity measure should be beneficial for macro-prudential purposes. It should measure liquidity imbalances in the financial system, offering an early indicator of financial crises. It should also quantitatively describe the liquidity condition of the financial sector, and the amount of liquidity the Central Bank may be called upon to provide during financial crisis, hence, the power of forecasting liquidity demands. Though liquidity can be measured by taking into account a bank's liquidity transformation gap, liquidity ratios are more famous and widely used. Researchers identify two approaches to measuring bank liquidity; liquidity gap/flow approach and liquidity ratio/stock approach (Ebenezer 2015).

2.1.3 Bank specific factors

The internal (bank-specific factors) are factors that are related to internal efficiencies and managerial decisions. Such factors include determinants such as profitability, bank capital adequacy, bank size, asset quality, growth of loan and the like. As reported by most researchers in these field like; Engida (2015), Fadere (2011), Vodova (2012), Tsenganesh (2012), Mugenyeh(2012), Vodova (2013), Mamunur et al (2017) ,Prince (2014), Moussa (2015), Fola (2015), Boardi e't al (2016), Sumaila (2015), Ebenezer (2015), Odunayo (2015), Eric and Lartey (2016), among others,

(a) Profitability and liquidity

Engida (2015) observed that one of the two most important requirements of liquidity is profitability the second receive in cash more than what it pays out. Profitability and liquidity must however be being care and thoroughness in administration. It is only when a firm is profitable that it will be seen in the light of Market growth, market share and progress through product and industry life cycles.

Fadere (2011) observed that in managing their portfolios, the commercial banks have two main aims that may conflict; maintenance of stock of liquid assets in case their cash is under pressure and the wish to earn high rate of return on their assets in order to maximize profits. He noted that high- risk borrowers and long term investments tend to earn banks higher returns.

(b) Capital adequacy and liquidity

Banks' capital has been defined by Moussa (2015) as common stock plus surplus plus undivided profits plus reserves for contingencies and other capital reserves. In addition since a bank's loan-loss reserves also serves as a buffer for absorbing losses, a broader definition of bank capital include this account. Opposing to the standard view of liquidity creation in which banks create liquidity by transforming liquid liabilities into illiquid assets, the recent theories indicate the creation of liquidity by changing asset mixes.

(c) 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.

(d) Loan Growth and liquidity

The loan portfolio is typically the largest asset and the predominate source of revenue 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 banks safety and soundness (Kiyotaki and 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.

According to Mourina (2008) in practice the amount of liquidity held by banks is heavily influenced by loan demand that is the base for loan growth.

2.2 Empirical Review.

2.2.1 Bank Specific factors and liquidity

Fadare (2011) on the banking sector liquidity and financial crisis in Nigeria, with the aim of identifying the key determinants of banking liquidity in Nigeria, and assessing the relationship between determinants of banking liquidity and financial frictions within the economy. It employed a linear least square model and time series data from 1980 to 2009. The result revealed that only liquidity ratio, monetary policy rate and lagged loan-to deposit ratio were significant for predicting banking sector liquidity. Secondly, it showed that a Decrease in monetary policy rate, liquidity ratios, volatility of output in relation to trend output, and the demand for cash, leads to an increase in current loan-to-deposit ratios; while a decrease in currency in circulation in proportion to banking sector deposits; and lagged loan-to-deposit ratios leads to a decline in current loan-to-deposit ratios. Generally, the result also suggested that during periods of economic or financial crises, deposit money banks were significantly illiquid relative to benchmarks, and getting liquidity monetary policies right during these periods is crucial in ensuring the survival of the banking sector., However, leaving out some of the macroeconomic and bank specific factor like Size which generally has a positive impact on bank liquidity risk and the use of traditional measures of liquidity was a limitation of the study.

Vodova (2012), using a panel data regression analysis, attempts to identify the liquidity determinants of commercial banks in Poland. The results pinpoint that liquidity tends to decrease with the size of the bank, more exactly large banks tend to hold less liquid assets, relying on a liquidity assistance of the

lender of last resort in case of distress, while small and medium sized banks hold more liquid assets. On the other hand, the research demonstrates that the inflation, increases in capital adequacy, share of non-performing loans have a positive impact on bank liquidity.

The study by Kehinde (2013) , in the attempt of determining which are the variables that impact the two new indicators of bank liquidity in Nigeria, recommended by the Basel Committee, more exactly the liquidity coverage ratio and the net stable funding ratio. The results emphasis that the selected variables can have an impact on liquidity risk management, because even if the specific bank structure variables (size, capitalization, assets quality and specialization) do not highlight always a relationship with both liquidity indicators, the relationship is present at least in one case.

Olarewaju et al. (2015) The study has so far investigated the causal relationship between liquidity and profitability of Nigerian deposit money banks using 15 selected banks for the periods 2004-2013 and based on the findings presented, the study succinctly conclude that there is no significant unidirectional and bidirectional causal relationship between liquidity and profitability of most deposit money banks of Nigeria for the period covered in the study, and that if at all the issue of causal link will be raised in Nigeria deposit money banks, it will only be in the purview of unidirectional causal relationship running from liquidity to profitability and can only be possible in few banks with standardized managerial and institutional make up that can withstand shocks in the industry.

Kuratomunobaraomi et al. (2017) studied the interrelationship between liquidity and corporate performance of banks in Nigeria with the use of annual data from 1984 to 2014. The work utilized Cash Reserve Ratio,

Liquidity Ratio and Loan-to-Deposit Ratio as proxies for liquidity; and Return on Shareholders' funds as the proxy for performance and applied finometric analyses that include Ordinary Least Square Regression, and Error Correction Model. The results indicates a significant negative short-run relationship between Cash Reserve Ratio and corporate performance as well as a positive relationship between Loan-to-Deposit Ratio and Liquidity Ratio on one hand and corporate performance on the other albeit significantly and insignificantly respectively. Also, the study recommends that Cash Reserve Ratio and Liquidity Ratio are statistically significant enough to influence Return on Shareholders' Fund in the long run, while the Loan-to-Deposit Ratio exhibits complacency in instigating Performance in deposit money banks in Nigeria.

Idowu et al (2017) studied four deposit money banks in Nigeria between 2007 and 2016, using Pearson correlation co-efficient technique. The empirical results revealed that there is a statistically significant relationship between banks' liquidity, return on asset and return on equity and thus, the liquidity management of Nigerian banks maximizes returns to shareholders but it is producing less than optimal in terms of efficient utilization of assets. The authors advocated that a good banker should try to reconcile the twin conflicting objectives by actually working out a good portfolio mix. This can be done by analyzing the situation, studying the objectives and therefore choosing a diversified and balanced asset portfolio.

Reports from the empirical studies on the bank specific determinants. Shows that lessons to be learnt from these studies are that there is evidence of the existence of the relationship between commercial bank's liquidity and bank-specific determinants. Among the determinants that were identified include

capital adequacy, non-performing loans, interest rates on loans, and interest rates on interbank transactions, size of the banks, bank profitability, credit risk, market concentration, gross total assets and share of owner's capital. The 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 capital adequacy, size and bank profitability appeared to negatively affect commercial bank's liquidity in most cases.

3.1 Research Methodology

The study seeks to evaluate the determinants of liquidity of listed banks on the Stock Exchange in Nigeria over a period of 11 years from 2008–2018. 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 the study, the relevant and necessary information is obtained from the annual reports and financial statements of listed Deposit Money Banks in the Nigeria stock exchange. The study uses the entire population as against samplings this is because the entire listed Deposit Money banks to be studied is small consisting of 16 Banks for the year 2008-2018, in order to derive the sample, the study used three –point filter as used by (Samaila, 2014) That for any bank to qualify as a member of the sample it must: Firstly have been listed on the NSE on or before 31 December 2007 and secondly, it must have been quoted without being delisted between 2008 and 2017, thirdly the bank must have had licensed to operate as a national bank on or before 31 December 2007. These criteria are established with a view to ensuring that the banks have their published financial statements for the period covered by this study. As a result of this filter the number of DMB's in the sample reduced to 14. Hence, Jaiz Bank Plc. was excluded from the sample since it was

quoted in 2016 and Wema bank was also excluded as the bank got the approval to operate as national bank in the year 2015. These secondary Data were subsequently tested using a statistical software package called Small State and it is viewed as effective and reliable software for testing panel data. Descriptive statistics, correlation and regression was used to analyzed the collected data, measured the relationship and tested the study's hypotheses.

3.1.1 The dependent Variable

Liquidity (LIQ)

The dependent variable in this research is the Liquidity which is 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.

3.1.2. The Independent Variables

The independent variable in this study are the Determinants namely profitability, capital adequacy, loan growth and Bank size. As in Vodovo (2013) Choon et al. (2013). Sumaila (2015), Boardi et al. (2016), Ebenezer (2015).

a) Profitability (PROF)

This is measured as the Net profit after tax to total assets. It also shows the ability of management to acquire deposits at a reasonable cost and invest them in profitable investments. As in the work of Ebenezer (2015), Sumaila (2015) and Fola, (2015).

b) Loan Growth of Banks (LG):

The loan portfolio is typically the largest asset and the predominate 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.

c) Bank Size

The bank size 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) that these make banks lend more as the size increases.

(d) Capital adequacy Ratio (CAR)

Capital is one of the bank specific factors that influence the level of bank's liquidity. It is measured as the Share of own capital /total asset. Capital is the amount of own fund available to support the bank's business and act as a buffer in case of adverse situation. Banks capital creates liquidity for the bank due to the fact that deposits are most fragile and prone to bank runs. Moreover, greater bank capital reduces the chance of distress. Capital adequacy ratio is directly proportional to the resilience of the bank to crisis situations as shown in the work of Ebenezer (2015), Engida (2015) and that of Fadere (2011).

3.2 Model Specification

A model was employed to examine the Determinants of liquidity of listed DMBs in Nigeria. For the purpose of this work and based on the variables of the study, Determinants are proxied by PROF, LG, CA, BZ, . On the other hand, Liquidity is proxied by LIQ R. The study adopted a model used by Moussa (2015), Ebenezer (2015) and Vodova (2012) with some modification. The model for this study is as follows:- Thus,

$$LIQ_{it} = \beta_0 + \beta_1 PROF_{it} + \beta_2 CA_{it} + \beta_3 LG_{it} + \beta_4 BS_{it} + e$$

Where: LIQ= Liquidity Ratio

PROF=Profitability

CA=Capital adequacy

LG= Loan growth

BS= Bank size

β_0 = constant term (average value of the dependent variable when the sum of independent variables is zero)

$\beta_1, \beta_2 \dots \beta_5$ = 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)

ε = is the error term

i = Firm

t = time

4.1 Results and Discussion

4.1 Descriptive statistics

This provides summary of statistics for the variables of the study. The summary of the statistics include mean, standard deviation, minimum and maximum of both the dependent variable and explanatory variables.

Table 1: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
LIQ	140	0.540	0.859	0.129	0.879
LOANG	140	0.236	0.196	- 0.123	0.779
PROF	140	0.025	0.009	0.003	0.040
CAR	140	0.095	0.038	0.025	0.271
BSIZ	140	22.26	1.29	19.56	26.007

Table 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 0.1974 shows little dispersion of liquid assets to total assets ratio from its mean for the Deposit money banks in Nigeria. This suggests that the banks under study has 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 listed Deposit Money banks 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 banks are being very careful in maintaining funds which are liquid to pay their contractual commitments when they fall due. 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 high variation in growth rate among listed deposit money banks in Nigeria.

Profitable firms are stronger to face financial distress and stronger to continue more than unprofitable firms in the future. Profitability, given as the ratio of profits after tax to total assets registered a mean value of 2.57% which is also the degree of the capacity of the management of banks to create adequate

revenue from the assets of the bank with a standard deviation of 0.9% which indicates that the variation of the profitability between the selected banks was a bit high.

Profitability for the sample bank ranged from 0.3% to 4% during the period of study. This means a maximum of 4 percent of profit after tax for a single naira invested in the assets of the bank during the study period and on the other hand, 0.3 percent of profit after tax for each naira invested is earned by the least rate during the study period.

Capital Adequacy Ratio (CAR) has a mean value of 9.52% which was above the minimum statutory requirement of 8% set by CBN. The maximum and minimum values were 27.07% and 2.52%, respectively. The standard deviation for CAR was 3.76% revealing little dispersion away from the mean of sampled banks in Nigeria. This means that, the banks hold about 9.52% as own funds which serves as buffer in case of adverse situation. The maximum of 27.07 % share for equity out of their total assets and a minimum of 2.52% equity out of their total assets.

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 deposit money banks in Nigeria.

4.2 Correlation Matrix

The results of the Pearson's correlation between the dependent variable (Liquidity ratio) and explanatory variables (Profitability, Capital adequacy ratio, Loan growth, Bank size) are presented in Table 4.2. It also shows the relationship between all pairs of variables in the regression model; the relationship

between all explanatory variables individually with explained variable and the relationship between all the explanatory variables

themselves. This gives an insight into the magnitude of the pairs of the explanatory variables.

Table 2: Correlation Matrix of LIQ and its Determinants- Model

liq	prof	car	bsize	loang	VIF
liq 1.0000					
prof 0.5229	1.0000				2.3
car 0.3191	0.1882	1.0000			1.12
bsize 0.1936	0.1175	-0.0934	1.0000		3.96
loang -0.1189	-0.0081	0.0491	0.0739	1.0000	1.04

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. ONE of the independent variable namely; Loan growth had negatively but weakly relationship with the dependent variable (Liq), considering the coefficient values of -0.1189, it can be observed from the table that PROF is positively and strongly correlated with liquidity meaning that the variable strongly influences the liquidity BSIZ, and CAR are positively but weakly related with 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.

4.3. Robustness Test of Independent and Dependent Variables

Robustness test is carried out in order to improve the validity of all statistical inferences for the study. The tests include: Heteroscedasticity, Multicollinearity and Normal probability plot. These were discussed below.

i) Multicollinearity Test

Multicollinearity test was carried out to check whether there is a correlation between independent variables which will mislead the result of the study. The result show that the maximum VIF is 3.69 and the minimum VIF is

1.04 and this is less than 10 which indicate absence of multicollinearity (See Appendix A).

ii) Heteroskedasticity Test: The results of the heteroskedasticity test reveal the presence of heteroskedasticity in the model as it shows a significant probability of 0.0000 for the model. This was later corrected through the OLS robust test. Robust estimation should be considered when there is a strong suspicion of heteroskedasticity or where it exists.

iii) Hausman Specification Test: The hausman specification test result is (0.000) therefore FE model is more appropriate for this study, which guides us to interpret the result of the Fixed effect model as shown in Appendix A.

The essence of the above discussions was to establish the accuracy and reliability of the research data. The test of heteroskedasticity, multicollinearity, Hausman specification and Normal P-plot gives solid evidence that the regression data is free of regression errors capable of invalidating the research's regression assumptions. This shows the accuracy of regression estimates and hence more reliable.

4.3.1 Regression Results

Table 3 presents the regression result of the fixed effect (FE) estimation technique.

Table 3: Regression Results: Determinants of Liquidity of listed Deposit Money Banks

variables	Coefficient	Std.Err	t	p> t	{95%conf . interval}
PROF	.3281048	.0509296	6.44	0.000	.2273818 .42882
CAR	.2352653	.0642601	3.66	0.000	.1081786 .362352
BSIZ	.1277189	.0508035	2.51	0.013	.0272453 .228192
LG	-.0216993	.0105872	3.66	0.042	-.0426374 -.0007612
_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	0.000
(Prob>Chi)	

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

The starred coefficient estimate are significant at 10% (*), 5% (**) and 1% (***) level.

Table 3 shows the regression results of the dependent variable (Liquidity) proxied by Total Liquid Asset to Total Asset and the independent variables of the study (Profitability, Capital adequacy, 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 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 listed Deposit money banks in Nigeria can be explained or caused by LOAN G, PROF, CAR and BSIZE jointly. The remaining 63.2% can be explained by other variables that are not captured in this model. This implies that the model is fit, and

the explanatory variables are properly selected, combined and used as Bank specific factors or Determinants of liquidity is accounted for by the explanatory variables Profitability has positive and significant impact on liquidity of listed deposit money banks in Nigeria implying that an increase in profit with other variable held constant will increase the liquidity of listed Deposit Money bank in Nigeria. Thus validating the fact that, banks invest in assets that yield high interest in order to improve. This indicates that, an increase in the profit will cause an increase in the liquidity of the banks. However, a bank can be liquid and profitable at the same time when having a good portfolio management as asserted by (Ibe 2013) which will enable a bank to strike the balance between liquidity and profit. This supports the findings of Choon et al, (2013) and Muhammad (2015). Nevertheless, studies

such as Tseganish (2012) and Fola (2015) have found negative relationship between Profitability and bank liquidity.

Capital adequacy ratio has positive and significant effect on the liquidity of listed Deposit money banks in Nigeria, Meaning that as capital adequacy of the sampled banks increases; it generates liquidity for the bank. This is due to the fact that, capital is the amount of own funds accessible to support the business of the bank and act as a cushion in case of adverse circumstances. Moreover, the chance of bank distress will reduce with adequate bank capital. This supports the findings of Bunda & Desquilbet (2008), Vodova (2012), Almunani (2013) and Chagwiza (2014) that, as the amount of bank's own funds increase, it creates liquidity for the bank when holding other variables constant. However, the result contradicts the findings of Moussa (2015) and Chikoko (2013) who found a negative relationship between CAR and liquidity of banks.

Bank size (SZE) is positively and significantly related with the liquidity of listed Deposit money banks Nigeria. The result reveals that higher banks have high amount of liquid assets. In other word as the banks increase and grow in size, the liquidity of listed Deposit money banks also increases. This result is supported by other studies like Almunani (2013), Ferrouhi and Abderrassoul (2013) but contradict the findings of Choon et al (2013) who found negative relationship between bank size and liquidity. The Loan Growth according to FE result in Table 3 has negative and significant effect on the liquidity of listed Deposit money bank 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 listed banks.

5.0 Conclusion and Recommendation

This study evaluated the determinants of deposit money banks' liquidity in Nigeria. The FE regression results for the models revealed that there exists positive and significant relationship between liquidity and profitability, Capital adequacy and Bank size which implies that The listed Deposit money banks' ability to meet obligations as they come due can be enhanced through profitability, the positive relationship with Size is an indicator of the banks higher liquidity, The Positive and significant effect with capital adequacy shows that the higher capital adequacy or capacity of the bank the higher will be their ability to absorb risks and create higher level of liquid as given by the analysis.

It was recommended that the sampled banks should not only be profit oriented in the sense that uncontrolled profits were realized through issuing more loans and investing in riskier assets. Therefore there is need for the bank management of the listed banks to strike a balance between profit and liquidity, maintain the loans given out and deposits retained. Bank managers of the sampled bank should be mindful of their size, as positive effect of size on the liquidity means the listed Deposit money banks can mobilize deposits from customers at ease in other to meet maturing obligations and helps to obtain funding from different sources at a lower cost. The listed Deposit money Banks in Nigeria should be more concerned with the internal environment

or factors and continue closely monitor of their Profitability, Capital adequacy and Size of the bank in formulating strategies to enhance their liquidity position. The Central Bank of Nigeria must critically review and follow-up or monitor the effectiveness of liquidity policy tools in the listed Deposit Money banks and where necessary, appropriate sanctions placed on erring banks to ensure effective implementation of these policy tools in an attempt to achieve desired liquidity. It is also recommended that future research should use other ratios or measures of liquidity to compare with the results for this study. Moreover, future studies should also use disaggregated data to uncover the macroeconomic determinants of listed Deposit Money Banks' liquidity in Nigeria.

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