DETERMINANTS OF LIQUIDITY OF LISTED DEPOSIT MONEY BANKS IN NIGERIA

BY

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DECLARATION

I, Habiba Adamu, hereby declare that this work is a product of my research efforts, undertaken under the supervision of Dr Ishaq A, Samaila (FCA); and has not been presented anywhere for the award of a degree or certificate. All sources have been duly acknowledged in the references. However, any error that may be found in this work is not deliberate and is therefore highly regretted.

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CERTIFICATION

This is to certify that this dissertation by Habiba Adamu- SPS/15/MAC/00035 was carried out under our supervision.

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DEDICATION

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ABSTRACT

This study examines the Determinants (Bank specific and macroeconomic 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 2017. 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 determinants that positively and significantly influence the liquidity of the listed Deposit money banks in Nigeria were; Profitability, Investment, capital adequacy and the size of the bank , while Non-performing loan and Interest rate on lending had negative and insignificant effect, Cash reserve ratio was positive though insignificant 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 a close monitoring of their Profitability, Capital adequacy, investment and Size of the bank in formulating strategies to enhance their liquidity position. The Central Bank of Nigeria should critically review, conduct regular liquidity stress test 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.

CHAPTER ONE

INTRODUCTION

1.1 Background to the study

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 (Fekadu, 2016). 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 as it falls due. Moreover, they are considered as the 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 (Melese, 2015).

In a study conducted by Sudirman (2014) opined that banks create liquidity to help their customers (depositors and companies) stay liquid, especially customers for whom other forms of financing are difficult to obtain. Therefore, creating liquidity is traditionally considered the preeminent function of banks, but also the primary source of their vulnerability and a justification for their fortification from liquidity crisis (Chagwiza, 2014). Furthermore, Moussa (2015) posit that the ability of banks to obtain with immediacy, the needed funds at a reasonable cost as and when necessary reflects that a bank is keeping appropriate levels of liquidity .

Hence, Banks may need to borrow from the market even at an exceptionally high rate during a liquidity crisis ultimately causing a decline in the banks' earnings. This is due to the fact that a bank's further borrowing to honour depositors' demand places the bank's capital at stake and consequently, a rise in the debt equity ratio thereby affecting the bank's efforts to sustain an optimal capital structure (Bagh, 2017).

Although a bank can utilize a number of sources to meet its liquidity needs, which include new deposits, maturing assets, borrowed funds and or using the discount window (borrowing from the central bank). However, given that access to these facilities may not always be obtainable and their use incurs cost, prudent liquidity measurement and management is an important activity to banks (Mugenyah, 2012).Generally ,it is easy for a bank to lose its liquidity because depositors can withdraw funds when they choose. In addition to depositors, banks face another way in which their cash reserves can be strained by fulfilling obligations to companies. Although these companies have previously established loan commitments, called credit lines, that can be borrowed from the banks when needed (Sheefani &Nyambe, 2016). The shortage of cash as a result of a bank losing deposits and customers defaulting on loan commitments is referred to as liquidity risk (Ibe, 2013).

In the same vein, the International Accounting Standards (IFRS, 2005) indicates that liquidity risk is the risk in which an entity will encounter difficulty in meeting obligations associated with financial liabilities. Therefore liquidity risk is of serious concern to banks since there is increased struggle for deposits and the variety of products in the market and advancement in technology. Uremadu (2009) as cited in Edem (2017) asserts that, a bank with inadequate

liquidity might fail irrespective of the fact that it has quality assets, high earnings and enough shareholders'funds. Hence, this is why liquidity management is one of the main bank's success factors determining liquidity risk. This is due to the fact that liquidity is vital for a better understanding on the concept of liquidity risk in relation with other financial risks (Idowu *et al.*, 2017).

In a study by Mugenyeh (2012) found that many banks experienced financial distress even when they are profitable because of poor liquidity management. This, however, made identifying factors that influence liquidity a vital issue. Therefore it is evident that identifying the determinant of liquidity is important in ensuring the survival, growth, sustainability which also help ensure a bank's ability to meet cash flow obligations, which are uncertain as they are affected by internal and external events and other agents' behaviour. Conclusively, keeping their optimal liquidity and performance of the banking system, as such improper liquidity planning and implementation can affect banking operations and might exhibit long term effect on the economy (Sheefani & Nyambe, 2016).

However, according to literature, liquidity is influenced or affected by number of factors or determinants, classified as internal and external factors. The internal factors or Bank specific factors are the individual bank characteristics, which affect bank performance. These factors are influenced by the internal decisions of management and board. These factors are also within the scope of the bank to manipulate them and they differ from bank to bank. These include capital, size of deposit liabilities, size, and composition of credit portfolio, interest rate policy, labor productivity, and state of information technology, risk level management quality, bank size, and ownership among others as discovered in (Diamond *et a*l., 2015).

The external or macro- economic factors are sector wide or country wide factors which are beyond the control of the company and affect the liquidity of banks, these include Gross domestic products, financial crisis, unemployment ,cash reserve ratio, interest rate margin and inflation rate among other monetary policies (Choon *et a*l., 2013). The study to find factors which influences the liquidity of bank by Moussa(2015) shows that the Internal factors are due to poor management and they are manifested through lack of responsiveness to changes in technology, poor communication, misfeasance and fraud, insufficient considerations for cost factors especially research and development, poor knowledge of financial matters, and also from specific banking performance, previous year liquidity, capital, asset quality, efficiency, profitability, and funding. While external factors are determinant factors of bank liquidity that come from the state of the macro economy consisting of, interest rate, inflation, capital market development, and GDP growth.

The Central Bank of Nigeria's guidelines on liquidity for banks is that these banks must meet up with the minimum liquidity ratio set up for them and consider any bank to be illiquid if; the bank's current account with the CBN is overdrawn and not covered consecutively for five working days within a month, the bank is unable to pay maturing obligations and lastly, the bank is a net taker of interbank deposit of up to one- quarter of its total deposits. For aforementioned reason, any bank operating in Nigeria shall statutorily require to comply with the reserve and liquidity requirement directive of the Central Bank of Nigeria as a means of effectively managing the liquidity positions of banks. (CBN FactBook, 2016).

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, therefore 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. This is because Liquidity shortage, no matter how small, can cause great damage to a bank's operations (Edem, 2017). Moreover 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.

According to Ifeoma *et al.* (2013) The policy which came in form of re-capitalization, merger and acquisition, consolidation is aimed at strengthening the financial system with little or no emphasis on liquidity management efficiency. For instance, the event of 1980s which characterized the unprecedented level of distress reflected by large volume of non-performing loans, insolvency, liquidity problem and default in meeting depositors and inter-bank obligations necessitated innovations in banking industry in 1986. Fadere (2011) as cited in Olarewaju (2015) posits that the 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. Moreover, government directives 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).

However, financial regulators have made conscious efforts to ensure that banks hold more liquid assets than before to help self-insure against potential liquidity problems. For example, Basel II was reviewed to provide for more capital buffer to hedge bank flimsiness, as well as,

a common measure of operational risk. (Uremadu, 2009). Therefore, the purpose of business organization like bank is to maximize profit, for this reason several researchers have proposed that the accurate functionality of banking system is needed to evade disorder of any financial service and thus Optimum level of liquidity is greatly linked with the efficient banking operations. Hence, if the liquidity is not adequately managed, it may lead to insolvency (in case of low liquidity) or low profitability (in case of high liquidity) and ultimately destroy the wealth of shareholders and breakdown of entire financial institutional framework due to strong integration, dependencies and contagion effect.

Conclusively, determinants of bank liquidity help ensure a bank's ability to meet cash flow obligations, which are uncertain as they are affected by internal and external events and other agents' behaviour and to keep their optimal profitability. However, in a study by Melese (2015) found that many banks experienced financial distress even when they are profitable due to poor liquidity management. Thus, this made identifying factors that influence liquidity a vital issue .Therefore, the study intends to identify those determinants of liquidity of the listed deposit money banks in Nigeria with a view to determine the extent to which each of the determinants affect the bank's liquidity.

1.2 Statement of the Research Problem

The Nigerian banking sector enables the economy to be more productive and foster the growth of the economy breathing as a source of liquidity as it allows investors with small resources to use savings from those with little prospects of investing (Fadere ,2011). Moreover, with regard to liquidity, in a study conducted by Uremadu (2009) as cited in Edem(2017) opined that the fundamental role of banks in the maturity transformation of short-term deposits into long-term loans makes banks inherently vulnerable to liquidity

shortage, both of an institution specific nature and that which affects markets as a whole as such the Deposit money Banks are essentially required to maintain timely cash flows in order to up keep with unusual large withdrawals. The issue of liquidity for organizations is very vital to the existence of any organization especially the deposit money banks.

However, illiquidity of firms especially the banks can lead to loss of businesses thereby reducing the potentials of earnings and profitability (Singh & Sharma 2016). This is because high liquidity position of firm helps it to meet up with obligations of which some lead to funding of loans and advances that could aid the bank to earn income inform of interests and loans good financial performance rewards the shareholders for their investment. This, in turn, encourages additional investment and brings about economic growth. On the other hand, poor banking performance can lead to banking failure and crisis which have negative repercussions on the economic growth(Board *et al,* 2016) .Generally liquidity problems may adversely affect the financial performance of a bank as well as its solvency. However, the banking sector in Nigeria was rated strong in 2013 using the capital adequacy, asset quality, management quality, earnings and liquidity rating system (Olarewaju 2015).

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 Olarewaju *et al,* (2015), managing monies of a firm in order to maximized cash availability and interest income on any idle cash is a function of liquidity management. However, the problems of weak corporate governance, poor capital base,

illiquidity and insolvency, poor asset quality and low earnings are some of the constraints faced by the banking sector in Nigeria.

Management of banks pay more attention to lending to corporate or wholesale, it becomes a problem sustaining the necessary liquidity level, these corporate or wholesale lending might cause liquidity crisis for the bank because they are almost always long-term in nature (Al-khouri, 2012).

Diamond *et al.* (2015) also hypothesized that procedure involved in retiring loan slows down when the economy experience poor production of resources. Non-performing loans (NPLs) increase as a result of this situation making liquidity crisis becoming inevitable. A critical recap of previous studies and their obvious pitfalls shall be examined with the sole aim of establishing empirical justification for embarking for the study. Several studies have been conducted in both developed and developing countries relating to the determinants of liquidity. Malik (2013) employed the Liquidity Transformation Gap (LTG) method on a sample of 43 banks operating in 6 of the GCC region (Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and the United Arab Emirates) over the period 1998-2008. The author examined empirically, the effect of bank capital, bank size and profitability and other micro and macro-characteristics on liquidity creation. The author found a positive and significant relationship between bank capital, bank size and liquidity, consistent with the literature that bank capital increases bank liquidity through its ability to absorb risk. The result also showed that bank sizes are significant in determining the liquidity of the banks under study and posits that the larger the bank size, and the higher the liquidity created by the bank in previous period, the higher the liquidity created. The result also showed a negative and significant relationship

between bank profitability as measured by return on assets and banks' liquidity created, suggesting that there should be a tradeoff between profitability and liquidity. The LTG method, as argued by Berger and Bouwman (2009), is not comprehensive enough to measure liquidity even though it is better than the traditional measure. For the macroeconomic factors, none of the indicators chosen showed a significant relationship to liquidity created by the banking sector. The coefficient on stock market capitalization is negative although insignificant. This implies that stock markets in the GCC region do not complement the banking sector. Government ownership also does not seem to affect the liquidity of the banks and that large banks with high capital seem to produce most of the liquidity in the GCC market. The author used a simple measure and also ignored off-balance sheet items, thus, the method was not comprehensive enough as asserted by Berger and Bouwman (2009).

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 Lartey (2016) Lastuskova (2016), Idowu et al (2017). Edem (2017), Mamunur (2017). It should be noted that mixed results have been the outcome of the study with the use of different methodologies and similar methodologies in some cases, as some of the macroeconomics factors vary or fluctuate as a result of economic activities of different country. Some scholars like Almumani (2013), Ferrouhi and Lahadiri (2014) argue that these 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 countries like Nigeria.

Furthermore, most of the studies conducted in Nigeria did not capture most of the determinants as used in the study, rather a few of bank specific factors or using a traditional measure of liquidity as proxies. This study will adopt the most influencing factors of liquidity of banks namely : Non performing loan, Capital adequacy, Investment, Bank size, Loan to deposit ratio, Interest rate on lending, Profitability, Loan growth, cash reserve ratio (Tseganesh, 2012) so as to have a general examination of the determinants of liquidity and fill the gap for listed Deposit money banks in 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 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 internal determinants as well as traditional measures of liquidity, In contrast, this study intends to use both internal and external determinants of liquidity .

Kurotamunobaraomi et al (2017) applied finometric analyses that include Ordinary Least Square Regression, Johanson Cointegration, Granger Causality test and Error Correction Model to investigate the interrelationship between liquidity and corporate performance of banks in Nigeria and the authors found 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. Although the study is rich, but the results obtained on the variable relationships in most cases, were neither consistent nor conclusive .Another shortcoming of their study is that they did not clearly explain or identify those determining factors (bank specific and macroeconomic) as well as its impacts on liquidity of listed deposit money banks in Nigeria. The statistical tools and methods adopted were also not dynamic and robust enough as a time series data was used to show the nature of relationship between the variables. They studied deposit money banks as at 31 December, 2014 which is not the most current data for research in 2017. Consequently, there is need to fill this time gap, and thus this study has analyzed data for ten years from 2008-2017 so as to have a more current and holistic result about the Determinant of listed Deposit Money Banks in Nigeria

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 increased cases of Non- performing loans amid high operational cost 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 and externals sources of liquidity. According to past research, factors found to significantly affect liquidity position of a bank include bank specific factors and macroeconomic factors. Bank specific factors consist of bank size, capital adequacy, non-performing loan (NPL), investment ratio, loan to deposit ratio and profitability, while external or macro-economic factors include cash reserve ratio ,interest rate on lending among others. A study which seeks to identify the determinants and their impact on liquidity of listed deposit money banks in Nigeria is deemed timely and appropriate to be embarked upon.

Based on the forgoing arguments that this study raises, the following research questions were raised with a view to answer them at the end of the study:

1. What is the impact of bank specific factors (Profitability, Capital adequacy, Loan growth, Non-performing loan, Bank size, and investment) on the liquidity of listed deposit money banks in Nigeria?
2. What is the impact of external or macroeconomic factors (Interest rate on lending, cash reserve ratio) on the liquidity of listed deposit money banks in Nigeria?

1.3 Research Objectives

The main objective is to examine the determinants of listed Deposit Money Banks' liquidity in Nigeria.

Specifically, the study sought to assess the:

1. Impact of bank specific factors (Profitability, Capital adequacy, Loan growth, Non-performing loan, Bank size and Investment) on liquidity of listed deposit money banks in Nigeria.

2. Impact of external or macroeconomic factors (Interest rate on lending, cash reserve ratio) on liquidity of listed deposit money banks in Nigeria.

1.4 Research Hypotheses

In line with the statement of the problem and the objectives of the study, the following hypotheses were formulated:

$H0_1$. Bank specific factors do not have significant impact on liquidity of listed Deposit money Banks in Nigeria.

$H0_2$ .External or Macro economic factors do not have significant impact on liquidity of listed Deposit Money banks in Nigeria.

1.5 Significance of the study

This study assesses the determinants of liquidity of listed deposit money banks in Nigeria. Therefore there are number of benefits that are expected to be derived from this research .The findings of this study are expected to be of great importance to the management, the government, shareholders as well as future researchers.

Management of Nigeria deposit money banks may find this study useful by knowing about the major determinants of banks liquidity, and how these various factors affect their liquidity levels so they can best strategize in maintaining adequate amounts of liquid funds or even cut down on the amount of liquidity they hold if necessary and provide new insights and information on broader measures of liquidity. This study will help in the understanding of the role of liquid asset holdings in a bank, it will deepen the bank's understanding of variables that will have significant effects on the bank's liquid asset holdings. The interpretations of the results provide practical information that will improve the effectiveness of bank managers' decisions making in overcoming the liquidity crisis and determining the bank's future plan in

asset liability management Moreover, the study on the financial ratios especially ratios on the bank's non-performing loans, equity and profitably are instrumental in evaluating the bank's performance (Query, 2009). In the long run, by evaluating these performances indicators, banks can gain more competitive advantage in the industry.

The findings from this study are expected to provide government especially (Central bank of Nigeria) with helping hand to perform its monitoring function. These empirical analyses will show the liquid asset holdings of banks, thus enabling the Central Bank to set a benchmark on the bank's liquid asset holdings. It will also ensure the listed Deposit Money banks fulfill the requirements to prevent banks panic as well as maintain the soundness and stability of financial system in Nigeria. Lastly, an insights on how to design targeted policies and programmes that will actively stimulate the growth sustainability of deposit money banks in Nigeria will be provided

Stakeholders In the macroeconomic environment will also benefit as liquidity serves as a cushion against unexpected crisis. If banks are unaware of their own liquid asset holdings, they might face difficulties in meeting their short-term obligations when struck by crisis. Accordingly, banks might become illiquid and disrupt the liquidity in the whole financial system within country, shareholders are also expected to benefit from this study by obtaining a better understanding of the determinants of liquidity and level of variation in the banks which is useful in evaluating their investment options .The significance of this study also stems from the immense contribution it will make to existing literature in the field and good standard practices which will enhance the liquidity level of the listed Deposit money Banks. The unethical practices will be avoided as such they will ensure that not only standard practices are outlined but also are adhered to. Various studies have been conducted

worldwide, this study will suit to follow by contributing to the frontiers of knowledge in the studies of the liquidity of banks as well as provide guidelines to other similar developing nations in measuring and managing bank liquidity ,The study will therefore serve as reference material for future researchers, who may wish to contribute in the same or related area.

1.6 Scope of the Study

The study focused on determinants of liquidity and their impact on the liquidity position of listed banks in Nigerian stock exchange as at 31 December 2018. In a study by Mugenyeh (2012), he found that many banks experienced financial distress even when they are profitable in the year 2008 because of poor liquidity management. This made identifying factors that influence liquidity a vital issue. It's an agreed fact that all businesses including banks face liquidity risk prior to "liquidity phase" of financial crisis which happened at late 2007 in Nigeria, a lot of banks still experienced financial distress as a result of these major events that includes firstly, the economic boom and sudden crash in crude oil prices and oil production, increase in exchange rates, naira devaluation, that characterize the Nigerian economy between the period of study (2008- 2018) the time frame of the study will be 11 years from 2008 through 2018. The eleven (11) year duration was adequate to evaluate the Determinants of liquidity of listed deposit banks .Furthermore; the study will only focus on seven bank specific factors (Profitability, Non-performing loan, Bank size , Capital adequacy, Loan growth and Investment ratio) and two macroeconomic or external factors(Interest rate on lending and Cash reserve ratio).

CHAPTER TWO

LITERATURE REVIEW

2.0. Introduction

This chapter presents a synthesis of relevant literature on the Determinants of liquidity among listed banks in Nigeria. The chapter reviews literature on concept of liquidity, its determinants, liquidity regulatory requirement, banking system and liquidity, underlying theories on determinants of liquidity. The review also covers empirical studies that were conducted on the determinants of liquidity with emphasis on findings and methodology in order to use the evidence from the studies to establish gaps in the literature which would also serve as a basis for validation of the findings of this work.

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 study by Ali (2016) he 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). According to Acharya & Naqvi (2012), the speed and certainty of converting an asset to cash whenever at the discretion of the asset holder is referred to as bank liquidity. This position is corroborated by Idowu *et al* .,(2017) who posits that liquidity is the convertibility of an asset to cash with minimum cost or loss.

In the same vein, Kurotamunobaraomi *et al.,* (2016) adds that liquidity is "the capacity to exchange an asset at a negligible cost, price and (on) short notice, therefore adjudged among many others, on the grounds of its ability to facilitate transactions." Given its pivotal role, Fekadu (2016) asserts that banks need a high degree of liquidity in their assets portfolio. The bank must hold a sufficient large proportion of its assets in the form of cash and liquid assets for the purpose of enhancing customers' confidence and corporate performance (profitability). Bagh (2017) states that since banks operations are facilitated by liabilities from depositors, liquid assets constitute a sine qua non in the overall asset basket of banks. Thus, mistakes in liquidity planning and implementation affect bank operations and might exhibit a long term effect on the economy.

Sheefani and Nyambe (2016) on their part posit that liquidity is current assets which should be managed efficiently to safeguard the firm against the risk of illiquid. Lack of liquidity in extreme situations can lead to the firm's insolvency. They further stated that conflict exists between liquidity and profitability. If the firm does not invest sufficient fund in current assets, it may become illiquid which is risky and it may lose profitability if some idle current assets do not earn anything. Furthermore, Ali (2016) contends that, liquidity includes three features namely Marketability, Stability and Conservatism which mean, 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 provide 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). It is imperative for banks to have adequate and sufficient proportions of these liquid components as it helps mitigate funding risk, compensation for the non-receipt of inflow of funds if the borrower(s) fail to meet their commitments, and risk arising from calls to honour maturing obligations (Idowu et al., 2017).

Therefore inadequate liquidity culminates in the compulsion to liquidate assets at unfavorable prices which could instigate losses. Liquidity shortfalls also erode customers' confidence, leading to bank runs which could expose the bank to unnecessary borrowing from the Central Bank which eventually subjects the bank to heightened scrutiny.

Singh and Sharma (2016) identified borrowed funds, deposit accounts and long term funds as the three main sources of liquidity and believed that the amounts and sources of funds obviously affect how much liquidity banks can generate. Deposit accounts comprise transaction deposits known as demand deposits, savings deposits, time deposits and money market deposit accounts. The longer term sources of funds for banks are bonds that banks

issue and bank capital. Hence, it is therefore right to say the amount of funds a bank hold and the liquidity a bank create is dependent on how easy the bank can access funds.

2.1.2 Liquidity Regulatory Requirements

Banking system liquidity from the perspective of central banking refers to the total balances of all banks reserve accounts with the central bank. The total volume of banking system liquidity is greatly influenced by the monetary operations and monetary targets of the central bank. The process of monetary policy implementation require the use of policy instruments that serve to stabilize interest rates at a level that is in tandem with the monetary targets set by the Central Bank (Ibe,2013). Stability in monetary aggregates means that the Central bank achieves equilibrium between demand for and supply of liquidity in the banking system. As discovered by Edem (2017) the central bank injects liquidity through its open market operations (the purchase of domestic securities), or by extending credit facilities. Banking system liquidity is impacted by balance sheet structure and hence cash flows obligations of banks. Customers withdrawal of deposits are random and unpredictable, as a result, the liquidity reserves of individual banks vary and are not constant, often resulting in surplus or deficit liquidity in the banking system. Liquidity is surplus in the banking system, when inflow of funds into the system is only as a result of the monetary operations of the central bank and not in response to a voluntary demand for liquidity by banks (Olarewaju, 2015). On the other hand, the banking system is faced with tight liquidity conditions or a deficit when the voluntary demand for liquidity by the banking system needed for complying with the statutory reserve requirement, or honour current liabilities exceeds the volume of monetary operations of the Central bank.

Central Banks require deposit money banks (DMBs) to keep a minimum liquidity ratio that ensures that the banks are able to meet current liabilities and settle outstanding obligations as they fall due. Liquidity ratio is measured as a ratio of liquid assets to current liabilities. Liquid assets include cash, short term investment securities and government bonds while current liabilities on the other hand include customer's borrowings. However, It should be noted that a higher liquidity ratio increases the safety margin of banks. Edem (2017) further stated that besides the liquidity ratio, there are other legal reserve requirements that the Central Bank of Nigeria use in regulating the liquidity in the banking system. The Central Bank also requires that banks hold a certain percentage of their deposits as reserve with the Central Bank. The fraction held is called the Cash Reserve ratio.

2.1.3 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 (Agbada *et al*.,2013). The question remains, what makes a good liquidity measure? Bai, Krishnamurthy and Weymullar (2015) argued 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 (Sumaila, 2015).

Furthermore, Sheefani and Nyambe (2016) gave a strong suggestion that banks could use the liquidity index, financing gap and the financing requirement, sources and uses of liquidity, peer group ratio comparisons and liquidity planning to measure their liquidity exposure. More to the point, Bagh (2017) also indicated that banks could apply maturity mismatch, balance sheet liquidity analysis and the cash capital position approach to gauge liquidity. Focusing on the ratios, the traditional current ratio measures a bank's short term solvency and is calculated by dividing current assets by current liabilities. Even though it is difficult to authoritatively set one standard for all firms, a current ratio that is greater than one is adjudged satisfactory for most business firms. The problem associated with current ratio as discovered by Vodova (2012) is that it is a test of quantity and not quality of the assets and hence, it does not reveal the true position of a firm's liquidity. Current ratio just gives a rough idea of the firm's liquidity. Besides, it mixes assets and liabilities which are quite different in terms of their maturity.

Other ratios which have been developed to measure liquidity are the ratios of liquid assets to total assets; liquid assets to total deposits; loans and advances to deposits. Calculating the ratio of liquid assets to total assets explains the importance of a bank's liquid assets among its total assets. It indicates the proportion of a banker's total assets that can be converted into cash at a short notice. The ratio of liquid assets to total assets normally gives information about the broad liquidity shock absorption capacity of banks. As a general rule, the higher the

share of liquid assets in total assets, the higher the capacity of a bank to take in a possible liquidity shock, given that market liquidity is the same for all banks. Conclusively, there is the need to optimize liquidity at the same time, trying as much as possible to reduce opportunity cost to the bank. Studies that have used this ratio to measure liquidity include: Lastuskova (2016), Mugenyeh (2012), Vodova (2013). However this study also seeks to also use the Liquid Asset to Total Asset as a measure of liquidity.

2.1.4 The Central Bank of Nigeria Measure of Liquidity

The CBN uses one measure of liquidity, the liquidity ratio (CBN Liquidity Regulation Supplement, 2014), which is given by the percentage of net liquid assets as a proportion of net deposit liabilities. Net assets comprise of notes and coins (local and foreign), balances with central bank of Nigeria, balances with domestic commercial banks, balances with banks abroad, balances with financial institutions, balances with mortgage finance, companies, balances with building societies, treasury bills, treasury bonds, certificates of deposit, government bearer bonds, and foreign currency bearer certificates. Net deposit liabilities comprise of; deposit from parastatals, deposit from other sources, and balances due to banks, balances due to financial institutions, balances due to mortgage companies, balances due to building societies. Furthermore It is important to recognize that banks create liquidity not only from their assets but also from their liabilities, equity and even off-balance sheet activities.

2.1.5. Liquidity Management and its Techniques in Banking

The maintenance of adequate liquidity is normally the responsibility of management. No bank should rely on a single source of liquidity. Diamond (2015) observed that the ability to meet liquidity needs is gauged by both asset and liability management and in an effort to

optimize its holding of liquid assets, a financial institution must trade the benefit of cash immediacy for lower returns. To counter liquidity risk, a crisis plan must be established in order to promote good communication from bank lenders to the funding manager and from the funding manager to the banks institutional investors and rating agencies as well as to conduct exercises for testing and establishing marketability of bank assets and acquire steps to broaden, deepen and stabilize markets for bank liabilities (Engida, 2015). According to Fekadu (2016), liquidity management consists of the activities involved in obtaining funds from depositors and other creditors and determining the appropriate mix of funds for a particular bank.

Edem (2017) further states that liquidity management is associated with planning and controlling current assets and current liabilities in an efficient manner so as to eliminate the risk of non-payment of dues for short term requirements and it also avoids excessive investment in these assets. The authors analyzed the liquidity management as financial institutions implementation strategies of insuring themselves against shortage of cash required to meet current and forthcoming obligations in a variety of ways. These authors go further to suggest that, liquidity management is concerned with ensuring the availability of funds in banks to meet obligations as they fall due and also an ongoing process. Lastuvkova (2015) also highlighted the importance of having a good liquidity policy, suggesting that the management of liquidity policies of a bank has to include a decisional structure for the risk management, a pattern (a strategy) for approaching operations and funding, a set of exposure limits to liquidity risk and a set of procedures for planning liquidities after alternative scenarios including crisis situations.

In the same vein Adebayo *et al*., (2011) are of the view that, for a commercial bank to plan or manage its liquidity position, it first manages its money position by conforming to the legal requirement. Actually, management of money position is important if a bank must avoid excesses or insufficiencies of required primary reserves. Where there is a drop in market price of securities or where additional funds required to correct the bank reserve position are for a very short time, it will be certainly more expensive to sell securities than to borrow from another bank. Moreover, it may be more required to borrow for bank's liquidity needs than to call back unsettled loans, cancel or place embargo on new loans. They also added that the situation will decrease the existing and potential customers of a bank.

However Almumani (2013) suggests that a bank should create a strong liquidity risk management framework that ensures and sustains adequate liquidity including a buffer of unencumbered, high quality liquid assets to survive a range of stress events as well as those involving the loss or impairment of both unsecured and secured funding sources. Hence, Supervisors should evaluate the suitability of both a bank‘s liquidity risk management framework and its liquidity position and should take swift action if a bank is lacking in either area in order to safeguard depositors and to limit possible damage to the financial system. Top management should come up with strategies, policies and practices to manage liquidity risk in accordance with the risk tolerance and to ensure that the bank maintains adequate liquidity. Top management should constantly review information on the bank‘s liquidity developments and report to the board of directors on a regular basis. Board of directors of a bank should appraise and approve the strategies, policies and practices related to the management of liquidity at least yearly and ensure that top management manages liquidity risk effectively.

Idowu et al (2017) identify two liquidity management approaches. Firstly, Purchased liquidity; where management is trying to adjust to the net outflows of deposits by purchasing liquidity. Purchasing liquidity can be done in two ways, either a bank borrows money on interbank market or it can issue or sell securities. However, this way of borrowing can be costly. A bank gets rid of paying low interest cost on drained deposits while it has to cover it by funds having higher market rates on the wholesale money market. Secondly, Stored liquidity management; this is the second management approach which deals with the net deposits drains with the use of cash. This means that instead of obtaining the needed funds after net deposit drain occurs, a bank is equipped for this situation by holding the cash. This management approach permits a bank to bear net deposit drains without relatively expensive borrowing but they are still facing the loss by not earning the interest from potential long term investments.

Malik and Rafique (2013) in their study on Islamic banks concluded that, the Islamic bank should try not to depend on a few large depositors they should rather try to mobilize their deposits from a large a cross section of depositors, as possible. Diversify their sources of deposits. There are two major types of fund providers which are; current account holders and profit and loss sharing deposit holders. These account holders require a degree of liquidity to be maintained by the Islamic bank to meet their requirements for withdrawals. They also state that in periods of liquidity shortages, banks adopt three strategies; firstly, real interest rates they are ready to pay for new deposits of resources are increased by the banks. Secondly, they attempt to sell late project loans. The third choice is to call loans as by compelling the borrowers to terminate late projects and restructure them to harvest resources immediately.

Odunayo et al (2015) suggest that by issuing demand deposits in enough quantity, the banker can efficiently tie its collection skills to the loans made and borrow what is required from unskilled depositors. That is, the banker does not pass on illiquidity but decreases it through the combination of their collection skills and demand deposits. Moreover, so long as there is no collective shortage of resources, the bank‘s capacity to issue new demand deposits permits it to meet an uncertain depositor demand for resources. This is because banks play a principal role in funding potentially long-term projects while permitting depositors to withdraw when in need. From the above, Liquidity management techniques can be regarded as the planning and controlling that is required to ensure that the organization maintains sufficient liquid assets either as a responsibility to the customers of the organization so as to meet some commitments related to existence of the business or as a measure to stick to the monetary policies of the central bank.

2.1.6. Liquidity Risk and Types

Liquidity risk can be defined in terms of the counterparty to a transaction. It means the risk inherent in the fact that the counterparty may not be able to settle the transaction even if they are in good financial standing, because of lack of liquidity (Sheefani & Nyambe, 2016).The authors point to the fact that the types of liquidity risk are the banks selling their assets at a discount to meet liabilities and the bank having inadequate funds to meet its obligations. Melese (2015) however defines liquidity risk from three distinct situations. The first viewpoint is where the bank has complications in raising funds at a reasonable cost due to situations involving transaction volumes, level of interest rates and their fluctuations and the problems in funding counterparty. The second viewpoint considers liquidity as a safety buffer which helps to gain time under challenging situations. In this case, liquidity risk is considered

as a state where short-term asset values are not adequate to match short term liabilities and unanticipated outflows.

The last viewpoint is from where liquidity risk is seen as the extreme situation. Such a condition can arise from instances of large losses which generates liquidity concerns and suspicions about the future of the bank. Such suspicions can end in massive withdrawal of funds and closing of credit lines by institutions which try to safeguard themselves against a likely default. Both can cause brutal liquidity crisis which probably can end in bankruptcy. Liquidity risk can be defined as the risk of being unable to liquidate a position timely at a reasonable price (Prince & Ifeanyi 2014). The above definitions imply that, a bank faces liquidity risk if its short term assets cannot cover short term liabilities. The authors went further to expand that liquidity risk occurs when a bank cannot convert its assets readily to meet depositors demand causing doubt about the solvency of the bank.

Mourina (2008) as cited in Leykun (2015) stated that liquidity risk can be divided into two types namely: liquidity of assets which means the inability to sell assets at current market prices, and the liquidity Instability of Liability (LIL), which refers to the inability to assess sufficient funds to meet payment obligations in a timely manner. According to Mamunur et al (2017), there are two forms of liquidity risk namely: funding liquidity risk and market liquidity risk. The author explained funding liquidity risk as the risk that a bank will be unable to meet its obligations as they come due because of the inability to liquidate assets or inadequate funding sources. Market liquidity risk on the other hand is the risk that a bank cannot easily unwind or offset specific exposures without significantly lowering market prices because of inadequate market depth or market disruptions. Therefore, from the above it

can be concluded that Liquidity risk is the shortage of cash as a result of a bank losing deposits and customers defaulting on loan commitments.

2.1.7 Characteristics and Objectives of Liquidity

Liquidity, according to Olagunju, Adeyanju and Olabode (2011) as cited in Boardi *et al*.(2016) has three features or characteristics, namely, Marketability, Stability and Conservatism. Liquid assets should be more marketable or transferable. That means, they are expected to be converted to cash easily and promptly, and be redeemed prior to maturity. All assets that cannot be redeemed at maturity are said to be illiquid. Another quality of liquid asset is price stability. Based on this characteristic, bank deposits and short term securities are more liquid than equity investments such as common stocks and real estate due to the fact that the prices of the former are fixed and have lesser variability than the prices and value of the latter which experiences considerable fluctuation, They added that, the conservatism quality of liquidity refers to the ability of the holders of liquid assets to recoup the cost of the asset at the time of resale. Common stocks might not be considered highly liquid despite their ready marketability, going by this quality. This can be ascribed to the fact that there are periods when current prices of stock are lower than their initial prices. Considering these three qualities, therefore, people and firms choose to hold cash which is the only perfectly liquid asset.

Amengor (2010) as cited in Ebenezer (2015) is of the view that banks require liquidity for the following reasons including The need to be able to cover withdrawal of funds by customers, to meet inter-bank indebtedness, which may arise on day-to-day basis following the payment clearing process, to be able to meet unforeseen borrowing requests from customers, and lastly to be able to cope with interruptions to their normal cash flow. From the above it can be

concluded that the objectives of liquidity management are to honor all cash outflow commitments on a daily and ongoing basis, minimize the cost of foregone earnings on idle liquidity and satisfy minimum reserve requirements and other regulatory liquidity standards. This in turn helps in detecting and preventing liquidity crisis in the banks and thus enhances the liquidity level

2.2. Determinants of Bank Liquidity

In most of the literatures, there are two ways of classifying the determinants of bank Liquidity. Al-munani (2013) and Aburime (2008) for instance classified the determinant factors into two namely the bank specific (internal) and macroeconomic variables. The internal factors are individual bank characteristics which affect the bank's liquidity. These factors are basically influenced by the internal decisions of management and board. The external factors are sector wide or country wide factors which are beyond the control of the company and affect the liquidity of banks. Other studies, Okpala (2013) attempted to integrate sector specific factors like bank ownership, bank size and concentration as a specific determinant of bank Liquidity. This approach seems to segregate the external factor determinants into sector specific and macroeconomic variable. However, some authors, like Bhati *et al.*, (2013), Chikoko (2013),Ferrouhi and Lahadiri (2014) ,focused on sector specific variables with total neglecting of the macroeconomic variables like GDP, inflation and the overnight policy rate. the CBN guidelines which also stems from this utilizes this policy by altering interest rates and cash reserve ratio to influence the monetary base accordingly. Kurotamunobaraomi et al (2017) asserts that the main measures of liquidity in Nigeria are the Cash Reserve Ratio (CRR). The study focused on the Central Bank's Lender of Last Result (LOLR) policy may affect banking in the period of liquidity crises. In general the two approaches seem similar in context and wide variation is not observed in classifying the

determinants of bank liquidity and like most of the researchers this study will use both internal and external variables in the study.

2.2.1 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 bank non- performing loans 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) Non-performing Loans:

Non-performing loans are loans that are outstanding in both principal and interest for a long time contrary to the terms and conditions contained in the loan contract (Melese, 2015). It follows that any loan facility that is not up to date in terms of payment of both principal and interest contrary to the terms of the loan agreement, is non-performing. Therefore, the amount of non-performing loan measures the quality of bank assets as suggested by (Diamond *et al.*, 2016). Bank Non-performing loans to total gross loans are the value of Non-performing loans divided by the total value of the loan portfolio (including nonperforming loans 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. Non-performing Loans is measured by ratio of non-performing loans over the Total Loan (Prince & Ifeanyi, 2014).

Therefore Non-Performing Loans (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. The higher the ratio, the higher is the liquidity risk. A definite fact, financial systems are responsible for managing complex and advance financial transactions. Fadere (2011) found in his study how the banking systems plays the central role of mobilizing and allocating resources in the market, conduit for savings and surplus funds channeled to deficit units and how Financial institutions oversee that operations are being run effectively and efficiently. Hence, the financial term for this activity is known as "Risk Transformation" (riskless deposit to risky loans). It should also be noted that granting loans generate most profits for banks. However, it involves high risk and eventually the main contributor to non-performing loans (NPLs). Thus, a core substance for sustained and rapid economic progress is financial stability. In addition, it was found that the financial stability measures that were immensely used, among various indicators of financial stability include banks' non-performing loan reflecting on its asset quality, credit risk and also its efficiency in the allocation of resources to productive sectors.

(b) Profitability

According to Kamau (2009) as cited in Ali (2016) one of the two most important requirements of liquidity is profitability the second receive in cash more than what it pays out, further stated that Profitability and liquidity must however be being care and thoroughness in administration as 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. Furthermore, 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. On the contrary, low risk and short-term investors will earn firms low returns. However, such high return assets were also noted to be illiquid.

Therefore in the pursuit of profits, banks would wish to hold as small proportion of assets as possible in the liquid form. At the same time, financial prudence would require that banks hold adequate cash and other liquid assets to meet their obligations as they fall due. The banks are therefore faced with a conflict choice between short term and long-term securities. Although high rate of return is associated with low liquidity, Hence low profitability would be expected to be associated with high liquidity. Consistent with the foregoing argument, Ibe (2013) had also found a weak inverse relationship between profitability and bank liquidity. However, Moussa (2015) results had indicated a significant positive relationship between profitability and bank liquidity. Thou, One possible reason for the conflicting findings may be different elasticity's of demand for loans in the two samples.

Assfaw (2018) proposed risk-return trade off of liquidity versus profitability where bank can use conservative policy by investing in lower return and risk investments or an aggressive policy of higher return and risk investments. In other word posit that Profitability accounts for the impact of better financial soundness on bank risk bearing capacity and on their ability to perform liquidity transformation. Similarly, Leykun(2016) found that Loans are among the highest yielding assets a bank can add to its balance sheet, and they provide the largest portion of operating revenue. In this respect, the banks are faced with liquidity risk since loans are advanced from funds deposited by customers. However, the higher the volume of loans extended, the higher the interest income and hence the profit potentials for the commercial banks. At this point, it is also worth noting that banks with a high volume of

loans will also be faced with higher liquidity risk. Thus, the commercial banks need to strike a balance between liquidity and profitability.

When banks hold high liquidity, they do so at the opportunity cost of some investment, which could generate high returns (Fekadu, 2016). Therefore, the trade-offs that generally exist between return and liquidity risk are demonstrated by observing that a shift from short term securities to long term securities or loans raises a banks' return but also increases its liquidity risks and the inverse is true. Thus a high liquidity ratio indicates a less risky and less profitable bank. Thus management is faced with the dilemma of liquidity and profitability.

(c) Capital adequacy

Banks' capital has been defined by Fadere (2011) 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. Engida (2015) opined that banks can create more or less liquidity by simply changing their funding mix on the liability side. (Prince & Ifeanyi, 2014), extended this argument by indicating that capital may also affect banks asset portfolio composition, thereby affecting liquidity creation through a change in the asset mix. Capital adequacy ratios (CAPs) are a measure of the amount of a bank's core capital expressed as a percentage of its total asset.

(d) Bank Size:

As suggested by Chagwiza (2014) 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. Thus, large banks are likely to perform higher levels of liquidity creation that exposes them to losses associated with having to sale illiquid assets to satisfy the liquidity demands of customers .Hence, there can be positive relationship between bank size and liquidity. However, since small banks are likely to be focused on traditional intermediation activities and transformation activities they do have small amount of liquidity. Hence, there can be negative relationship between bank size and liquidity. Bank Size in this study was measured by natural logarithm of the total value of the assets.

(e) Loan-To-Deposit Ratio - LTD

A commonly used statistic for assessing a bank's liquidity is by dividing the banks total loans by its total deposits. This number, also known as the LTD ratio, is expressed as a percentage. Mugenyeh (2012) found that If the ratio is too high, it means that banks might not have enough liquidity to cover any unforeseen fund requirements; if the ratio is too low, banks may not be earning as much as they could be .This is measured as total loans relative to the total liabilities. A higher ratio means less liquidity position which may affect bank lending while a lower ratio signifies good liquidity position which enables banks to lend and invest (Ibe 2013). Loan to deposit ratio measure of liquidity has been criticized for ignoring quality and maturity of bank assets and for treating bank assets as having equal degree of liquidity and maturity. Uremadu (2009) a financial analyst argued that off balance sheet funding which offers better benefits have made loan to deposit ratio of liquidity measure unpopular. Other

forms of loan ratios include loan to liabilities, Loan losses to net loans and Reserve for loan losses to net loans.

(f) Loan Growth:

The loan portfolio is typically the largest asset and the predominate source of revenue as reported by Moussa (2015) ,He further 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. 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 Melese (2015), in practice the amount of liquidity held by banks is heavily influenced by loan demand, which is the base for loan growth, he further identified that If demand for loans is weak, then the bank tends to hold more liquid assets (short term assets), whereas if demand for loans is high they tend to hold less liquid assets since long term loans are generally more profitable. Therefore, a growth in loans and advances has negative impact on banks liquidity. Loan Growth will be measured by the Current year total loans less previous year total loans over the previous year total loans.

2.2.2. Macroeconomic factors

The external or macro determinants are variables that are not related to bank management but reflect the economic and legal environment that affects the operation and liquidity positions of institutions. The macroeconomic factors that can affect bank liquidity include factors such as GDP, interest rate margin and inflation rate among others (Malik & Rafique 2013, Engida 2015 Bagh 2017, Vodovo 2013) among others.

(a) Gross Domestic Product (GDP):

The economy's health of a nation is measured by its growth rate in national income. The economic growth is measured as percentage change in Gross Domestic Product (GDP) or Gross National Product (GNP). The GNP is broader than GDP, although both proxies are used to measure economic growth. GDP is a macroeconomic factor that affects bank liquidity. For which, a major recession or crises in business operations reduces borrowers' capability to service obligations which increases banks' NPLs and eventually banks insolvency (Engida, 2015). In reference to Painceira (2010), research on liquidity preference during different business cycle states that banks liquidity fondness is low in the course of economic boom. Where, banks confidently expect to profit by expanding loanable funds to sustain economic boom, while restrict loanable funds during economic downturn to prioritize liquidity.

To sum up, banks prefer high liquidity due to lower confidence in reaping profits during economic downturn. Fadere (2011) as cited in Edem (2017) has also inferred that banks prioritize liquidity when the economy plummets, during risk lending opportunities, while neglecting liquidity during economic boom when lending opportunities may be favorable. Thus, to best knowledge, banks forgo liquidity inducing lending during economic growth. Even Valla, Saes-Escorbiac and Tiesset (2008) reported a negative relationship between liquidity and GDP real growth

(b) Inflation Rate

Inflation reflects a situation where the demand for goods and services exceeds their supply in the economy. Inflation causes many distortions in the economy. in a study conducted by Ibe (2013) he discovered that it hurts people who are retired and living on a fixed income. When

overall prices rise these consumers cannot buy as much as they could previously. It also affects the repayment of loans and discourages savings due to the fact that the money is worth more presently than in the future and inflation therefore affects the liquidity of the of the Commercial Banks. In any economy inflation is undesirable. This is because of the specific economic costs associated with inflation. First, when inflation is high, currency and non-interest-bearing checking accounts are undesirable because they are constantly declining in purchasing power. Secondly, there are tax distortions, for example, when inflation rages, the actual value of these deductions are much less than it should actually be (Idowu et al 2017).

The liquidity position of a bank is very sensitive to macroeconomic variable fluctuations (Malik & Rafique ,2013). Conclusively, The increasing inflation, high interest rates and real gross domestic product growth determine the bank's liquidity position. Hence, High inflation rate and sudden changes of inflation have a negative impact on Real interest rates and bank's capital. In this respect, the bank's nonperforming loans will expand, collateral security values deteriorate and value of loan repayments on banks loans declines. This way, it has been found that inflation rate significantly determines bank liquidity.

(C) Financial Crisis

The effect on the bank's liquid asset holdings during a financial crisis is well documented in the prior researches. Bunda and Desquilbet (2008) tested out the impact on bank's liquid asset holdings in 36 emerging countries during a financial crisis. Empirical result revealed that financial crisis has a positive relationship with the bank's liquid asset holdings. In the aftermath of the financial crisis, the growth of the business sector is sustained, causing the demand of loans to decrease. The drop in demand for loans results in banks holding more liquid assets, thus leading to higher bank's liquid asset holdings (Moore, 2009). On the

contrary, research on commercial banks in both Slovakia and Czech Republic found that financial crisis is negatively correlated with bank's liquid asset holdings (Vodova, 2011a; Vodova, 2011b). In addition, Vodova (2012), Vodova (2013) stated that bank's liquid asset holdings and financial crisis have bidirectional causal effects.

Financial crisis can cause poor bank's liquid asset holdings or they can be caused by poor bank's liquid asset holdings as well. This statement is supported in Fadere (2011) study where he stated that financial crisis may result from excessive lending that eventually causes the banks to suffer poor bank liquid asset holdings. Quoting findings from Vodova (2013) and Vodova (2012), financial crisis can impair borrower's capacity and cause the banks to suffer losses. Thus, financial crisis can cause the bank's liquid asset holdings to drop. The second factor that can contribute to this cause is shown in Moore (2010) where he stated that during the financial crisis, depositors might require more cash, thus leading to more withdrawals.

2.2.3. CBN Guidelines on liquidity

a. Cash reserve ratio

Banking system liquidity is influenced by the Cash Reserve ratio (CRR). Cash Reserve ratio is a specified minimum fraction of customer deposits required of deposit money banks to be held as reserves either in cash or with the central bank. The CRR is an effective tool for controlling liquidity in the banking system and by extension money supply in the economy. During periods of excess liquidity, the CRR is raised to sterilize a higher fraction of funds as reserves with the central bank. The impact is a direct reduction in the amount of liquidity in the banking system as banks increase the proportion of funds held as reserves . The CRR is

used as a monetary policy tool in controlling the supply of money in the economy and influencing the level of interest rates. It can also be effective as a tool to regulate the foreign exchange market in response to a slide in the domestic currency. By reducing the liquidity in the banking system, it is expected that banks will have less funds available to lend and thus reduce speculation and buying pressures in the foreign exchange market (CBN Factbook 2017)

b. Short Term Interest Rate

Short term interest rate affects liquidity management as it is influenced by the monetary policy. When interest rates change, these differences can give rise to unexpected changes in the cash flows and earnings spread among assets, liabilities, and off-balance-sheet instruments of similar maturities or re-pricing frequencies (Vodova, 2013). The Central and world banks have now published average annual interest rates and banks are expected to disclose more detailed financial information for the determination of spread in the banking system without cost. This stresses the importance of interest rate spread. Fadere (2011) opined that Intermediation spread is an outcome of bank's decision and is affected by micro and macro level factors, as it is subjected to many macro level issues that shape the efficiencies in financial sector performance. It is a reward for liquidity risk earned by transformation of deposit into loan and for selecting and monitoring the right kind of borrowers. Spread provides sufficient margins for the banks to continue its operations in the market.

Aremu (2011). Suggests that banks must manage other risks such as market risk, legal risk, liquidity risk, strategic risk etc. to enable them cover costs of operation and give good returns for equity holders. Interest rate spread or financial intermediation spread is an important

indicator for the banking system and the intermediation process. It is associated with cost of financial intermediation. Interest rate spread between lending and deposit rates may be used for making judgment on banks efficiency in individual bank or banking efficiency in overall spread of banking system. In a study conducted by Boardi et al. (2016) opined that Overall spread of banking system can be used for assessing profitability and pricing behavior of banks while spread between high and low of inter-bank rates can be used for the early indication of change in risk perception. Market competition in the banking sector affects spread. Hence, a bigger bank enjoys the benefit of bargaining power over others.

2.3 Empirical Review

In this section, empirical literature that examined the relationship between liquidity and its Determining factors namely the bank specific (internal) and macroeconomic (external) variables were reviewed.

2.3.1 Bank Specific factors and liquidity

Uremadu (2009) analyzed Nigerian financial system with a view to determining its liquidity profile using a group of money market instruments (MMIs). The model depicts the liquidity structure of the Nigerian financial system as represented by components of money market instruments which comprised treasury bills (TBs, treasury certificates (TCs), eligible development stocks (EDS), certificate of deposits (CDs), commercial papers (CPs) and banker's acceptance (BAs). The model estimates are based on a time series data of financial system aggregates stretching from 1980 to 2005, and have been used to evaluate impact multipliers and the liquidity rating of the Nigerian financial system using these money market variables. Regression results indicate that commercial papers had the greatest significant impact on bank liquidity (proxy for financial system liquidity) in Nigeria, followed by TCs,

EDS and TBs in descending order of magnitude. However, qualitatively, CPs, TCs, CDs and BAs had negative impact on the banking system's liquidity ratio while TBs and EDS had positive effect on bank liquidity ratio. This suggest that most of these short term investment in securities are less likely to influence the financial systems liquidity.

Fadare (2011) examined out a study 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.

Another study by 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 limitation of this study is that the sample is too small and the basis of measuring the liquidity of the banks is not strong which makes the findings of the study difficult to be generalized to other developing countries like Nigeria.

Bhati *et al.* (2013) on Indian banks examines the relation between capital and liquidity creation, by carrying out a series of Granger-causality tests, over the period 1996-2012 .the result shows that Capital to total assets and log of total assets are significant in affecting liquidity. Others factors have very little influence. The conclusions of the paper support the idea that the requirements of Basel III can lead to the decrease of liquidity creation, but on the other hand that greater liquidity creation can reduce banks' solvency, leading thus to a trade-off between the benefits of financial stability generated by stronger capital requirements and the benefits of greater liquidity creation. Taking all this into account, we can conclude that the exposure to risk liquidity is lower for the banking institutions that create less liquidity on the market.

Chikoko (2013) highlights how the liquidity of a sample of banks in Zimbabwe over the period 2009-2012 Panel data was influenced by number of internal factors. Capital adequacy and size have negative significant influence on liquidity risk. Non-performing loans have a positive significant relationship with liquidity risk. In particular, the research investigates whether banks tend to take more risks in a crisis period and if they follow similar strategies. Hence, the results provide important insights for regulators, suggesting that banks have a collective behaviour in the pre-crisis period, reflected in a global deterioration of liquidity

indicators and that collective risk taking incentives are focused mainly among the largest banks in Zimbabwe. However, Almumani (2013) studied Saudi banks and found liquidity to be negatively correlated with loan to deposits, size, debt to equity ratio and ROE as well as positively correlated with capital adequacy, investment to assets ratio and ROA. In Jordanian banks liquidity was found to be positively correlated with ROA, debt to equity ratio, size and capital adequacy meanwhile loan to deposits, investment to asset ratio and ROE have negative correlation relationship with liquidity. Implying that these relationship varies ,depending on the economy. The only pitfall of the study is attributed to the use of traditional ratio as a measure of liquidity. However other aspects of this study's methodology are valid and immensely suitable and useful.

Ferrouhi and Lahadiri (2014) analyzed the determinants of liquidity of banks in Morocco over the period between 2001-2012,using the Panel data, it indicates that Liquidity is mainly determined by size of banks, share of own bank's capital of the bank's total assets, external funding to total liabilities and return on assets. In this regard, liquidity is positively correlated with bank's size, share of own bank's capital of the bank's total assets, external funding to total liabilities while negatively correlated with return on assets. However, bank's return on equity and equity to total assets has no impact on bank's liquidity. The empirical results found strong evidence that these variables have a strong influence on liquidity. However, the results also showed that higher total assets may not necessarily lead to higher profits due to diseconomies of scale. Also, higher loans contribute toward profitability but the impact is not significant. Equity and deposits have significant impact on liquidity. Moussa(2015) studied the determinant of liquidity of 18 banks in Tunisia over the period (2000-2010) and found that (financial performance, capital, loans / total assets, operating expenses / total assets) have a significant impact on bank liquidity, however (size, total deposits/total assets,

financial expenses / total loans) does not have significant impact on bank liquidity. Though the study's scope is wide and rich in terms of representativeness, but it falls short by not using liquidity ratio as a measure of liquidity but rather used current ratio.

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 concluded 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.

Furthermore , 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 of liquidity. 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.

2.3.2. Macroeconomic factors (External factors) and Liquidity

The macro-economic variable broadly focuses on the state of the economy. The liquidity position of a bank is very sensitive to macro-economic variable fluctuations. This has been echoed by Almumani (2013) that the increasing inflation, decline in asset prices, high interest rates, credit expansion, real gross domestic product growth determine the bank's liquidity position. High inflation rate and sudden changes of inflation have a negative impact on interest rates and bank's capital. In this respect, the bank's non-performing loans will expand and collateral security values deteriorate.

Valla and Saes-Escorbiac (2008) assumed that, the liquidity ratio as a measure of the liquidity should be dependent on following factors: Probability of obtaining the support from lender of last resort, which should lower the incentive for holding liquid assets, interest margin as a measure of opportunity costs of holding liquid assets, bank profitability, which is according to finance theory negatively correlated with liquidity, loan growth, where higher loan growth signals increase in illiquid assets, size of the bank measured by the number of customers, gross domestic product growth as an indicator of business cycle, and short term interest rate, which should capture the monetary policy effect. This is confirmed by Rauch, Steffen, Hackethal and Tyrell (2010) whom studied the determinants of liquidity risk and attempted to identify the determinants of liquidity creation using multivariate dynamic panel model on all 457 German savings institution from the period 1997 until 2006.Using three ratios including the ratio of liquid assets to total assets, their results highlighted that the most important determinants are macroeconomic variables and monetary policy, while not showing a significant are the internal variables . They recommended that a careful and effective concern should be given to the macro economic variables as they vary in time.

Aremu (2011) investigated liquidity series of Nigerian banks to highlight aspects of vulnerabilities. The study focused on the Central Bank's Lender of Last Result (LOLR) policy may affect banking in the period of liquidity crises. Time series data were extracted from the three biggest banks (in terms of assets, capital base, turn over and branch networks) for the study. The Ordinary Least Square (OLS), Johansen co-integration, Error Correction Mechanisms (ECM), and Granger Causality tests were employed to show prima facie evidence that bank A and B are more liquid than bank C because proxies of liquidity series and Tobin's relationship between liquidity creation and bank specific variables such as size and performance .the result concluded that capital base, Branch network have significant impact on liquidity of the banks while asset have negative impact on the banks liquidity. The author also acknowledged the effects of both micro and macro-economic variables on liquidity risk. Therefore it shows that the optimal level of liquidity is strongly linked to effective operations. Furthermore, Vodova (2011) analyzed the banks liquidity positions of commercial banks in the Czech Republic and identified the determinants of bank liquidity. The conclusion was the positive correlation between unemployment rate and liquidity. On the other hand, the author noted the negative impact of inflation, financial crisis and the size on banks liquidity. The author also found that unemployment, interest margin, bank profitability and monetary policy interest rate have no statistically significant effect on the liquidity.

In similar vein, the findings were in consistent with that of Rauch et al (2009), whom analyzed the Liquidity created by Germany's state-owned savings banks and its determinants which revealed that unemployment which is connected with demand for loans is negatively linked to liquidity.

A study which investigated the relationship between liquidity and profitability of some selected banks and companies quoted in Nigerian Stock Exchange was carried out by Obiakor and Okwu (2011). The central objective of the study was to examine the nature and extent of the relationship between liquidity and profitability and also to determine whether any cause and effect relationship existed between the two performance measures. Analysis was based on accounts of the banks and the companies for the relevant period. A model of perceived functional relationship was specified and estimated using correlation and regression analysis. The results indicated that while a trade-off existed between liquidity and profitability in the banks with a negative but insignificant impact, the two variables were positively correlated. This however implies that the bank most have striking balance between liquidity and profit by actually working on a good portfolio (Liquidity) management and therefore shows that banks in Nigeria still have reasons to improve their liquidity management approaches.

Vodova (2013) using a panel data regression analysis, attempts to identify the liquidity determinants of commercial banks in Poland. The results determine that liquidity tends to decrease with bank size, 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. therefore the study reveals little about the endogenous effect of the variables unlike his previous study, the scope of the study and variable proxies chosen are sufficiently better than the previous study.

Malik and Rafique (2013) researched into the determinants of commercial banks in Pakistan and the results indicate that the bank specific fundamentals (non-performing loans to total loans and total assets of the bank) and monetary policy interest rate positively determine the bank liquidity whereas inflation and ROE has a negative impact. Additionally the study concludes that bank liquidity is also negatively affected by the financial crisis at any given time. Implying that external factors is influencing liquidity level of quoted banks in Pakistan. In another study by

Ferrouhi and Abderrassoul (2013) they concluded that, liquidity of Moroccan banking industry is positively correlated with bank‘s size, share of own bank‘s capital, external funding, foreign assets, foreign direct investment and negatively correlated with return on assets, inflation rate, growth rate of gross domestic product, public deficit and financial crisis. However, the study also recommend amongst other things that the bank‘s returns on equity, equity to total assets and unemployment rate have no impact on Moroccan bank‘s liquidity. However, these findings are not consistent with the results of other studies such as Vodova (2011) and who argue that liquidity of a bank has insignificant negative relationship with its size. Similarly Kamau(2013) also proved that variations in liquidity level are caused by both internal and external factors. Internal factors found significant in determining liquidity level of commercial banks in Kisumu, Kenya, are contingency planning, profitability, banks' major obligations and management policies.

On the other hand, external factors found significant in determining liquidity level of banks in Kisumu are credit rating, monetary policies, government expenditure and Balance of Payment status. This means that internal and external events and other agents' behavior as well as keeping their optimal profitability and performance of the banking system, as such

improper liquidity planning and implementation can affect banking operations and might exhibit long term effect on the economy. Cucinelli (2013) analyzed the type of relationship that exists between liquidity risk, measured with the liquidity coverage ratio and the net stable funding ratio, and some specific bank structure variables (size, capitalization, assets quality and specialization). The sample is composed of 1080 listed and non-listed Eurozone banks and the methodology applied in the analysis is OLS regression. The results highlight that bigger banks have a higher liquidity risk exposure, while banks with higher capitalization present a better liquidity on long horizon. Asset quality impacts only on the measure of the short term liquidity risk. Hence, with regard to the specialization, banks more specialized on the lending activity show a more vulnerable funding structure. Finally, during the crisis, the liquidity risk management changes only on the short term horizon.

Prince and Ifeanyi (2014) in an attempt to ascertain the factors that account for the persistence of excess liquidity in Nigerian economy. The vector Autogressive (VAR) and Granger Causality test are utilized for the study. The result was further supplemented with Impulse Response and Variance Decomposition tests. The result reveals among all the variables included in the study, level of money supply, foreign exchange monetization, and lagged excess liquidity are the major determinants of excess liquidity in Nigeria. This is in discord to quite a number of researches reviewed, whose findings revealed insignificant relationship between most attributes of liquidity and macroeconomic variable. Similarly, Chagwiza (2014) confirmed that, the liquidity of Zimbabwean commercial banks has a positive link with capital adequacy, total assets, gross domestic product, bank size and bank rate. Also suggests that, the adoption of multi-currency, inflation rate and business cycle have a negative impact on liquidity, through econometric analysis. Result suggests increased liquidity for banks with some quantum of liquid assets, however, beyond a point, holding

further liquid assets diminish a bank's profitability. Further empirical evidence also suggests that the link between the duos is dependent on the bank's framework and the economy in general.

Fola (2015) used the mixed methods research approach by combining documentary analysis and in-depth interviews. The findings of the study show that capital strength, interest rate margin and inflation had statistically significant and positive relationship with banks' liquidity. On the other hand, loan growth had a negative and statistically significant relationship with banks' liquidity. However, the relationship for profitability, non-performing loans, bank size and gross domestic product were found to be statistically insignificant. The study investigated only limited internal and external variables by using 12 years data. There are other variables like interest rate on loans, total deposits from internal and reserve requirements from external variables which are not included in the study.

These findings are in line with the study of Sumaila (2015) that sought to find explanations on why bank liquidity in Ghana has for about a decade now remained above global average levels. With an unbalanced data set of 22 banks over a 7-year period spanning 2007 to 2013, the ratio of liquidity created to total assets was used. This ratio captures illiquidity and as such, is employed as an indirect measure of bank liquidity. Findings of the study confirmed that, indeed, Ghanaian banks were highly liquid. Capital, size, ratio of loans to total assets and annual average inflation showed a positive and significant relationship with liquidity.Net interest margin, industry concentration and GDP growth rate exhibited a negative significant relationship with liquidity of banks. Growth in money supply was insignificant in explaining liquidity of banks.

In a similar vein, Boardi *et al.* (2016) analyses the determinants of Rural and Community Banks (RCBs) liquidity performance in Ghana using the Capital adequacy, Assets quality, Management Efficiency, Earnings ability (profitability) and Liquidity (CAMEL) regulatory measures and macroeconomic variables with Rural and Community Banks (RCB)s' market jurisdiction as a moderating variable. 114 rural and community bank-specific panel data from 2005– 2013 and the panel least square fixed effect method estimation were used for the research the results show that for the full period capital adequacy, assets quality ,management efficiency, profitability, investment, gross domestic product and inflation are significant predictors of rural community bank liquidity other macroeconomic variables effect on RCBs liquidity like interest rates and on national level financial structure indicators such as money supply, credit provided by the banking sector and others we're not included in the study.

Sheefeni *et al*. (2016) examined macroeconomic determinants of commercial banks' liquidity in Namibia were considered and analyzed. The unit root, bound test for co -integration and error correction model were employed using quarterly data covering the period 2001 to 2014. The results revealed that real gross domestic product is the main determinant of commercial banks' liquidity in Namibia. It was also found that monetary policy rate is positively related to banks' liquidity though statistically insignificant, On the contrary, it revealed a negative relationship between inflation and commercial banks' liquidity. According to the theory of liquidity Inventory, when the economy is at boom or goes out of recession, economic units including banks are optimistic and increase their long term investment and decrease their holding of liquid assets while in the period of recession the opposite is experienced.

Lastuskova (2016) focuses on the factors affecting the liquidity of selected banks, as well as their size groups, using panel regression analysis. For higher complexity of the results, multiple dependent variables are used: liquidity creation, outflow and net change. The values are calculated based on the specific method of liquidity risk measurement – gross liquidity flows. The results indicate both multiple effects of some factors on the given variables, as well as isolated influence of factors on a single liquidity form or size group. The results show that certain factors had a multiple effect on several forms of liquidity or several classes at the same time (see net loans etc.), while others had influence on certain forms and classes only the factor affected different forms of liquidity (for example in the case of capital). Different sensitivity of the classes stemmed mainly from their size or the strategy of liquidity risk management. In this respect, the study believes that smaller banks were more sensitive to macroeconomic quantities, since they have to rely more on themselves. The class of small banks created liquidity reserves during favorable economic conditions to cover potential problems in the future. This difference in behavior and sensitivity to different factors leads to the need for a more flexible setting of regulatory measures or limit values of indicators for differently sized bank classes, or different bank types. The result is consistent with the Bankruptcy and stakeholders theory that the liquidity buffer predicts that the size of liquidity buffer should reflect opportunity cost of holding liquid assets rather than loans as well as the cost of raising funds at a short notice.

On the basis of the afore-mentioned literature on the macroeconomic determinants factors describing risk position of the bank such as interest rates differentials, inflation and gross domestic product, one can safely say the following: There are mixed findings due to the variation of the environment and data included in various studies ranging from those for the view and otherwise. There are also different methodological approaches depending on

whether it is cross-country or individual country's studies. There is variation in terms of data frequency used. Notably, most studies employed bank data-level and few used aggregated data. On the identified factors, namely , external cash reserve ratio, and monetary policy interest rate on lending within the period of the study, so far there seems to be no study on Nigeria that has specifically looked at such within the period of the study .

The findings from the reviewed literatures in this section also revealed mixed results, while some studies uncovered positive relationship between the Determinants (Internal factors and External factors) and Liquidity others found negative relationship.

2.4 Theoretical framework

In selecting a theoretical framework, many contending theories were considered as possible explanatory frameworks within which to fit the determinants of Bank liquidity. In the banking theory and practice, there are no generally accepted indicators measuring the liquidity of banks. In spite of the fact that there are not enough acceptable indicators for measuring the liquidity, different authors offered their own approaches for measuring and expressing the liquidity of individual banks and the banking system as a whole.

2.4.1 Shiftability Theory

The liquidity management theory focuses on the liability side of bank balance sheet. This theory contends that supplementary liquidity could be derived from the liabilities of a bank. According to Nwankwo (1991) as cited in Edem (2017) the theory argues that since banks can buy all the funds they need, there is no need to store liquidity on the asset side (liquidity asset) of the balance sheet. Liquidity theory has been subjected to critical review by various authors. The general consensus is that during the period of distress, a bank may find it

difficult to obtain the desired liquidity since the confidence of the market may have seriously affected and credit worthiness would invariably be lacking. However, for a healthy bank, the liabilities (deposits, market funds and other creditors) constitute an important source of liquidity. This theory posits that a bank's liquidity is maintained if it holds assets that could be shifted or sold to other lenders or investors for cash.

This point of view contends that a bank's liquidity could be enhanced if it always has assets to sell and provided the Central Bank and the discount Market stands ready to purchase the asset offered for discount. Thus this theory recognizes and contends that shiftability, marketability or transferability of a bank's assets is a basis for ensuring liquidity. This theory further contends that highly marketable security held by a bank is an excellent source of liquidity. Dodds (1982) cited in Boardi et al (2016) contends that to ensure convertibility without delay and appreciable loss, such assets must meet three requisites. Liquidity management theory according to Dodds (1982) consists of the activities involved in obtaining funds from depositors and other creditors (from the market especially) and determining the appropriate mix of funds for a particularly bank. This point of view contends that liability management must seek to answer the following questions on how do we obtain funds from depositors, how do we obtain funds from other creditors?, What is the appropriate mix of the funds for any bank? Management examines the activities involved in supplementing the liquidity needs of the bank through the use of borrowed funds.

2.4.2 Bankruptcy and stakeholders Theory

The theories are a subset of positive accounting theory that deals with why and what is happening in the field of accounting. These are adopted to ascertain the determinants of liquidity and predicting the financial health of Deposit Money Banks. Bankruptcy predictions

were based on accounting ratios of Profitability, capital adequacy, Loan growth, Assets quality (NPL) and other financial variables. One of the classic works in the area of ratio analysis and bankruptcy classification was performed by Beaver (1967) as cited in Leykun (2015). The study found out that a number of indicators such as Profitability, Capital adequacy, Loan growth, size and Assets Quality(NPL) could discriminate between matched samples of failed and non-failed Banks. The results were used to explain empirical observations of Beaver on the power of various financial ratios to predict the failure of banks.

The emerging market score model portrays interest of stakeholders such as creditors, management, investors, shareholders, and analyst. This is because of their interests are caption as Profitability, capital adequacy, Assets Quality (NPL) Loan growth, size and investment as factors capable of defining banks' liquidity potentials. The theory also predicts that the size of liquidity buffer should reflect opportunity cost of holding liquid assets rather than loans as well as the cost of raising funds at a short notice. Furthermore, it also takes into account the distribution of liquidity shocks that commercial banks may encounter. In particular, the size of liquidity is to be positively related to the volatility of the funding basis and the cost of raising additional funds. It is for this reason that commercial banks are encouraged to keep a buffer of liquid assets to enable them to adequately manage the liquidity risk underlying their balance sheet structure (Mugenyah, 2015).

In support of this argument is Fola (2015) who stated that though it may be costly for commercial banks to keep a stock of liquid assets, it is more beneficial in the sense that it minimizes risk of being out of stock in case of deposit withdrawals. Furthermore, Diamond and Dybvig (1983) and Diamond and Rajan (2001) as cited in Boardi et al. (2016)also advocate for commercial banks to keep sufficient liquidity to insure them against liquidity

risk which may lead to insolvency that may arise from unexpected massive deposit withdrawal which might be costly for banks to counter on short notice . Hence, keeping a buffer of liquid assets by commercial banks equates the marginal benefit of holding liquid assets to the marginal cost of alternative form of financing. This theory also 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 aforementioned reason, any bank operating in Nigeria shall statutorily require to comply with the reserve and liquidity requirement directive of the Central Bank of Nigeria as a means of effectively managing the liquidity positions of banks in other prevent Bankruptcy.

2.4.3 Keynes -Liquidity preference Theory

Keynes (1936) as cited in Boardi *et al* (2016) describes liquidity preference theory saying that people value money for both "the transaction of current business and its use as a store of wealth. Thus, they will sacrifice the ability to earn interest on money that they want to spend in the present, and that they want to have it on hand as a precaution. On the other hand, when interest rates increase, they become willing to hold less money for these purposes in order to secure a profit. Preference approach suggests that banks pursue active balance sheet policies instead of passively accommodating the demand for credit. As originally proposed by Keynes (1936) the theory identified three motives on why banks demand and prefer liquidity. The transaction motive, here banks hold cash in order to satisfy the cash inflow and cash outflow

needs that they have. Cash is held to carry out transactions and demand for liquidity is for transactional motive. The demand for cash is affected by the size of the income, time gaps between the receipts of the income, and the spending patterns of the cash available.

This theory posits that bank's management can plan its liquidity based on the expected income of the borrower and this enables banks to give out loans as the settlement of these loans are linked by the borrowers expected income to be paid in a periodic and regular premiums and that will enable the bank to offer high liquidity when the cash inflows are regular and can be anticipated. However, Keynes liquidity preference theory is contrary to that of the liquidity inventory management theory as it supports the idea that banks with more volatile cash flows face a higher probability of experiencing cash shortages due to unexpected cash flow deterioration. Thus, cash flow uncertainty should be positively related with Cash holdings. This theory also stipulates that liquidity level of banks should be managed to enhance effective operation. Nevertheless, the theory does not stipulate how an optimal level of liquidity is influenced by some variables.

Tseganesh (2012) however provide evidence that banks with the highest and lowest credit risk issue more short-term debt while intermediate credit risk banks issue long-term debt. If we consider that banks with the highest credit rating have better access to borrowing, it is expected that these banks will hold less cash for precautionary reasons, which would cause debt maturity to be positively related to cash holdings. The precautionary motive of holding cash serves as an emergency fund for a bank. If expected cash inflows are not received as expected cash held on a precautionary basis could be used to satisfy short-term obligations that the cash inflow may have been bench marked for. Speculative reason for holding cash is

creating the ability for a bank to take advantage of special opportunities that if acted upon quickly will favor the bank.

Similarly, Moussa (2015) highlights Keynes description of liquidity preference theory as "the transaction of current business and its use as a store of wealth. Pandey (2010) posits that liquidity preference is necessitated by the need finance expenditure, speculation on interest rate path, or due to uncertainty about the future. These motives became known as transactions, speculative and precautionary motives to demand money. The theory also postulates that a bank should ensure that it does not suffer from lack-of or excess liquidity to meet its short-term compulsions. Also capacity of banks to perform their intermediation and credit creation roles in a manner that guarantees optimal profitability and minimum risk is greatly hinged on having adequate liquidity.

The theory is directly linked to function of risk-transformation which commercial banks undertake (Okpala, 2013). This theory follows two strands of literature. The first strand is that liquidity creation exposes commercial banks to risk (Allen and Gale, 2004; Diamond and Dybvig, 1983). It basically implies that the more liquidity is created the higher the probability and greater severity of losses associated with having to sell-off illiquid assets in order to meet the demand of clients. The second strand argues that commercial banks capital absorbs risk and expands banks' risk-bearing capacity (Okpala, 2013; Von Thadden, 2004). The risk absorption hypothesis predicts that higher capital ratios are positively related to liquidity levels and enhances the ability of banks to create liquidity (Mugenyah, 2015). 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 organisation,

Deposit Money Banks 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 at when due (liquidity). Inability to meet or sustain these interests over a given period of time could be tantamount to bankruptcy or liquidation, with either stakeholders applying for such or through voluntary filing by the management. In the event of these, not only would the stakeholders lose, but the Nigerian economy as a whole would be affected negatively.

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CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the methodology used in the study; it covers the research design, population of the study, sample size and sampling techniques, source of data collection and method of data analysis. It also explained the variables of the study and their measurement.

3.2 Research Design

The study seeks to evaluate the determinants of liquidity of listed banks on the Stock Exchange in Nigeria. 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 with cross-sections (Tseganish 2012), was used for the study. The data used in the estimation and analysis with regards to the factors to be examined is Panel data. This is because according to Vong et al. (2009) the usage of panel data will provide more informative data because it contains both information which is cross sectional, which captures individual variability and time series information which captures dynamic adjustment. As it has been used by Tseganish (2012), Almumani (2013) ,Vodova (2013), Malik and Rafique (2013), in this research, listed deposit money banks on the Nigerian stock exchange was studied in terms of their liquidity across the time period of 2008-2018. The core of the data needed for analysis was adequately and conveniently obtained from annual report of the listed Deposit money banks in Nigeria.

3.3 Population of the Study

The population of this study comprises all the 16 Nigerian deposit money banks listed on the Nigerian Stock Exchange as at 31 December 2018.This can be seen in the Table 3.1.

Table3.1: List of Deposit Money Banks in Nigeria

S/No	Name of banks	Date listed
1	Access Banks Plc.	1998
2	Diamond Bank plc.	2005
3	Ecobank Nigeria Plc.	2006
4	Fidelity Bank Plc.	2005
5	First Bank of Nigeria plc.	1971
6	First City Monument Bank plc.	2004
7	Guaranty Trust Bank Plc.	1996
8	Jaiz bank Plc	2016
9	Skye Bank Plc.	2005
10	Stanbic IBTC Plc.	2005
11	Sterling Bank Plc.	1993
12	United Bank for Africa Plc.	1970
13	Union Bank Plc.	1971
14	Unity Bank Plc.	2005
15	Wema Bank Plc.	1990
16	Zenith Bank Plc.	2004

Source*: Generated by the researcher from the NSE 2018 Factbook.*

Table 3.1 presents the study population which shows the year of listing. The Table shows the list of sixteen (16) deposit money banks in Nigerian stock Exchange as at 31 Dec 2018.

3.4 Sample Size and Sampling Techniques

In view of the fact that how banks liquidity level vary across banks over time, it is essential to have the entire information contained in annual reports and accounts of all sampled listed banks. Hence availability of relevant data is very essential for this study. Consequently, in order to derive the sample, the study used three –point filter as used by (Samaila, 2014).That for any bank in table 3.1 to qualify as a member of the sample, it must: Firstly have been listed on the NSE on or before 31 December 2007, secondly, it must have been quoted without being delisted between 2008 and 2018 ; thirdly, the bank must have had license 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 population

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. In view of the fact that the population is small and the data for the study are readily available from the Nigerian Stock Exchange, as well as, from the official websites of the listed Deposit money banks. The purposive sampling technique was used in the study.

Table 3.2: ***Sample Size***

S/No	Name of banks	Date listed
1	Access Banks Plc.	1998
2	Diamond Bank plc.	2005
3	Ecobank Nigeria Plc.	2006
4	Fidelity Bank Plc.	2005
5	First Bank of Nigeria plc.	1971
6	First City Monument Bank plc.	2004
7	Guaranty Trust Bank Plc.	1996
8	Skye Bank Plc.	2005
9	Stanbic IBTC Plc.	2005
10	Sterling Bank Plc.	1993
11	United Bank for Africa Plc.	1970
12	Union Bank Plc.	1971
13	Unity Bank Plc.	2005
14	Zenith Bank Plc.	2004

Sourced :Generated by the researcher from table 3.1

3.5 Sources and Method of Data Collection

The source of data for this study is secondary. The secondary data was collected from the annual reports and financial statements of the 14 quoted deposit money banks listed on the floor of the Nigeria stock exchange from (2008 -2018). The Nigeria stock exchange was an appropriate resource center for the required secondary data. The choice of the sources and methods of data collection was influenced by the models used for the determining the liquidity of listed banks; and it is in line with the works of Fadere (2011),Tseganish (2012) , Almumani (2013), Vodova (2013), Malik and Rafique (2013), Moussa(2015), Olarewaju et

al. (2015), Sumaila (2015), Boardi et al. (2016) Sheefeni et al. (2016), Lastuskova (2016), Kurotamunobaraomi et al. (2017).

3.6 Variables of the Study

This study has two variables; they are dependent and independent variables.

3.6.1 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 by Fadere (2011),Tseganish (2012) , Almumani (2013) ,Vodova (2013), Malik and Rafique (2013), Olarewaju et al. (2015), Sumaila (2015), Boardi et al. (2016) Sheefeni et al. (2016), Lastuskova (2016), Kurotamunobaraomi et al. (2017).

3.6.2 The Explanatory Variables

This consists of independent variables.

3.6.2.1 The Independent Variables

The independent variables in this study are the Determinants namely profitability, Non-performing loan, capital adequacy, loan growth, Interest rate on lending, Cash reserve ratio, Loan to deposit ratio, Investment ratio and Bank size. As in Vodovo (2013) Choon e tal.(2013). Sumaila (2015), Boardi et al. (2016), Ebenezer (2015).

a) Interest rate on lending(ITRL)

It is a reward for liquidity risk earned by transformation of deposit into loan and for selecting and monitoring the right kind of borrowers. Spread provides sufficient margins for the banks to continue its operations in the market.(Aremu ,2011). It is also referred to as the Monetary

policy rate ,the regulatory bodies set the margin for interest rate to be charged on deposit and lending. this study has used the interest rate on lending spread set by central Bank of Nigeria. As used in the work of Vodova (2013),Boardi et al(2016) and Mugenyah (2012)

b) 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) .

c) Non-performing loans (NPLs):

NPLs are loans that a customer fails 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 non-performing loans was the percentage of non-performing loans to the total amount of bank loan. This is in line with the work of Fola (2015) and Tseganish (2012) .

d) 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.

e) 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.

(f) Cash Reserve Ratio (CRR)

Cash Reserve ratio is a specified minimum fraction of customer deposits required of deposit money banks to be held as reserves either in cash or with the central bank. The CRR is an effective tool for controlling liquidity in the banking system and by extension money supply in the economy. CRR is raised to sterilize a higher fraction of funds as reserves with the central bank .as seen in the work of Fadere (2011), Lastuskova (2016) and Edem (2017). However, the problem of this ratio is that a significant part of the cash assets is not really available for financing of liquidity assets.

(g) Investment Ratio (INVR)

Total investment to total assets is another measure of bank liquidity. It measures the proportion of asset. The higher the investment to asset ratio, the lesser is the amount available as liquid assets. And the higher the liquidity risk. Though, higher levels of investment provide higher potential profitability for the banks as more of the available funds are channeled into higher earning assets compared to liquid assets. Therefore, a reasonable mix between liquid assets and investment is needed to ensure that profitability is not hindered and sufficient liquid assets are available (Chagwiza, 2014). as read also in the work of Mamunur (2017), Prince and Ifeanyi (2014)

(h) 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).

3.7 Techniques of Data Analysis

In analyzing the relationship between the Liquidity of listed deposit money banks and its determinants, the study used three techniques of data analysis which are; descriptive statistics, correlation matrix and multivariate regression techniques (Fixed-effect or Random-effect (GLS) regression). However, before carrying out such analyses, robustness test was conducted in order to improve the validity and reliability of the research data and all statistical inferences to be drawn therein. The tests include multicollinearity, heteroscedasticity, normality of residuals and hausman specification test.

3.7.1 Descriptive Statistics

The descriptive statistics was employed in this study to compute the summary statistics comprises of the minimum value, maximum value, mean and standard deviation. However, mean represent measures of central tendency of random variable categorized in dispersal while standard deviation measures the dispersion on a set of data from its mean and the more the dispersal away from the data, the greater the deviation. Thus, this tool would be used to describe the dependent and the independent variables of the study. Previous studies that used this technique to examine the determinants of firm value include (Lastuskova ,2016 and Edem , 2017)

3.7.2 Correlation Matrix

The correlation matrix expressed the strength of association between variables (i.e the effect of one variable over the other). This was used to determine the nature of relationship between all variables under study so as to understand their individual relationship with one another before regressing them. The coefficient goes from -1 to +1, closer to 1 means strong

relationship. In addition, positive values (+1) show a perfect positive relationship i.e. the variables are positively related, which means as one variable changes the other changes with the same proportion. And negative values (-1) show a perfect negative relationship i.e. the variables are negatively correlated, it means as one variable increases the other decreases by the same proportion. Zero values (0) on the other hand would indicate that there is no relationship between the variable. This technique has been used by similar prior studies such as. (Tseganesh, 2012, Smaila, 2015, Lastuskova , 2016 and Edem , 2017)

3.7.3 Linear Regressions

In an effort to determine the variations in dependent variable [i.e. Liquidity (LIQ) due to variation in any of the independent variables [i.e. Profitability (ROE), Loan growth (LG),Capital Adequacy (CAR), Bank size (BZ)Non-Performing Loan (NPL), Investment ratio, (IR), Cash reserve ratio (CRR) ,Interest rate on lending(ITRL),the study used linear regression techniques that explained the variation in dependent variable due to variation in any of the independent variables. Linear regression technique using panel data methodology was found to be suitable and was thus employed in the analysis of data. This is because of the panel character of data, that is, its combination of time series, as well as cross-sectional attributes as used by Vodova (2012), Mugenyeh (2012) and Ibe (2013).

The Ordinary Least Square (OLS) regression, Fixed Effect (FE) and Random Effect (RE) were employed in estimating the combined effects of independent variables on the dependent variable. The OLS provides a consistent estimate of α (intercept) and β (slopes) but is biased because it fails to address the problem of endogeneity as cited in Sama'ila, (2014) and, as a result, the fixed effects and random effects are also employed. This technique was used by related studies (Vodovo, 2012, Engida, 2015 and kuratomunobaraomi et al 2017)

3.8 Model Specification

The 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, NPL , LTD, INVR,CRR, ITRL. 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,

$LIQit = ß_0 + ß_1PROF_{it} + ß_2NPL_{it} + ß_3CRR_t + ß_4CA_{it} + ß_5INVR_{it} + ß_6BS_{it} + ß_7LG_{it} + ß_8 INTRL_t + e$……1

Bank specific factors

$LIQit = ß_0 + ß_1PROF_{it} + ß_2NPL_{it} + ß_3LG_{it} + ß_4CA_{it} + ß_5INVR_{it} + ß_6BS_{it}$……..2

Macro economic factors

$LIQit = ß_0 + ß_1INTRL_t + ß_2CRFZR_t + e$……..3

Where: LIQ= Liquidity Ratio

PROF=Profitability

NPL=Non performing loan

INTRL= Interest rate on lending

CA=Capital adequacy

CRR= Cash reserve ratio

BS= Bank size

LG= Loan growth

INVR= Investment ratio

$\beta 0$= constant term (average value of the dependent variable when the sum of independent variables is zero)

$\beta 1$, $\beta 2 \ldots \beta 5$ = 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

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Introduction

This chapter presents, interprets and discusses the results of data analysis of this study. The data relating to each hypotheses of this study were generated from the annual reports of forteen sampled listed Deposit Money Banks in Nigeria to determine the impact of corporate tax aggressiveness and firm value. The chapter specifically presents and interprets the result of descriptive statistics, correlation matrix, multiple regression results of the dependent variable (Liquidity) and the independent variable (Profitability, Non-performing Loan, Capital Adequacy , Loan growth, Investment ratio, Loan to Deposit ratio , size of the bank,Interest rate on lending, Cash reserve ratio) as well as various robustness tests. The chapter finally presents hypothesis testing and discusses the implications of findings .

4.2 Descriptive Statistics

Table 4.1 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 4.1: Descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
LIQ	154	0.350	0.197	0.129	0.879
LOANG	154	0.236	0.196	- 0.123	0.779
PROF	154	0.025	0.009	0.003	0.040
CAR	154	0.095	0.038	0.025	0.271
NPL	154	0.109	0.010	0.002	0.535
INVR	154	0.058	0.040	0.001	0.263
BSIZE	154	22.26	1.29	19.56	26.007
INTRL	154	0.034	.047	0.0011	0.115
CRR	154	0.122	0.100	0.1	0.31

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 .3503 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 have the mean value of the Liquidity to be 35% 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 Non-performing loan which measures the asset quality of a bank has a mean value of 10.95% with the maximum and minimum of 53.5% and 0.2%, respectively. The mean value of 10.95% is much above 10% maximum limit of regulatory body, signifying that on an average, banks in Nigeria incurred 10.95% NPLs from its total loan, which are more than the required threshold. The maximum value of 53.5% indicates the presence of high credit risk in some of the banks. There was moderate dispersion of NPL sampled deposit money banks in Nigeria that is shown by the standard deviation of .10%.

The ratio of investment to total assets, as a measure of risk taking behaviour of banks, shows a variation of 0.4%, a mean of 0.58 %, minimum of 0.01% and a maximum of 26.38%.The mean value of 0.58.9% signifies that, the deposit money bank's investment is relatively moderate. Thou their primary objective are not necessarily to be doing investment banking

but to provide loans to its jurisdictional customers as a means of dealing with poverty through the provision of formal financial intermediation services to the customer. Considering modern portfolio management theory, usually diversifying investment is good because it safeguard firms against risk.

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. Similarly, one of the macroeconomic factors which is the Interest rate on lending of the banks measured by the difference between annual average lending shows the mean value of the interest rate margin over the period under study to be 3.4% with the maximum and minimum values of 11.2% and 0.11%, respectively. There was little variation of interest rate margin towards its mean value over the periods under study with the value of standard deviation of 4.7% On average the rate was 3.4% with maximum rate of 11.2% in the year 2008 and the minimum rate of 0.11% in the year 2012.

Another External or macroeconomic factor affecting liquidity of Listed Deposit Money banks was Cash reserve ratio that measures the portion of the minimum requirement determined by the Central bank of Nigeria. The mean value of the percentage of reserve with CBN was 11% over the periods under study with the maximum of 31% in the year 2015 and minimum of 1% in the year 2009 and 2010, and a standard deviation value of 12.2% for the sampled bank during the period. The Cash Reserve ratio was designed to afford bank managers the opportunity to manage their portfolios efficiently And address the problem of excess liquidity

4.3 Correlation Matrix

The results of the Pearson's correlation between the dependent variable (Liquidity ratio) and explanatory variables (Profitability, Capital adequacy ratio, Loan growth, Non-performing loan, Bank size, Investment ratio, Interest rate on lending and cash reserve ratio) 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 4.2: Correlation Matrix of LIQ and its Determinants- Model

	liq	Loan	Prof	Car	npl	invr	bsize	intrl	crr	VIF
liq	1									
Loang	-0.029	1								1.49
prof	0.731	0.056	1							1.08
car	0.338	0.058	0.709	1						2.04
npl	-0.017	-0.072	-0.115	-0.10	1					5.42
invr	0.0752	0.046	0.714	0.839	-0.05	1				1.53
bsize	0.7900	0.044	0.709	0.646	0.871	0.0709	1			7.19
intrl	-0.087	-0.146	-0.032	0.188	0.098	-0.026	0.216	1		1.55
crr	0.058	-0.257	0.078	0.105	-0.04	0.0486	0.837	-0.275	1	6.39

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. Three of the independent variable namely; Loan growth, Non performing loan and interest rate on lending, have negative and weak relationship with the dependent variable (liq), The relationship is weak for both LG, NPL and INTRL considering the coefficient values of -0.0296, -0.0173 and -0.0872 respectively, Similarly, it can be observed from the table that PROF, BSIZ, and IVR are positively and strongly correlated with liquidity meaning that these variables strongly influences the liquidity while CAR, and

CRR are positively but weakly related with the liquidity, CRR has very weak relationship with Liquidity. To further asses for collinearity problem the variance inflation factor (VIF) test was carried out. The result indicates absence of multicollinearity because the VIF values ranges from 1.04 to 4.15. Hence the predictive ability of the independent variable is not adversely affected by the relationship.

4.4 Regression Result

The summarized regression results of the Ordinary Least Square (OLS), Fixed Effects (FE) and Random Effects (RE) as well as the results of various robustness tests are presented in Table 4.3

4.4.1. Robustness Test of Independent and Dependent Variables

Robustness test was 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 implies that there is a linear relationship between two or more independent variables. When multicollinearity exists, it will be difficult to differentiate the individual effects of explanatory variables and the OLS estimators may be biased and they even tend to have large variances (Toby 2008). Furthermore, if there is a perfect linear relationship among the independents, the estimates for a regression model cannot be uniquely computed. The two common ways to check for the presence of multicollinearity between independent variables are correlation coefficients and variance inflation factors (VIF) with tolerant values. This study used VIF to check whether the explanatory variables of the model suffer from multicollinearity. VIF measures the variance of an estimator compared to what the variance

would have been if the independent variable was not collinear with any of the other explanatory variables (Petria 2010). Therefore, 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 4.15 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 test is conducted to check whether the variability of error terms is constant or not. The presence of heteroskedasticity indicates that the variation of the residuals or term errors is not constant which would affect inferences in respect of beta coefficient, coefficient of determination (R^2), t-statistics and F-statistics of the study. The results of the heteroskedasticity test reveal the presence of heteroskedasticity in the model as it show a significant probability of 0.0000 for the models. 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: Hausman specification test is performed to decide between fixed or random effect models when there is a trade-off between the efficiency of the random effect approach and the consistency of the fixed effect approach. The fixed effects regression represent a common, unbiased way of controlling for omitted variables in a panel set. On the other hand, the random effects assume that the variation across entities is random and uncorrelated with the independent variables included in the model. Therefore, an essential assumption for selecting the random effect estimation is that the unobserved heterogeneity should not be correlated with the independent variables. The role of Hausman test is to check for strict exogeneity. In the event that no correlation is found, random effect is to be employed and if correlation exists, fixed effect is to be employed. Therefore, if prob>chi2 is less than 5%, FE is more appropriate, otherwise RE is more appropriate. The hausman

specification test result is (0.000) therefore FE model is more appropriate for this study, which guide 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.

4.4.2. Determinants of Liquidity of listed Deposit Money Banks in Nigeria

Table 4.3 and 4.4 presents the regression result of the ordinary least square (OLS), Random Effect (RE) and fixed effect (FE) estimation techniques.

Table 4.3: Regression Results: Determinants (Bank specific and external) of Liquidity of listed Deposit Money Banks

	OLS ROBUST				FIXED-EFFECT				RANDOM-EFFECT			
Variables	**Coef.**	**St.Err**	**T**	**P>/t/**	**Coef.**	**St.Err**	**T**	**P>|t|**	**Coef.**	**St.Err.**	**Z**	**P>|z|**
CONSTANT	-1.469	1.212	-1.21	0.226	-1.170	.460	-2.5	0.012	-1.125	.708	-1.59	0.112
LOANG	- 0.09	0.045	-1.99	0.046**	-.0516	.0515	-1.00	0.318	-.098	.0495	-1.99	0.047**
PROF	1.672	1.652	1.01	0.311	1.314	.4387	3.06	0.003***	1.654	.4523	3.66	0.000***
CAR	2.088	1.028	2.03	0.042**	1.755	.3154	5.55	0.000***	2.04	.3057	6.68	0.000***
BSIZE	0.9112	0.393	2.32	0.021**	.6699	.2642	2.38	0.011 ***	.85519	.2679	3.19	0.001 ***
NPL	-0.004	0.002	-.1.84	0.665**	-.0004	.0014	-0.10	0.770	-.000	.0014	-0.16	0.873
INVR	1.148	0.517	2.25	0.024**	1.311	.2199	6.01	0.000***	1.173	.223	5.25	0.001***
Adj R-squared												
Within						0.7599				0.7529		
Between						0.8995				0.9265		
Overall						0.7692				0.7792		
F value		389.25										
Prob>F		0.000				0.000				0.000		
Hausman test (Prob>Chi)	0.000											

Source: Generated by the Author using STATA (Version 12).
The starred coefficient estimate are significant at 10% (*), 5% (**) and 1% (***) level.

Table 4.3 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, Non-performing loan, Bank size, Investment ratio, Interest rate on lending and cash reserve ratio) .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 0.78 which indicate that 78.77% variation or fluctuation of the liquidity of listed Deposit money banks in Nigeria can be explained or caused by LOAN G, PROF, CAR, , NPL, INVR, and BSIZE, jointly. The remaining 22.2% 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 Determinants of liquidity is accounted for by the explanatory variables.

The FE results in Table 4.3. Shows that Loan Growth has negative and insignificant effect on the liquidity of listed Deposit money bank in Nigeria. Considering the negative Coefficients of -.0516 and p-value of 0.318. 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 decrease the liquidity of the sampled banks insignificantly. 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.

Profitability according to the FE result in Table 4.3 has positive and significant impact on liquidity of listed deposit money banks in Nigeria (Coef. 1.314 and p-value 0.003) 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, (coef. 1.755 and p-value 0.000). 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), Almumani (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.

Non-Performing loan which has a negative and insignificant effect on liquidity of listed Deposit money banks in Nigeria, (coef. -.0004 and p-value 0.770). Meaning that an increase in Non -performing loan and other independent variables remaining constants will decrease the liquidity of the sampled banks insignificantly. However the large bad loans portfolios will slightly affect the ability of banks to provide credit which could result in loss of confidence on the part of depositors and foreign investors who may start a run on banks, leading to liquidity problems. This result is consistent with the results founded by Vodova (2013), Chikoko (2013) and Kahende (2013). However, the result contradict the findings of Sheefani et al (2016) who examined the Determinant of liquidity of banks in Namibia and the result shows that NPL has a positive and significant effect on liquidity.

The investment ratio has a positive and significant impact on the liquidity of listed Deposit money banks in Nigeria , (Coef. 1.311 and p-value 0.000). This means that the higher the banks investment, the higher the liquidity of listed Deposit money banks and vice versa .The result implies that higher levels of investment provide higher potential for liquidity of the banks, as more of the available funds were channeled into higher earning liquid assets. This is consistent with the findings of Chagwiza (2015) and Rashid (2017). Nevertheless, other studies such as Tseganesh (2012) have found negative relationship between investment and bank's liquidity.

Bank size (SZE) to FE result in Table 4.3, is positively and significantly related with the liquidity of listed Deposit money banks Nigeria. (Coef. .6699 and p-value 0.011). This is in line with the assumption that small banks focus on the traditional intermediation and transformation activities and hold less liquid assets. This is to mean that small banks has little

cash and cash equivalent reserves in other banks (central bank and other commercial banks) since they have little dealing with other types of investment instruments than loans, the results 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 Almumani (2013), Ferrouhi and Abderrassoul (2013) but contradict the findings of Choon et al (2013) who found negative relationship between bank size and liquidity

Table 4.4.: Regression Results: Determinants (Macroeconomic factors) of Liquidity of listed Deposit Money Banks

	OLS ROBUST				FIXED-EFFECT				RANDOM-EFFECT			
Variables	**Coef.**	**Std.Err**	**T**	**P>/t/**	**Coef.**	**Std.Err**	**T**	**P>|t|**	**Coef.**	**Std.Err.**	**Z**	**P>|z|**
CONSTANT	2.155	1.369	1.65	0.100	2.185	.863	2.53	0.012	2.155	1.369	-1.57	0.115
INTRL	-.1411	0.045	0.150	0.157	-.1472	.1004	-1.47	0.145	-.1411	.0998	-1.41	0.157
CRR	0.020	0.046	0.44	0.661	.0194	.0462	0.42	0.675	-.020	.0461	0.44	0.661
Adj R-squared												
Within						0.020				0.020		
Between						0.020				0.020		
Overall						0.0087				0.0087		
F value												
Prob>F		0.000				0.000				0.000		
Hausman test (Prob>Chi)	0.000											

Furthermore, the FE result in Table 4.4 shows that Interest rate on lending have negative, but insignificant relationship with liquidity of listed Deposit Money Banks. Considering the negative coefficients and p-value of -.1472, and 0.145 respectively. This implies that an increase in Interest rate other independent variables remaining constant will weakly but negatively affect the liquidity level of the banks. This result implies that, the increase in monetary policy rate makes lending activities slightly more attractive and thus lead to

liquidity decrease insignificantly. In other words the increase in bank interest rate on lending stimulate bank to focus more on lending activities and as a result the share of liquid assets is slightly decreased. The result is consistent with the findings of Vodovo (2013) who found that interest rate on lending have no statistically significant effect on the liquidity, the author also argues that the interest rate on lending is not the main factor which influences the incentives of banks to hold liquidity in the form of interbank deposits.

Boardi et al (2016) also assert that the increase of the policy rate will slightly reduce bank's liquid asset holdings. However, the result contradict the findings of Fola (2015) who examined the determinant of liquidity of banks in Ghana and the result shows that interest rate on lending has significant and positive relationship with banks' liquidity.

Cash reserve ratio According to FE result in Table 4.4, has positive but insignificant impact on liquidity of listed Deposit money banks in Nigeria. (Coef. .0194 and p-value 0.675). This also implies that an increase in cash reserve with CBN will weakly influence the liquidity of the sampled banks in Nigeria. But since the coefficient was statistically insignificant we could not say it show positive impact on banks liquidity. The insignificancy and positive impact of the cash reserve ratio could be due to the reserves with other banks, That is to say when the CBN tightens monetary policy, banks may have to exercise their liquidity reserve with other banks and therefore the size of the liquidity buffer slightly increases. This supports the findings of Choon et al (2013) and Lastuskova (2016). This result is not in agreement with Kuratamunobaraomi et al (2017) who found that liquidity decreases with cash reserve ratio.

4.4.3 Hypotheses Testing

The research hypotheses of this study are formulated in null form. To determine whether a hypothesis can be rejected or not, the p-value of FE regression result in Table 4.3 and Table 4.4 is used as a yardstick. Where the p-value is more than 0.05, the null hypothesis is accepted, otherwise it is rejected.

In view of the results reported on the Determinant of liquidity (Bank specific factors or internal factors) level of listed Deposit money Banks Nigeria. This therefore provides evidence for the rejection of hypothesis one (Ho_1) of the study in favor of the alternate hypothesis. Which state that (Bank specific factors or internal factors with p-value of 0.000, 0.003, 0.001 and 0.000 for Profitability, investment, capital adequacy and bank size respectively with exception of loan growth and Non-performing loan which has p-value of 0.310 and 0.770 respectively) has no significant impact on the liquidity of listed Deposit money banks, the hypothesis one is therefore rejected.

Hypothesis two states that External factors or macroeconomic factors(Interest rate on lending and Cash reserve ratio) has no significant impact on the liquidity of listed deposit money banks in Nigeria. From Table 4.3 also, the p-value of 0.941 and 0.599 respectively shows insignificant relationship and this hypothesis two is therefore not rejected.

4.5 Implications of the Findings

The study has numerous theoretical, practical and regulatory implications. These implications represent the contributions to knowledge in the study which are expected to benefit DMBs, existing body of knowledge within the accounting research, accountants in practice, investors, regulators and providers of accounting services as the outcome of this

study would enable DMBs to appreciate to the extent profitability, investment, capital adequacy and size is to the organization in the area of liquidity.

The findings have fundamental policy implications regarding the factors influencing the liquidity in the Nigerian listed Deposit money banks as well as the levels of their variability. This suggests that similar efforts in use of higher frequency data in terms of the specific timing between actual and benchmark Banking Sector liquidity gaps to mention few, would be rewarding in determining the relationship between liquidity and the extent of bank specific factor's variability in order to ensure high level of liquidity and to reduce the problem of poor capital base, poor asset quality, low earnings, and the possibility of illiquidity leading to insolvency, and insolvency leading to Bankruptcy .

The analysis reveals that Profitability is positively and significantly influencing liquidity. This provides evidence that the liquidity of banks with higher level of profitability will be improved however there is a limit to it holdings. in line with Muhammad (2015) for banks to be profitable and liquid at the same time, it must have a good portfolio management. Therefore suggest that the bank should strike the balance between liquidity and profit

The result provides evidence of positive and significant association between size of the bank and liquidity to the users. This implies that bank size play a prominent role in reducing uncertainty of meeting the demands of it customers when its due, DMBs size explain how efficiently banks employ strategy to maintain stakeholder's confidence. In other word, High value implies growth in market shares and explains customer's loyalty. Hence, it can also be inferred that economies of scale of a bank influences its decision on the amount of liquidity reserve to be held.

The result on investment indicating positive and significant relationship with liquidity which provide evidence to the users and investors with evidences on the implication of high investment ratio of shareholdings in Deposit money Banks . Users therefore, should be cautious in investing in banks where investment ratio is low. This implies that the ones that are relatively large in terms of investment ratio, tend to maintain a high reserve of liquid assets.

Furthermore, the effect of capital adequacy on liquidity of listed Deposit Money banks as shown by empirical evidence may find here a plausible explanation. This has significant policy implications for the banks in questions. The analysis points to the attractiveness of having adequate capital by the bank, investor affiliated members such as employees and other parties with specific knowledge of the banks 'business which will go a long way in improving the capacity and capability , thus the banks should maintain a healthy capitalization.

The above findings can have implications for users of financial statement (internal and external) and regulatory authorities (FRCN and SEC,) professional Accounting bodies (ICAN and ANAN) to help them make informed decisions. Users of accounting information should note the influence of Profitability, capital adequacy, investment, and size on liquidity level of the bank.

The findings provides proof that the findings on these financial ratios on the bank's capital adequacy, investment, size and profitability are instrumental in evaluating the bank's liquidity, and shed more light on new insights and evidence which deepens the bank's

understanding of variables that will have significant effects on the bank's liquid asset holdings and practical information that improves the effectiveness of bank managers' decisions making in overcoming the liquidity crisis and determining the bank's future plan in asset liability management. Moreover In the long run, by evaluating these liquidity indicators, banks can gain more competitive advantage in the industry. Finally ,the findings from this study provides government especially (policy maker) to perform its monitoring function since it shows the liquid asset holdings of banks, thus enabling the central bank of Nigeria to set a new benchmark on the listed Deposit money bank's liquid asset holdings. The outcome of this research also imply just like the theory argues, the listed deposit money in Nigeria – whose motive is largely profit maximization- to realize that higher profitability ratio, higher investment ratio, and higher bank size significantly influence the liquidity of their banks.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary

This dissertation comprised of five chapters. The first chapter started with a background in which a general overview of the area of the study is explained with a view to identifying and assessing the Determinants of Listed Deposit Money banks in Nigeria. There is growing concern over whether or not the internal and external factors influence the liquidity level of listed Deposit Money Banks in Nigeria. A number of studies have been conducted on the Determinants of liquidity of Banks at different times in developed, as well as, developing countries, most of which are well documented in accounting and finance literature. The studies conducted in Nigeria paid more attention to mostly few bank specific factors influencing liquidity and a traditional measure of liquidity. Consequently, this study used Liquid Asset to Total Asset to measure the liquidity. Furthermore most of the studies conducted in Nigeria did not capture most of the determinants used in the study, but a few of bank specific factors or using a traditional measure of liquidity as proxies and the statistical tools and method adopted were not dynamic and robust enough to show the nature of relationship between the variables. This study has adopted the most influencing factors of liquidity of banks namely: Non performing loan, capital adequacy, investment ratio, bank size, Interest rate on lending, profitability, loan growth, cash reserve ratio.

It is noted 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 increased cases of Non- performing loans amid high

operational cost has cost many banks to cut down staff size and close branches in the face of low profit output. Consequently, there is need to determine these factors which influences the liquidity, and thus the study analyzed data for eleven years from 2008-2018 in order to have a more current and holistic result about the Determinants of Liquidity. Therefore, this study examines the impact of internal and External Factors on the Liquidity of listed Deposit Money Banks in Nigeria.

In line with the problem statement, two research hypotheses were formulated in null form with a view to testing them at the end of the study. Finally, the chapter explained that the study covered only the Deposit Money Banks quoted on the Nigerian Stock Exchange covering a period of eleven years from 2008-2018.

In accounting and finance literature, many factors have been identified as influencing the Liquidity of Banks, such as profitability, Non-performing Loan, Capital Adequacy, Loan growth, Investment ratio, size of the bank, Interest rate on lending, Cash reserve ratio. However, the purpose of business organization, like bank is to maximize profit. For this reason, several researchers have proposed that the accurate functionality of banking system is needed to evade disorder of any financial service and thus Optimum level of liquidity is greatly linked with the efficient banking operations and therefore if the liquidity is not adequately managed, it may lead to insolvency and ultimately destroy the wealth of Shareholders and breakdown of entire financial institutional framework due to strong integration, dependencies and contagion effect. Determinants of bank liquidity help ensure a bank's ability to meet cash flow obligations, which are uncertain as they are affected by internal and external events and other agents' behaviour and to keep their optimal liquidity. Most of the studies that examine the impact of bank specific and macroeconomic factors and

bank liquidity are foreign-based; and as such, their findings may not be applied to Nigeria due to our differences , hence, the need to examine these two important variables in the listed deposit money banks in Nigeria.

The study adopted the longitudinal research design specifically the panel data type was used in view of the nature and purpose of the study. The population of the study comprised all the Sixteen (16) Listed Deposit Money Banks that are publicly listed on the floor of the Nigerian Stock Exchange as at 31st December 2018. In order to derive the working population, the study used three –point filter as used by (Samaila, 2014), that for any bank to qualify as a member of the working population 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 2018 , thirdly, the bank must have had license to operate as a national bank on or before 31 December 2007.These criteria are established either 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 population reduced to 14 . Hence, Jaiz Bank Plc. was excluded from the sample since it was quoted in the year 2016 and thus excluded. Also ,Wema bank was excluded as the bank got the approval to operate as national bank in the year 2015 . The study employs panel data methodology of Random effect (RE), Fixed Effect (FE) and pooled OLS for analysis. Descriptive statistics, correlation and multiple regression analysis are employed as a technique for data analysis.

5.1.1 Summary of Major Findings

Based on the analysis and interpretation of models results in the previous chapter, the study came up with the following findings:

i) The bank's liquid asset holdings of listed Deposit money banks in Nigeria has a positive and significant relationship with profitability of the sampled banks.

ii) Non performing loan of the listed bank was found to have negative and insignificant impact on the liquidity of the sampled banks .

iii) Investment was found to significantly and positively affect the liquidity of the listed deposit money banks in Nigeria.

iv) There is positive and significant relationship between capital adequacy and liquidity of listed deposit money bank in Nigeria .

v) Loan growth of the listed deposit money banks has a negative but insignificant effect on the liquidity of the sampled banks.

vi) The size of the bank has positive and significant impact on the liquidity of the listed deposit money banks in Nigeria.

vii) The Interest rate on lending was found to have negative and insignificant impact on the liquidity of the sampled banks.

viii) Finally the cash reserve ratio has a positive but insignificant impact on the liquidity of listed deposit money banks in Nigeria.

5.2 Conclusions

The following are the conclusions that are drawn based on the findings of the study:

i. The listed Deposit Money Banks' ability to meet obligations as they come due can be enhanced through profitability as given by the analysis indicating that the higher the profit the higher is the liquidity of the sampled banks.

ii. The Non-performing as an indicator of financial stability reflecting on its asset quality, credit risk and the total volume of loans does not Necessary improve the liquidity level but rather a Rise of non-performing loan portfolios significantly contributed to liquidity risk in the banking sector.

iii. Higher levels of investment provide higher potential liquidity for the listed Deposit money banks in Nigeria. This is because as more of the available funds were channeled into short term earning assets, consequently the liquidity of listed Deposit money bank was seen to have increased.

iv. The capital adequacy ratio, which is a proxy for the rate of capitalization in a bank is also found to increase the level of liquidity reserve, thus higher capacity of the bank to absorb risks and create higher level of liquid was as a result of higher capital adequacy ratio. It is therefore essential in order to improve the liquidity of the listed Deposit Money Banks in Nigeria.

v. Growth in loans and advances ratio does not necessary improve the liquidity of listed deposit money but rather deteriorates the bank liquidity.

vi. Size of bank is an important determinant of liquidity level in listed Deposit money banks. The magnitude of size is, therefore, an indicator of the banks higher liquidity.

vii. Interest rate on lending of deposit money banks does not necessary affect the level of liquidity though at a higher interest rate, most banks will tend to issue loans rather than holding them as reserves. Hence the level of interest rate is not the main factor which influences the incentives of banks to hold liquidity.

viii. Cash reserve ratio of listed Deposit money banks in Nigeria though positive, does not help to significantly maximize liquidity for the listed bank

5.3 Recommendations

Based on the findings of the study, the following recommendations are made.

1. The Managers of the listed Deposit Money Banks in Nigeria should not only be profit oriented in the sense that uncontrolled profits were realized through issuing more loans and investing in riskier assets. As in long term, the bank's liquidity would deteriorate over time due to low quality assets. Therefore, there is need for the bank management to strike a balance between profit and liquidity, maintain the loans given out and deposits retained.
2. The managers of the listed Deposit Money Banks in Nigeria should maintain a better credit administration like credit rationing, and in to reduce the impact of Non-performing loan by diversifying loan portfolio risk more efficiently.
3. Managers and Investors of listed Deposit Money Banks in Nigeria should fully utilize the investment ratio by diversifying in other sectors of the economy, so as to minimize the risk of failure and maintain a reasonable mix between liquid asset and investment. Also they would ensure that liquidity is not hindered and sufficient liquid assets are available.
4. Managers and shareholders of listed Deposit Money Banks in Nigeria should maintain a healthy capitalization rate through diversify their funding sources, especially funds from foreign financial institutions, as it helps in infusing more cash in their balance sheet this is because excessively focusing on a few capital sources will increase liquidity risk.
5. Managers and shareholders of the listed Deposit Money Banks in Nigeria should be mindful of their size, as positive effect of size on the liquidity means the bank 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.

6. Since the macroeconomic factors are exogenous and are beyond the banks' control, the bank managers should focus on maintaining the quality of their assets by reducing the level of impaired loans in their books.
7. The study recommends that listed Deposit money Banks' managers in Nigeria should be more concerned with the internal environment as a cornerstone of their policy and in formulating strategies to enhance their liquidity position. More importantly, liquidity management should aim at a tradeoff between lending and the risk of insolvency of banks.
8. The Central Bank of Nigeria should critically review, conduct regular liquidity stress test 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.

5.4 Suggestions for Further Research

Firstly, the study has relied exclusively on annual data; however, use of higher frequency data would improve the accuracy of the results in terms of the specific timing between actual and benchmark Banking Sector liquidity gaps. Secondly, cross country studies which compare the relationship between Banking Sector liquidity and Banking Sector monetary policy regulations in Nigeria with that of other developing countries such as Ghana, Kenya and Zambia would provide an insight into how outcomes differ amongst similar economies, given that the researcher has limited his evaluations to cover a ten year period (i.e. 2008-2018). Future research in this area of accounting should consider it necessary to extend the number of periods studied. Further research in these areas would not only complement this study, but

would also help in bringing about improvement in the liquidity level of deposit money banks in Nigeria. This study may also be replicated using different methodology, different scales of variables measurements and different tools of analysis in other sectors of the economy and/or by incorporating other variables from the bank specific and macroeconomic factors.

Reference

Acharya , V. V., Shin, H. S., & Yorulmazer, T. (2009). Crisis Resolution and Bank Liquidity. *International Journal of Finance and Economics, 2* (23), 78-94.

Acharya, V., Gale, D., & Yorulmazer, T. (2011). Rollover risk and market freezes. *The Journal of Finance, 66*(16), 1177-1209.

Acharya, V., & Naqvi, H. (2012). The Seeds of a Crisis: A Theory of Bank Liquidity and Risk - Taking over the Business Cycle. *Journal of Financial Economics, 103*(32), 349-366.

Adraian, T., & Shin, H. S. (2008). Liquidity and Financial Contagion. *Financial stability Review, 23*(45), 126-170.

Agbada, A. O., & Ang Osuji, C.C . (2013) .The Efficacy of Liquidity Management and Banking performance in Nigeria. *International Review of Management and Business Research*, *2*(1), 223 – 233

Ali, A. S. (2016). Effect of Liquidity Management On Financial Performance of Commercial Banks in Mogadishu, Somalia. *International Journal for Research in Business, Management and Accounting, 15*(40) ,230-245.

Alshatti, A. A. (2015). The Effect of the Liquidity Management on Profitability in the Jordanian Commercial Banks. *International Journal of Business and Management*; *10* (1) 62-81.

Al-khouri, R. (2012). Bank Characteristics and liquidity Transformation: The case of GCC banks. *International Journal of Economics and Finance*, *4*(12), 312-322.

Almumani, M. A. (2013). Liquidity Risk Management: A Comparative Study between Saudi and Jordanian Banks. *Interdisciplinary Journal of Research in Business, 5*(12), 62-79.

Alper, K., Hulager, T., & Keles, T. (2012). An empirical study on Liquidity and Bank Lending. *Working Paper 1204, Research and Monetary Policy Department, Central Bank of the Republic of Turkey*.

Amengor, E. C. (2010). Importance of Liquidity and Capital Adequacy to Commercial Banks. A Paper Presented at Induction Ceremony of ACCE, UCC Campus

Aremu, A. M. (2011). A perspective on liquidity and assets management of commercial banks in Nigeria: Evidence from some selected banks. *Journal of Emerging Trends in Economics and Management Sciences* (JETEMS), *2*(6), 454-460.

Ariff, A., & Anees, A. (2012). Liquidity risk and performance of banking system. *The Journal of Financial Regulation and Compliance, 20*(2), 85-102.

Assfaw, A. M. (2018). Determinants of the Financial Performance of Private Commercial Banks in Ethiopia: Bank Specific Factors Analysis. *Global Journal of Management and*

Business Research: C Finance, 18(3), 25-42.

Aspachs, O., Nier,E.,& Tiesset, M.(2008).Liquidity, Banking Regulation and the Macroeconomy. Bank of England.

Ayadi, N.,& Boujelbène, Y. (2012). The Determinants of the Profitability of the Tunisian Deposit Banks. *IBIMA Business Review* , *7*(15), 1-21.

Bagh, T. (2017). The Causative Impact of Liquidity Management on Profitability of Banks in Pakistan : An Empirical Investigation. *International Journal of Academic Research in Economics and Management Sciences, 6*(3). 96-101.

Bai, J., Krishnamurthy, A., & Weymuller, C. H. (2015). Measuring Liquidity Mismatch in the Banking Sector. *International Journal of Empirical Finance*

Basel. (2009). Basel Committee on Banking Supervision announces enhancements to the Basel II capital framework. January 2009, www.bis.org

Berger, A.N. & Bouwman, C. (2009). Bank Liquidity Creation. *Review of Financial Studies, 22*(9), 3779-3837.

Bessis, J. (2009). *Risk Management in Banking*, 2nd ed., John Wiley & Sons: Chichester .205-247.

Bessis, J. (2010). *Risk Management in Banking*, Wiley, Third edition John Wiley & Sons: Chichester .154-194.

Bhati, S., Zoysa, A., & Jitaree, W. (2013). Determinants of Liquidity in Nationalised Banks in India. *Journal of Monetary Economics,41*(67), 27 - 38.

BIS. (2009). *International framework for liquidity risk measurement, standards and monitoring*. Basel: Bank for International Settlements. ISBN 92-9131-811-6.

BIS. (2008), '*Principles for sound liquidity risk management and supervision'* Basel, Bank for international settlements.

Bordeleau, E.,& Graham, C . (2010). The Impact of Liquidity on Bank Profitability. *International Economic Journal, 21*(3), 211-220.

Boardi, E .,& Victor, C.(2016) . Determinants of rural and community banks in Ghna , *British Journal of Economics, management and trade. 12* (3) 1-15

Bordo, M., Eichengreen, B., Klingebiel, D., & Martinez-Peri, M. (2001). 'Is the crisis problem growing more severe? Economic policy', 16, (32), 51-82.

Brooks, C. (2008). *Introductory Econometrics for Finance*, 2nd edition, Cambridge University Press, New York

Brunnermeier, M. K. (2011). Deciphering the Liquidity and Credit Crunch 2007–2008. *Journal of Economic Perspectives,23* (1) , 27-34.

Bunda, I., & Desquilbet, J. B. (2008). The Bank Liquidity Smile Across Exchange Rate Regimes. *International Economic Journal, 22*(3), 45-56.

Central Bank of Nigeria publications, various issues @www.cbn.gov.ng

Chagwiza, W. (2014). Zimbabwean Commercial Banks Liquidity and its Determinants. *International journal of empirical finance*, *2*(2), 45-56.

Chen, T., Chou H., Chang Y., & Fang, H. (2015). The Effect of Excess Lending on bank liquidity: Evidence from China. *International Review of Economics and Finance*, *36*(12), 54-68.

Chikoko, L. (2013). Zimbabwean Commercial Banks Liquidity Risk Determinants after Dollarisation. *Journal of Applied Finance & Banking, 6* (34) , 97-114.

Choon et al. (2013). The Determinants Influencing Liquidity of Malaysia Commercial Banks, and its Implication for Relevant Bodies: Honours Unpublished Thesis.

Cornett, M., Mcnutt, J., Strahan P. E., & Tehranian, H. (2010). Liquidity Risk Management and credit supply in the financial crises. *Journal of Financial Economics, 101* (670, 297- 312.

Cucinelli, D. (2013). The Determinants of Bank Liquidity Risk within the Context of Euro-Area. *Interdisciplinary Journal of Research in Business, 2*(16), 51- 64.

Daniel, E. (2017). Liquidity Management and Performance of Deposit Money Banks in Nigeria (1986 – 2011): An Investigation. *International journal of Economics ,finance & management sciences, 5* (3), 146-161.

Diamond, D. W., & Dybvig, P. H. (1983). Bank Runs, Deposit Insurance, and Liquidity. *Journal of Political Economy, 105* (91) ,401-419.

Diamond, D .W., & Rajan, R .G. (2008). Liquidity Risk, Liquidity Creation, and Financial Fragility: a Theory of Banking. *Journal of Political Economy*, *109* (2) 287-327.

Distinguin, I., Roulet. C., & Tarazi, A. (2013). Bank Regulatory Capital and Liquidity: Evidence from US and European Publicly Traded Banks. *Journal of Banking and Finance*, *37*(15), 3296–3317.

Eljelli, M. A. (2012). Liquidity-profitability tradeoff: An empirical investigation in emerging market. *International Journal of Management, 14*(51), 115-130.

Ebenezer, K. (2015). The Determinants of Liquidity of Banks in Ghana. (Unpublished MBA Project, University of Ghana)

Eakins, G. S. (2008). Financial Markets and Institutions, Sage Publications Beverly Hills. *Journal of Economic perspective, 16*(23), 160-174.

Edem, B. (2017). Liquidity Management and Performance of Deposit Money Banks in Nigeria. *International Journal of Economics, Finance and Management Sciences. 2*(23), 225-250.

Engida, B. (2015). The Determinants of Bank's Liquidity and their impact on Profitability in Ethiopia.(Unpublished MSc Thesis ,University of Addis Ababa Ethiopia).

Eric B, Yao L., & Lartey .V.(2016) .Determinants of Liquidity of Rural and Community Banks in Ghana. *British Journal of Economics, Management & Trade,12*(3) 1-15.

Fadare, O. S. (2011). Banking Crisis and Financial Stability in Nigeria. *International Research Journal of Finance and Economics, 63*(15), 1450-2887.

Ferrouhi, E., & Lahadiri, A. (2014). Liquidity Determinants of Moroccan Banking Industry. *International Research Journal of Finance and Economics, 118*(34), 103-112.

Ferrouhi, E. M., & Abderrassoul. L. (2013). Liquidity Determinants of Moroccan Banking Industry, *International Research Journal of Finance and Economics.* Issue 118

Fola, B. (2015). Determinants of Liquidity of Banks in Ethiopia. (Unpublish MSc thesis, University Addis Ababa, Ethiopia.)

Ghafoor, A. (2009). Comparison of Islamic and Conventional Banking in Pakistan. *The Quarterly Journal of Economics,52* (2) ,1-36

Hacktal, A., Rauch, C., & Steffen, S. (2010). Determinants of Bank Liquidity Creation. *Social Science Research Network. 25*(54),341-353.

Holmstrom . B., & Tirole. J. (2010). Liquidity and Risk Management. *Journal of Money, Credit and Banking*; *32* (3), 295-319.

Horvath, R., Seidler, J., & Weill. L. (2012). *Bank capital and liquidity creation. Granger-Causality evidence.* Working paper series – European Central Bank, No. 1947.

Horvath, R., Seidler, J., & Weill . L. (2013). How bank competition influence liquidity creation. *BOFIT Discussion Papers, 15*(16), 4–23.

Ibe, S.O. (2013). The impact of liquidity management on the profitability of banks in Nigeria. *Journal of Finance and Bank Management, 1*(1), 37-48.

Idowu, A. A., Essten J. M., & Adegboyega .R. (2017). Liquidity management and bank performnance in Nigeria. *Journal of issues in Business management and economics, l4* (5), 85-98

Ifeoma, .C., Victor. A., & Emenike, O. (2013). Impact of informality on the liquidity of depositmoney banks in Nigeria. *Global Journal of Human Resource Management, 1*(3), 67-77

Jinghan, M. L. (2010). Macro-economic theory. Delhi, *Journal of Economic Theory*, *81*(45), 353-400.

Kamau, A. W. (2009). Efficiency in the Banking Sector: An Empirical Investigation of Commercial Banks in Kenya", Ph.D Thesis, University of Nairobi, Nairobi.

Kashyap, A. K., Rajan, R . G., & Stein, J. K. (2012). Banks as Liquidity Providers: An Explanation for the Coexistence of Lending and Deposit Taking. *Journal of Finance, 58*(54), 33-73.

Kehinde, O . P. (2013). An Empirical Investigation of the Liquidity-Profitability Relationship in Nigerian Commercial Banks. J. Econ. and Sustainable Development, *Journal of Banking & Finance, 31*(67), 2127-2149.

Keynes, J. M . (1964). *The General Theory of Employment, Interest and Money*, Harcourt, Brace Jovanovich, New York.

Keynes, J. M . (1936), "*General Theory of Employment, Interest and Money*", New York, Hartcourt, Brace & World.

Kiyotaki, N., & Moore, J. (2008). Liquidity business cycles and monetary policy. Princeton University,unpublished.

Koch, T., MacDonald, W., & Scott. S. (2008). Bank management. *Journal of Financial Economics, 75*(64), 535-569.

Kurotamunobaraomi , T., Baribefe,I., & Blessing, O. (2016). Domestic Debt and Liquidity in Nigeria. *Journal of Accounting and Financial Management*. *15* (87), 99-127,

Lartey, V. C., Antwi, S., & Boadi, E. K. (2013). The Relationship Between Liquidity and Profitability of Listed Banks in Ghana. *International Journal of Business and Social Science, 4*(3), 48-56.

Laštůvkova, J. (2015a.). Determinants of the Slovakbank liquidity flows. *MENDELU Working Papers in Business and Economics*, 51/2015. Brno: Mendel University in Brno.

Laštůvkova, J. (2015b). Dimensions of liquidity and their factors in the Slovenian banking sector. *MENDELU Working Papers in Business and Economics*,55/2015. Brno: Mendel University in Brno.

Lei, A. C. H., & Song, Z. (2013). Liquidity Creation and Bank Capital Structure in China. *Global Finance Journal,21* (88) 928-110.

Leykun, F. (2016). Determinants of Commercial Banks ' Liquidity Risk : Evidence from Ethiopia. *Research Journal of Finance and Accounting, 7*(15), 47–61.

Loth, S., Baumann, S., Lutz, C. P., Eigler, D. M., & Heinrich, A. J. (2012). stability in atomic-scale antiferromagnets. *Science journal*, *335*(6065), 196-199.

Madura, J.(2008). *Financial Markets and Institutions. Mason*: South-Western/Cengage .Learning Oxford University Press.

Malik, F.M., & Rafique , A . (2013). Commercial Banks Liquidity in Pakistan: Firm Specific and Macroeconomic Factors, *The Romanian Economic Journal*, *48* (71), 667-682.

Mamunur, R.,. Jayalakshmi R., & Tunku, M. F. (2017). Cross-Country panel Data Evidence of the Determinant of Liquidity risk in Islamic banks. *International journal of business and society,18* (5), 3-22.

Melese, N. (2015). Determinants of Banks Liquidity : Empirical Evidence on Ethiopian Commercial Banks. *Journal of Economics and Sustainable Development, 6*(15), 36–47.

Miller, M. H., & Orr, D. (1966). A model of the demand for money by firms. *Quarterly Journal of Economics*, *45*(65), 413-435.

Moore, W. (2010). *How do financial crises affect commercial bank liquidity? Evidence from Latin America and the Caribbean,* MPRA Paper, No. 21473.

Mourina, B . A. (2008). Managing Risks and Liquidity in an Interest Free Banking Framework: The Case of the Islamic Banks. *International Journal of Business and Management, 3*(9), 72-82.

Moussa, M. (2015).The Determinants of Bank Liquidity: Case of Tunisia. *International Journal of Economics and Financial Issues, 5*(45), 249-259.

Mugenyah, L. (2015). Determinants of Liquidity Risk of Commercial Banks in Kenya. *International Journal of Economics, Finance and Management Sciences, 7*(3), 146-161.

Niresh, J.A. (2012). 'Trade-off between liquidity and profitability: A study of selected manufacturing firms in Sri-lanka', *Journal of Arts & Science and Commerce*, *4*(2), 34-40.

Obiakor, R.T.,& Okwu, A .T. (2011). Investigating Liquidity –Profitability Relationship in Business Organisation: A Study of Selected Quoted Companies in Nigeria. *British J. Economics, Finance and Management Sciences. 1*(2), 56-68.

Odunayo, M.O.,& Oluwafeysayo, K. A. (2015). Determinants of Deposit Money Banks'profitability in Nigeria. *Arabian journal of business & management review. 5*(9), 556-579.

Ogege, S., Williams, H. T., & Emerah, A. (2012). An empirical analysis of capital adequacy in the banking sub-sector of the Nigeria economy. *International Journal of Economics and Finance, 4*(5), 208-215

Okpala, K. (2013). Consolidation and Business Valuation of Nigeria Banks: What consequences on Liquidity Level. *International Journal of Business & Social Science*. *12*(67), 312-320.

Olagunju, A., Adeyanju, O.D., & Olabode , O.S. (2011). Liquidity Management and Commercial Banks' Profitability in Nigeria. *Research Journal of Finance and Accounting, 2*(7/8), 2222-2847.

Ogbuabor, J. E., & Malaolu, V. A. (2013). Informality and bank performance in Nigeria: A panel data analysis, *Journal of Economics and Sustainable Development, 4*(11), 62- 70.

Okoye, V. & Eze, O. R. (2013). Effect of bank lending rate on the performance of Nigerian deposit money banks. *International Journal of Business and Management Review, 1*(1), 34 - 43.

Olarewaju, o., & adeyemi ,O. (2015). Causal Relationship between Liquidity and Profitability of Nigerian Deposit Money Banks. *International Journal of Academic Research in Accounting, Finance and Management Sciences, 7*(1), 34 - 43.

Owolabi, S., Obiakor, R., & Okwu, A. (2011). Investigating Liquidity-Profitability Relationship in Business Organizations: A Study of Selected Quoted Companies in

Nigeria. *British Journal of Economics, Finance and Management Sciences*, *1*(2), 11-29.

Painceira, J. (2010). The Role of Banks in the Korean Financial Crisis of 1997: An Interpretation Based on the Financial Instability Hypothesis", research on money and finance, Department of Economics, School of Oriental and African Studies

Pandey, I.M. (Eds.). (2015). *Financial management* (10th ed.), Vikas Publishing HousePvt. Ltd, New Delhi.

Petria, N., & Petria, L. (2009). Operational Risk Management and Basel II. *Journal of Management and Economics , 34*(25), *96-100.*

Prince, C., & Ifeanyi, M . (2014*).* Determinant of excess liquidity: the Nigerian experience. *International Business Research, 7* (*6)*, 443-460.

Query, T. (2009). 'The Impact of Bank Mergers on Liquidity Creation. *Working Paper series in economics, 21*

Rauch, C., Steffen, S., Hackethal, A., & Tyrell, M. (2010). Determinants of bank liquidity creation. *International Journal of Economics, Finance and Management Sciences. 5* (3), 146-161.

Rychtárik, S. (2009). 'Liquidity Scenario Analysis in the Luxembourg Banking Sector'. *Working Papers 370.*

Saes-Escorbiac, B., & Tiesset, M . (2008) .Bank liquidity and Risk Management. *Banque de France financial stability review, 54* (16) ,95-109.

Samaila, A. I. (2014). Corporate Governance and Financial Reporting Quality in the Nigerian Oil Marketing Industry (Unpublished Doctoral thesis, Bayero University, Kano-Nigeria)

Shahchera, M. (2012). The impact of liquidity assets on Iranian bank profitability. *Working papers 260* .

Sheefeni, .S., & Nyambe, J. (2016). Macroeconomic Determinants Of Commercial Banks Liquidity In Namibia. *European Journal of Business, Economics and Accountancy , 4* (5),121-143.

Shen, C.H., Chen, Y.K., Kao, L.F., & Yeh, C.Y. (2010). Bank liquidity risk and performance, Working Paper. *Stability Department, Bank of Canada, Working Paper 2010-38*

Singh, A., & Sharma, A. K. (2016). An empirical analysis of macroeconomic and bank specific factors affecting the liquidity of Indian banks. *Future Business Journal, 2*(1),40–53.

Sudirman, M . (2014). Determinants of Bank Liquidity in Indonesia ' Conference Paper, 11th International Annual Symposium on Management, The Singhasari Resort, Batu, Malang, Indonesia

Sufian, F. (2011). Profitability of the Korean Banking Sector: Panel Evidence on Bank Specific. *Journal of economics and finance, 2*(12),343-357.

Sumaila, N. (2015). Explaing bank liquidity in Ghana (Unpublished MSc thesis, University of Ghana).

Tabari, N., Ahmadi, M., & Emami, M . (2013). The Effect of Liquidity Risk on the Performance of Commercial Banks. *International Research Journal of Applied and basic science,6* (45), 56-80.

Toby, A. J. (2008). Monetary policy, capital adequacy regulation and banking system soundness in Nigeria: Empirical research findings. *Journal of Financial Management and Analysis, 21*(1), 32-46.

Trenca, I., Petria, N., & Corovei, E. (2015). Impact of Macroeconomic Variables upon the Banking System Liquidity. *Procedia Economic and Finance*. *32 (78)*, 1170-1177.

Tseganesh, T . (2012). Determinant of banks liquidity and their impact on financial performance: Empirical study on commercial banks in Ethiopia', MSc Thesis, Addis Ababa University.

Uremadu, S.O. (2009). Determinants of Financial System Liquidity (1980 – 2005): Evidence from Nigeria. Annals of University of Bucharest, *journal of Economic and Administrative Series Nr. 3, 123-137.*

Valla, N., Saes-Escorbiac, B., & Tiesset, M . (2008). Bank liquidity and financial stability. *International Journal of Economics, Finance and Management Sciences. 5*(3), 146-161

Van-Ness, D. R . (2009). *Corporate Performance 3rd Ed.: Strategies, Actions, Results*. East Greenbush: Hallenbeck Publishing Co.

Vodova, P. (2012). Liquidity of Czech Commercial Banks and its Determinants. *International Journal of Mathematical Models and Methods in Applied Sciences, 6(56), 1060-1067.*

Vodova, P. (2013). Determinants of Commercial Bank Liquidity in Hungary. *Financial Internet Quarterly* "*e-Finanse*", *9*(76), 64-71.

Vong, A. P., & Chan, H. S. (2009). Determinants of bank profitability in Macao. *International Journal of Management ,17* (67) , 93-113.

Wahiu , W. (1999). The Relationship Between Liquidity and Macro Economic Factors- An Inter Industry Comparison. Unpublished MBA Project, University of Nairobi.

Wojcik-Mazur, A., & Szajt, M. (2015). Determinants of Liquidity Risk in Commercial Banks in the European Union. *Argumenta O economica, 34* (*35),* 26-47.

APPENDIX A

```
  ___  ____  ____  ____  ____ (R)
 /__    /   ____/   /   ____/
___/   /   /___/   /   /___/   12.0   Copyright 1985-2011 StataCorp LP
  Statistics/Data Analysis            StataCorp
                                      4905 Lakeway Drive
     Special Edition                  College Station, Texas 77845 USA
                                      800-STATA-PC        http://www.stata.com
                                      979-696-4600        stata@stata.com
                                      979-696-4601 (fax)

Single-user Stata network perpetual license:
       Serial number:  93611859953
         Licensed to:  Habiba Adamu
                       GSU

Notes:
      1.  (/v# option or -set maxvar-) 5000 maximum variables

. xtset coy year, yearly
       panel variable:  coy (strongly balanced)
        time variable:  year, 2008 to 2017
                delta:  1 year
. vif


    Variable |       VIF       1/VIF
-------------+----------------------
        invr |      4.15    0.241213
        bsiz |      3.96    0.252681
        prof |      2.30    0.435029
       intrl |      1.15    0.869014
         crr |      1.13    0.885391
         car |      1.12    0.890022
         npl |      1.04    0.960806
       loang |      1.04    0.966082
-------------+----------------------
    Mean VIF |      1.99


Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
         Ho: Constant variance
         Variables: fitted values of liq

         chi2(1)      =   112.22
         Prob > chi2  =   0.0000

. estat hettest
. sktest intrl loang prof car crr ltd npl invr bsize liq
```

```
                  Skewness/Kurtosis tests for Normality
                                                       ------- joint ------
    Variable |    Obs   Pr(Skewness)   Pr(Kurtosis)  adj chi2(2)    Prob>chi2
-------------+------------------------------------------------------------
       intrl |    140      0.0000         0.3509        20.80         0.0000
       loang |    140      0.0408         0.7682         4.35         0.1136
        prof |    140      0.0000         0.0000            .         0.0000
         car |    140      0.0000         0.0000            .         0.0000
         crr |    140      0.0031         0.0012        15.67         0.0004
         ltd |    140      0.0000         0.0000            .         0.0000
         npl |    140      0.0000         0.0000            .         0.0000
        invr |    140      0.0000         0.0000            .         0.0000
      bsize  |    140      0.1559         0.0073         8.29         0.0159
         liq |    140      0.0000         0.0000            .         0.0000
. sktest intrl loang prof car crr ltd npl invr bsize liq
                . predict e
(option xb assumed; fitted values)
. sktest e
. summarize liq intrl loang prof car crr ltd npl invr bsize
    Variable |       Obs        Mean     Std. Dev.       Min          Max
-------------+--------------------------------------------------------
         liq |       140        0.35047    .1976       .0129        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
-------------+--------------------------------------------------------
        npl  |       140        0.109     0.110         0.007        0.535
        invr |       140        .0580     0.040         0.001        0.263
       bsize |       140       22.269     1.297        19.565       26.007
       intrl |       140        0.034     0.047          .0011        0.0115
         crr |       140       .0122      1.00          0.1           31

. correlate liq intrl loang prof car crr ltd npl invr bsize
(obs=140)

             |      liq    intrl    loang     prof      car      crr      npl
invr   bsize
-------------+------------------------------------------------------------------
---------------------
         liq |   1.0000
       intrl |  -0.0751   1.0000
       loang |  -0.0450  -0.0416   1.0000
        prof |   0.8616  -0.0584  -0.0081   1.0000
         car |   0.7924  -0.0761   0.0363   0.6737   1.0000
         crr |   0.0772  -0.5661   0.0467   0.0350   0.1267   1.0000
         npl |   0.3384  -0.0346   0.0491   0.1882   0.0975  -0.0259  1.0000
        invr |   0.7527  -0.0534   0.0490   0.6363   0.8391   0.0574   0.8570
1.0000
      bsizei |  0.1145 -0.0546  0.0739   0.1175   0.1353   0.1300   0.0633  -
0.0934    1.0000
```

```
. regress liq loang prof bsiz car  npl invr

Source   |   SS       df      MS                    Number of obs =     154
---------+------------------------------          F(  6,   147) =   87.14
Model    | 5300.42125 6    883.403542              Prob > F      =  0.0000
Residual | 1490.25106   147  10.1377623            R-squared     =  0.7805
---------+------------------------------          Adj R-squared =  0.7716
Total    |  6790.67231   153  44.3834791           Root MSE      =   3.184

------------------------------------------------------------------------------
         liq |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       loang |  -.1096888   .0466256    -2.35   0.020    -.2018319   -.0175458
        prof |   1.939973   .4770395     4.07   0.000     .9972317    2.882714
        bsiz |   1.089066   .2752317     3.96   0.000     .5451435    1.632988
         car |   2.268273   .3030006     7.49   0.000     1.669473    2.867073
         npl |  -.0005647   .0015016    -0.38   0.707    -.0035322    .0024029
        invr |   1.031772   .2311576     4.46   0.000     .5749504    1.488593
       _cons |   -1.70485   .4763722    -3.58   0.000    -2.646273   -.7634273
------------------------------------------------------------------------------



. xtset coy year
       panel variable:  coy (strongly balanced)
        time variable:  year, 2008 to 2018
                delta:  1 unit


. xtreg liq loang prof bsiz car npl invr, fe

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

R-sq:  within  = 0.7568
Obs per group: min =        11
       between = 0.8995
avg =      11.0
       overall = 0.7692
max =        11


F(6,134)          =     69.51
corr(u_i, Xb)  = 0.3454
Prob > F          =    0.0000

------------------------------------------------------------------------------
         liq |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       loang |  -.0516865   .0515681    -1.00   0.318    -.1536792    .0503062
        prof |   1.314735   .4365741     3.01   0.003     .4512673    2.178202
        bsiz |   .6699973   .2607087     2.57   0.011      .154361    1.185634
         car |    1.75591   .3140167     5.59   0.000      1.13484    2.376981
         npl |  -.0004015   .0013697    -0.29   0.770    -.0031105    .0023074
```

```
        invr |    1.31136   .2183136     6.01   0.000     .8795741    1.743147
       _cons |  -1.170793    .460092    0   0.012    -2.080774    -.260811
-------------+----------------------------------------------------------------
     sigma_u |  2.0489668
     sigma_e |  2.7835613
         rho |  .35142279   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0:     F(13, 134) =     4.49             Prob > F = 0.0000

. estimates store fixed

. xtreg liq loang prof bsiz car npl invr, re

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

R-sq:                           within                          =            0.7529
Obs per group: min =        11
       between                                  =                                0.9265
avg =      11.0
       overall                                  =                                0.7792
max =        11


Wald chi2(6)       =    481.22
corr(u_i,          X)                                =          0          (assumed)
Prob > chi2        =    0.0000

------------------------------------------------------------------------------
         liq |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       loang |  -.0911175   .0480464    -1.90   0.058    -.1852867    .0030517
        prof |   1.672245    .453705     3.69   0.000     .7829993     2.56149
        bsiz |   .9112131   .2660804     3.42   0.001     .3897052    1.432721
         car |   2.088574    .303661     6.88   0.000      1.49341    2.683739
         npl |  -.0004701   .0014264    -0.33   0.742    -.0032657    .0023256
        invr |   1.148462    .223102     5.15   0.000     .7111907    1.585734
       _cons |  -1.469446   .5226289    -2.81   0.005     -2.49378   -.4451122
-------------+----------------------------------------------------------------
     sigma_u |  .84643118
     sigma_e |  2.7835613
         rho |  .08463964   (fraction of variance due to u_i)
------------------------------------------------------------------------------

. estimates store Random

. hausman Random fixed

                ---- Coefficients ----
             |      (b)          (B)            (b-B)     sqrt(diag(V_b-V_B))
             |     Random       fixed        Difference          S.E.
-------------+----------------------------------------------------------------
       loang |   -.0911175    -.0516865        -.039431               .
        prof |    1.672245     1.314735        .3575101        .1234961
        bsiz |    .9112131     .6699973        .2412158        .0531955
```

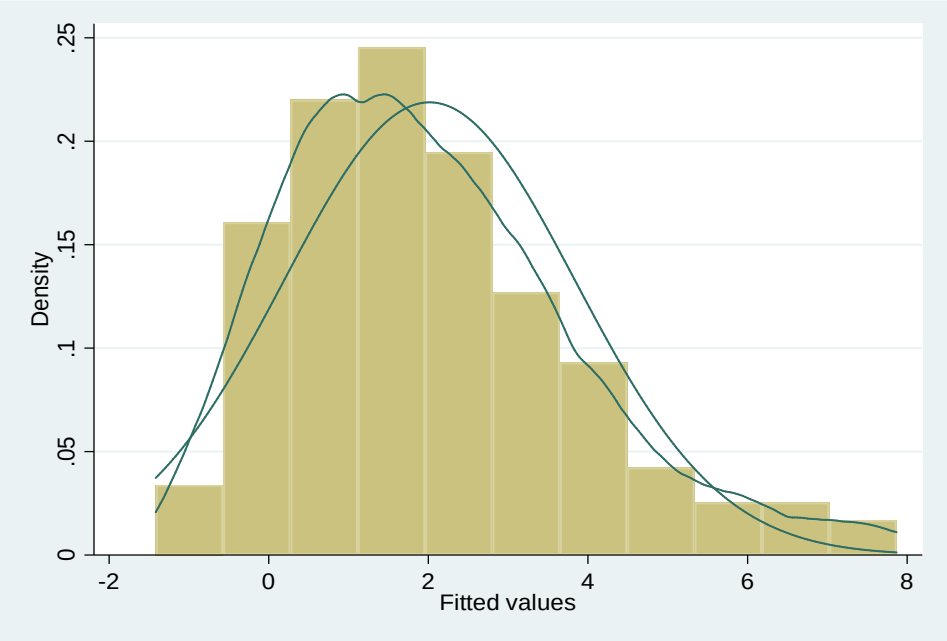
```
         car |    2.088574      1.75591        .3326641              .
         npl |   -.0004701    -.0004015       -.0000685        .0003981
        invr |    1.148462      1.31136       -.1628979        .0459744
------------------------------------------------------------------------------
                           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(6) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                          =       76.33
                Prob>chi2 =      0.0000
                (V_b-V_B is not positive definite)


xtreg liq intrl crr, fe

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

R-sq:                           within                          =            0.0206
Obs per group: min =        11
       between                                  =                            0.0206
avg =      11.0
       overall                                  =                            0.0087
max =        11

                                                F(2,138)           =      1.45
corr(u_i, Xb)  = -0.0379                        Prob > F           =    0.2375

------------------------------------------------------------------------------
         liq |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       intrl |   -.147228   .1004771    -1.47   0.145    -.3459018    .0514457
         crr |   .0194048   .0462215     0.42   0.675    -.0719891    .1107987
       _cons |    2.18593   .8634443     2.53   0.012     .4786386    3.893222
-------------+----------------------------------------------------------------
     sigma_u |  4.2258204
     sigma_e |  5.5047869
         rho |  .37079466   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0:     F(13, 138) =     6.47             Prob > F = 0.0000

. estimates store Random

. estimates store fixed

. xtreg liq intrl crr, re

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

```
R-sq:                           within                          =            0.0206
Obs per group: min =        11
       between                                  =                               0.0206
avg =      11.0
       overall                                  =                               0.0087
max =        11


Wald chi2(2)       =      2.76
corr(u_i,          X)                              =          0          (assumed)
Prob > chi2        =    0.2515

------------------------------------------------------------------------------
         liq |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       intrl |  -.1411572   .0998303    -1.41   0.157     -.336821    .0545065
         crr |   .0201963   .0461142     0.44   0.661    -.0701858    .1105785
       _cons |   2.155497   1.369349     1.57   0.115    -.5283777    4.839372
-------------+----------------------------------------------------------------
     sigma_u |  3.9936504
     sigma_e |  5.5047869
         rho |  .34483418   (fraction of variance due to u_i)
------------------------------------------------------------------------------

. estimates store random


                ---- Coefficients ----
             |      (b)          (B)            (b-B)     sqrt(diag(V_b-V_B))
             |     Random       fixed        Difference          S.E.
-------------+----------------------------------------------------------------
       intrl |    -.147228     -.147228               0               0
         crr |    .0194048     .0194048               0               0
------------------------------------------------------------------------------
                           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(0) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                          =        0.00
                Prob>chi2 =  0.0000         .
                (V_b-V_B is not positive definite)
estat hettest
Random-effects                              GLS                             regression
Number of obs      =       154
Group                                   variable:                                 coy
Number of groups   =        14

R-sq:                           within                          =            0.0206
Obs per group: min =        11
       between                                  =                               0.0206
avg =      11.0
       overall                                  =                               0.0087
max =        11
```

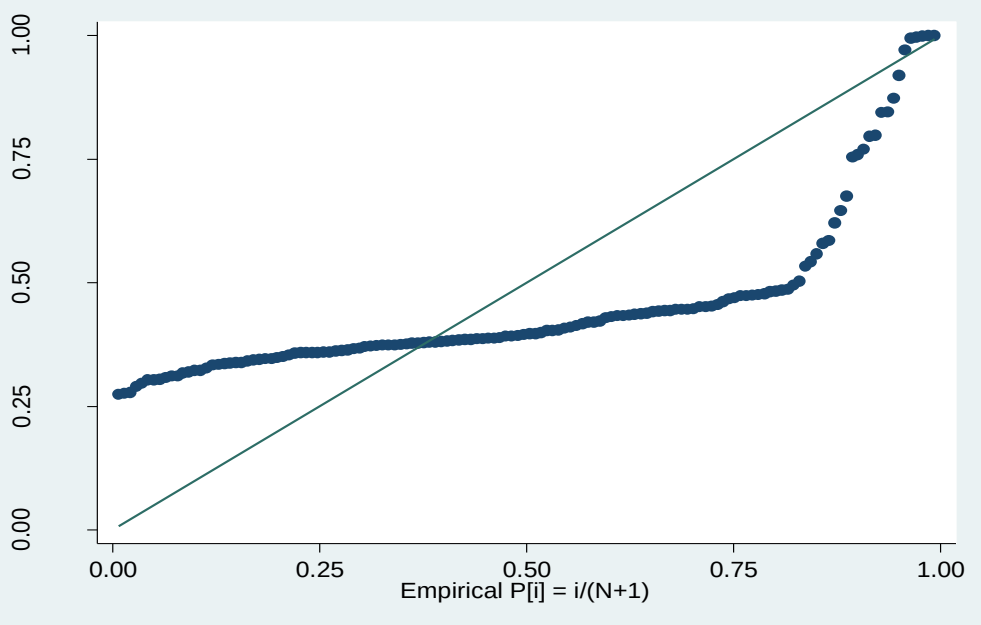
```
Wald chi2(2)       =      1.64
corr(u_i,          X)                             =         0          (assumed)
Prob > chi2        =    0.4408

                                   (Std. Err. adjusted for 14 clusters in coy)
------------------------------------------------------------------------------
             |               Robust
         liq |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       intrl |  -.1411572   .1116711    -1.26   0.206    -.3600287    .0777142
         crr |   .0201963   .0198528     1.02   0.309    -.0187145    .0591072
       _cons |   2.155497   1.310118     1.65   0.100    -.4122877    4.723282
-------------+----------------------------------------------------------------
     sigma_u |  3.9936504
     sigma_e |  5.5047869
         rho |  .34483418   (fraction of variance due to u_i)
------------------------------------------------------------------------------

. xtreg liq loang prof bsiz car invr npl, re vce(robust)

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

R-sq:                            within                          =            0.7529
Obs per group: min =        11
       between                                  =                               0.9265
avg =      11.0
       overall                                  =                               0.7792
max =        11


Wald chi2(6)       =  10189.79
corr(u_i,          X)                             =         0          (assumed)
Prob > chi2        =    0.0000

                                   (Std. Err. adjusted for 14 clusters in coy)
------------------------------------------------------------------------------
             |               Robust
         liq |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       loang |  -.0911175   .0457218    -1.99   0.046    -.1807306   -.0015044
        prof |   1.672245   1.652015     1.01   0.311    -1.565646    4.910136
        bsiz |   .9112131   .3932762     2.32   0.021      .140406     1.68202
         car |   2.088574   1.028441     2.03   0.042     .0728664    4.104282
        invr |   1.148462   .5104327     2.25   0.024     .1480327    2.148892
         npl |  -.0004701    .000255    -1.84   0.065    -.0009699    .0000298
       _cons |  -1.469446   1.212879    -1.21   0.226    -3.846645    .9077536
-------------+----------------------------------------------------------------
     sigma_u |  .84643118
     sigma_e |  2.7835613
         rho |  .08463964   (fraction of variance due to u_i)
------------------------------------------------------------------------------
```

APPENDIX B

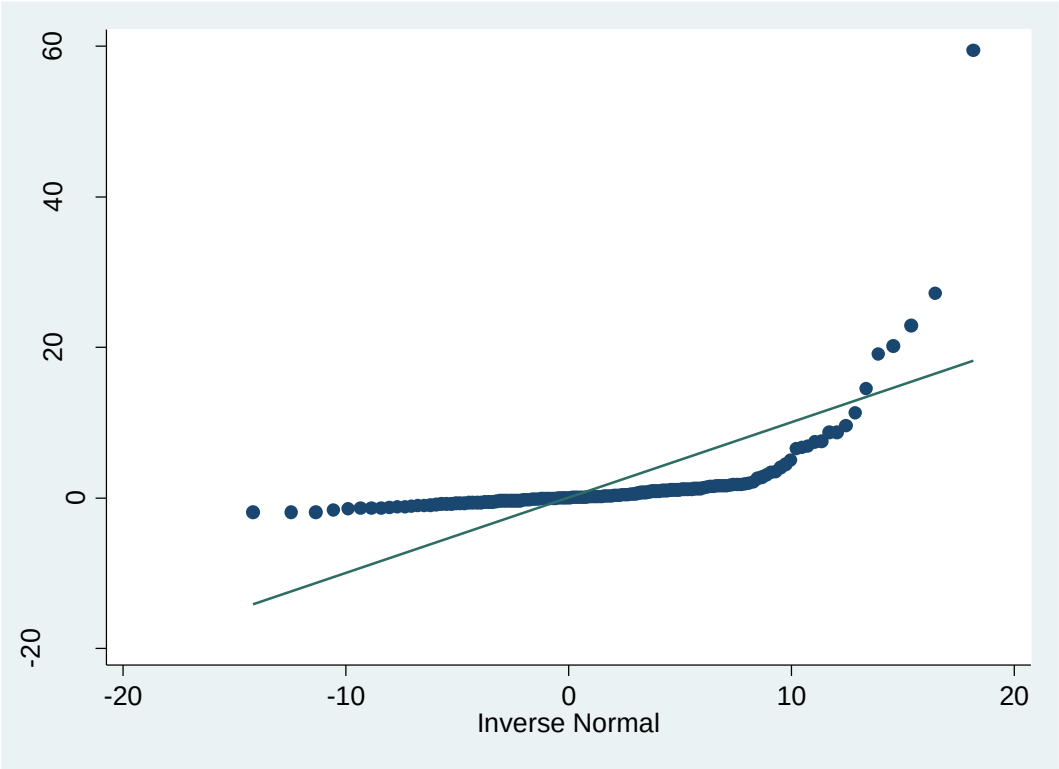
A VERSION 12.0 GENERATED RESULTS
HISTOGRAM



NORMAL PPLOT
DEPENEDNT VARIABLE: LIQ



NORMAL QUANTILE PLOT


-20
0
20
40
60
-20
-10
0
10
20
Inverse Normal

APPENDIX C:

DATA ON THE DEPENDENT VARIABLE AND EXPLANATORY VARIABLES OF THE STUDY

YEAR	LIQ	LG	Prof	NPL	CAR	INV	BSIZE	CRR	ITRL
				ACCESSBANK PLC					
2008	0.195789	0.281137	0.0153876	0.064837	0.0575	0.099357	20.76581	0.023	0.0011
2009	0.559445	0.293647	0.0282859	0.214007	0.0836	0.021307	20.51142	0.01	0.0099
2010	0.523909	0.574442	0.0177884	0.025105	0.0947	0.049484	20.40438	0.01	0.006
2011	0.135642	0.397531	0.0144407	0.077206	0.0853	0.044437	20.66772	0.02	0.0088
2012	0.499022	0.325872	0.0239839	0.567696	0.0932	0.008405	21.13918	0.075	0.0012
2013	0.631303	0.621093	0.0153817	0.043878	0.0845	0.018134	21.2563	0.125	0.0012
2014	0.405984	0.037612	0.0201524	0.038326	0.0465	0.011412	21.40735	0.125	0.0014
2015	0.359153	0.505217	0.0244304	0.004944	0.0573	0.064676	21.6037	0.31	0.0013
2016	0.285706	0.48432	0.0206872	0.036247	0.0654	0.052085	21.85304	0.2	0.0014
2017	0.343915	0.56629	0.0521247	0.034152	0.0453	0.034728	21.97594	0.225	0.0014
2018	0.134524	0.48417	0.0447343	0.04456	0.0579	0.00765	21.7345	0.225	0.115
DIAMOND BANK									
2008	0.148674	0.450258	0.0270482	0.068378	0.0422	0.018848	20.25481	0.023	0.001
2009	0.204899	0.281244	0.0338516	0.089548	0.0583	0.069835	20.21909	0.01	0.099
2010	0.267327	0.350842	0.0118936	0.093003	0.0974	0.090314	20.12252	0.01	0.006
2011	0.204952	0.320882	0.0320255	0.343209	0.0934	0.107501	20.38648	0.02	0.088
2012	0.249318	0.435496	0.0153219	0.448732	0.0384	0.007009	21.13267	0.075	0.0012
2013	0.215243	0.701387	0.0219511	0.203316	0.0486	0.071894	21.02743	0.125	0.0012

2014	0.224064	0.215225	0.0126397	0.584973	0.0847	0.039916	21.28006	0.125	0.0014
2015	0.296729	0.436492	0.0246514	0.033795	0.0873	0.012323	21.16486	0.31	0.0013
2016	0.255241	0.320355	0.0118498	0.012712	0.0998	0.005515	21.23159	0.2	0.0014
2017	0.257052	0.492454	0.0156199	0.012655	0.0897	0.087723	21.24656	0.225	0.0014
ECOBANK PLC									
2018	0.345653	0.345555	0.023453	0.53465	0.0567	0.6565	21.43567	0.225	0.11
2008	0.431831	0.302119	0.014638	0.332586	0.2746	0.00892	21.59164	0.023	0.112
2009	0.879162	0.538456	0.038893	0.531078	0.0746	0.051092	21.04871	0.01	0.099
2010	0.155761	0.218159	0.031789	0.226501	0.0847	0.041281	21.15142	0.01	0.006
2011	0.361366	0.738611	0.0078379	0.027789	0.0438	0.032042	20.80433	0.02	0.088
2012	0.358599	0.361034	0.0257007	0.111606	0.0975	0.162434	21.04283	0.075	0.0012
2013	0.180441	0.40647	.04065,868	0.094113	0.0473	0.225526	21.5371	0.125	0.0012
2014	0.184619	0.68033	0.0275031	0.21772	0.0583	0.030842	21.53661	0.125	0.0014
2015	0.447457	0.53966	0.0271284	0.232166	0.0843	0.030908	21.58004	0.31	0.0013
2016	0.182437	0.32152	0.0040828	0.060065	0.0743	0.159565	22.55678	0.2	0.0014
2017	0.347549	0.34944	0.1077197	0.300017	0.0563	0.38542	22.64957	0.225	0.0014
2018	0.675536	0.454746	0.0340454	0.054836	0.0676	0.06765	22.163	0.225	0.115
FIDELITY BANK PLC									
2008	0.784122	0.292507	0.0367566	0.366173	0.08427	0.002954	21.98545	0.023	0.112
2009	0.587613	0.226423	0.0325766	0.301094	0.04167	0.001155	22.19127	0.01	0.099
2010	0.786632	0.456631	0.021921	0.125791	0.06743	0.008578	22.28774	0.01	0.006
2011	0.533266	0.610292	0.030137	0.488227	0.06736	0.012169	22.72168	0.02	0.088
2012	0.163643	0.353572	0.040366	0.047004	0.09637	0.014052	21.08555	0.075	0.0012
2013	0.257757	0.233189	0.0163899	0.036645	0.07385	0.023576	20.80135	0.125	0.0012
2014	0.314781	0.271332	0.016223	0.475836	0.02542	0.070229	20.89472	0.125	0.0014
2015	0.368581	0.067414	0.0286751	0.470368	0.07382	0.051066	21.54895	0.31	0.0013

2016	0.261121	0.124173	0.0249842	0.200059	0.02472	0.068241	20.9842	0.2	0.0014
2017	0.347779	0.661538	0.0136723	0.189937	0.03642	0.055695	21.04478	0.225	0.0014
2018	0.435663	0.097354	0.0403343	0.567043	0.06757	0.037656	2155.45	0.225	0.115
FIRSTBANK									
2008	0.363484	0.013696	0.0327192	0.531812	0.06492	0.376291	19.17047	0.023	0.112
2009	0.545647	0.672723	0.0057289	0.395897	0.07867	0.376742	19.19874	0.01	0.099
2010	0.562787	0.342534	0.0141651	0.057437	0.08672	0.153526	19.20743	0.01	0.006
2011	0.131615	0.093567	0.037303	0.066339	0.09746	0.255015	19.22999	0.02	0.088
2012	0.268656	0.394688	0.010391	0.083543	0.03864	0.087084	19.25565	0.075	0.0012
2013	0.080942	0.342536	0.0262342	0.092152	0.07363	0.135301	19.21314	0.125	0.0012
2014	0.266179	0.233999	0.0217917	0.002538	0.08964	0.117214	19.65897	0.125	0.0014
2015	0.285024	0.770618	0.0109997	0.367076	0.08965	0.004991	19.63373	0.31	0.0013
2016	0.022233	-0.18771	0.0281263	0.513978	0.07538	0.004627	19.4024	0.2	0.0014
2017	0.342042	0.104543	0.0244001	0.453181	0.05236	0.365031	19.41253	0.225	0.0014
2018	0.345366	0.576474	0.035432	0.567763	0.06546	0.057676	19.38733	0.225	0.115
First City Monument Bank plc.									
	0.319704	0.232252	0.029301	0.284016	0.04822	0.501407	19.958	0.023	0.112
2009	0.264669	0.266695	0.024898	0.278488	0.06743	0.069068	19.94691	0.01	0.099
2010	0.310748	0.666003	0.013787	0.253995	0.03822	0.035672	20.08853	0.01	0.06
2011	0.315142	0.386079	0.035558	0.197295	0.08363	0.028996	20.2009	0.02	0.088
2012	0.318657	0.386432	0.026969	0.147016	0.07835	0.014363	20.60708	0.075	0.0012
2013	0.375035	0.563189	0.040269	0.094641	0.04837	0.084008	19.69438	0.125	0.0012
2014	0.355255	0.595092	0.010192	0.056524	0.04867	0.014701	19.69505	0.125	0.0014
2015	0.303441	0.618281	0.029538	0.079809	0.06473	0.509244	19.67825	0.31	0.0013
2016	0.388468	0.441702	0.040359	0.007361	0.03763	0.368755	19.6935	0.2	0.0014

2017	0.321217	0.484639	0.01584	0.48666	0.09374	0.08124	19.69556	0.225	0.0014
2018	0.346473	0.464753	0.04013	0.45832	0.08865	0.07654	19.4635	0.225	0.115
Guaranty Trust Bank Plc									
2008	0.174091	0.348864	0.023497	0.117024	0.09834	0.537802	21.19986	0.023	0.112
2009	0.144246	0.085756	0.028502	0.166325	0.09643	0.124247	20.79978	0.01	0.099
2010	0.362606	0.118858	0.033536	0.188565	0.02536	0.127453	20.8786	0.01	0.06
2011	0.358908	0.705834	0.032096	0.145468	0.02967	0.107728	21.19866	0.02	0.088
2012	0.199503	0.502817	0.027l955	0.068416	0.07833	0.006257	21.20589	0.075	0.0012
2013	0.181159	0.546662	0.040207	0.031005	0.06732	0.191169	21.36741	0.125	0.0012
2014	0.165414	0.093192	0.040311	0.092267	0.04722	0.149425	21.47779	0.125	0.0014
2015	0.173621	0.077396	0.040462	0.080994	0.04632	0.143818	21.5464	0.31	0.0013
2016	0.139097	0.696368	0.038548	0.142642	0.08778	0.104787	21.68389	0.2	0.0014
2017	0.268206	0.786434	0.023934	0.092847	0.07463	0.169039	21.76175	0.225	0.0014
2018	0.433938	0.078754	0.040873	0.089237	0.08676	0.678654	21.32466	0.225	0.115
Skye Bank Plc									
2008	0.207643	0.54597	0.0355843	0.013011	0.08364	0.004646	22.78361	0.023	0.112
2009	0.129278	0.06659	0.0181551	0.025825	0.07392	0.005889	22.5517	0.01	0.099
2010	0.418691	-0.12346	0.0280893	0.019883	0.07563	0.011715	22.63141	0.01	0.006
2011	0.424385	0.69348	0.0401679	0.095659	0.03938	0.016489	22.91252	0.02	0.088
2012	0.129596	0.03802	0.0118511	0.010089	0.05863	0.192187	20.79221	0.075	0.0012
2013	0.174078	0.02906	0.0142312	0.011059	0.03852	0.158974	20.83194	0.125	0.0012
2014	0.232772	0.29241	0.0270578	0.090357	0.08526	0.073803	21.43551	0.125	0.0014
2015	0.187739	0.06889	0.0122209	0.132567	0.07374	0.098263	21.13322	0.31	0.0013
2016	0.190586	0.01522	0.0337546	0.128307	0.03536	0.087041	21.13197	0.2	0.0014
2017	0.203154	0.08301	0.0129886	0.084308	0.08527	0.098851	21.45738	0.225	0.0014

2018	0.456363	0.54635	0.033874	0.52944	0.06767	0.43232	21.45635	0.225	0.115
Stanbic IBTC									
2008	0.247765	0.075635	0.010356	0.282539	0.08363	0.116404	19.27565	0.023	0.112
2009	0.486288	0.500825	0.032118	0.307383	0.05732	0.130549	19.27139	0.01	0.099
2010	0.315622	0.000976	0.029215	0.092893	0.05537	0.15885	19.28467	0.01	0.006
2011	0.162721	0.405011	0.009228	0.229386	0.05637	0.238094	19.35374	0.02	0.088
2012	0.738565	0.154469	0.032678	0.198195	0.03333	0.157247	19.73577	0.075	0.0012
2013	0.780564	0.087868	0.021949	0.138847	0.06262	0.037108	19.74351	0.125	0.0012
2014	0.412461	0.186071	0.034968	0.178439	0.06423	0.068677	19.74422	0.125	0.0014
2015	0.865232	0.112446	0.035605	0.08651	0.05434	0.050582	19.75978	0.31	0.0013
2016	0.345941	0.193913	0.036572	0.37913	0.07843	0.009906	20.64935	0.2	0.0014
2017	0.449941	0.541931	0.023365	0.086056	0.05867	0.166882	20.69665	0.225	0.0014
2018	0.734645	0.504464	0.032543	0.458373	0.05654	0.238842	20.23535	0.225	0.115
Sterling bank									
2008	0.330646	0.431787	0.0201549	0.343071	0.058485	0.009718	21.89776	0.023	0.112
2009	0.133357	0.236771	0.027771	0.09072	0.036373	0.008029	21.88818	0.01	0.099
2010	0.384698	0.707935	0.0071702	0.442005	0.025422	0.162211	20.20488	0.01	0.006
2011	0.393891	0.317846	0.0382062	0.14545	0.056655	0.342182	20.03818	0.02	0.088
2012	0.137197	0.158628	0.0119842	0.03866	0.045644	0.029053	20.17893	0.075	0.0012
2013	0.169849	0.024618	0.0031691	0.096555	0.045643	0.027545	20.37767	0.125	0.0012
2014	0.264642	0.538658	0.033212	0.102743	0.087354	0.059474	20.53034	0.125	0.0014
2015	0.196186	0.124047	0.0228745	0.119539	0.030485	0.149451	20.49944	0.31	0.0013
2016	0.184446	0.482381	0.023732	0.103131	0.084748	0.068587	20.53791	0.2	0.0014
2017	0.179065	0.770051	0.0391076	0.062698	0.082233	0.074879	20.7898	0.225	0.0014

2018	0.197364	0.34533	0.0265444	0.48922	0.07676	0.54232	20.57564	0.225	0.115
2008									
	0.312955	0.061702	0.038909	0.237786	0.05322	0.197013	19.83945	0.023	0.11
2009	0.136251	0.059757	0.0154689	0.340009	0.23433	0.075439	19.75778	0.01	0.099
2010	0.163932	0.274607	0.0355604	0.310385	0.23322	0.189655	19.78019	0.01	0.006
2011	0.289974	0.705153	0.0235874	0.384834	0.04273	0.118212	22.27878	0.02	0.088
2012	0.134518	0.423661	0.0240395	0.342248	0.08637	0.302774	21.38265	0.075	0.0012
2013	0.143082	0.161299	0.0180764	0.093575	0.03647	0.238112	21.51961	0.125	0.0012
2014	0.331486	0.499765	0.0203698	0.20543	0.07674	0.188937	21.57293	0.125	0.0014
2015	0.461394	0.300318	0.0214958	0.526081	0.06337	0.258637	21.51912	0.31	0.0013
2016	0.357696	0.655347	0.0321872	0.539228	0.07847	0.096246	21.65527	0.2	0.0014
2017	0.387459	0.597927	0.0384374	0.372916	0.07365	0.144379	21.79889	0.225	0.0014
2018	0.758857	0.477564	0.040443	0.04844	0.06565	0.549912	21.7644	0.225	0.115
Union bank plc									
2008	0.120426	0.066553	0.0278331	0.423533	0.055303	0.499732	19.32315	0.023	0.112
2009	0.314152	0.510467	0.021886	0.345069	0.078573	0.867404	19.25552	0.01	0.099
2010	0.237698	0.304265	0.034808	0.076773	0.086544	0.091331	19.25254	0.01	0.006
2011	0.412808	0.685483	0.037367	0.128086	0.046633	0.177501	19.2508	0.02	0.088
2012	0.240272	0.408934	0.031953	0.180137	0.047322	0.078702	19.30017	0.075	0.0012
2013	0.345341	0.115772	0.040645	0.505268	0.084622	0.097148	19.25968	0.125	0.0012
2014	0.516587	0.418085	0.019271	0.230616	0.073637	0.170443	19.33755	0.125	0.0014
2015	0.295676	0.541854	0.027741	0.310985	0.078458	0.096135	19.41882	0.31	0.0013
2016	0.456066	0.037761	0.040391	0.236714	0.084433	0.174843	20.8397	0.2	0.0014
2017	0.172581	0.727749	0.039678	0.470754	0.078355	0.138134	21.01214	0.225	0.0014
									0.11
2018	0.453663	0.563536	0.0403666	0.23902	0.06765	0.43334	21.5463	0.225	

UNITYBAN									
2008	0.276079	0.427962	0.024317	0.034593	0.078647	0.063857	19.50713	0.023	0.112
2009	0.315028	0.748782	0.037915	0.03102	0.056373	0.061013	19.52744	0.01	0.009
2010	0.478034	0.570042	0.010118	0.042002	0.073384	0.063935	19.53269	0.01	0.006
2011	0.503802	0.698183	0.037356	0.075748	0.073846	0.043498	19.73689	0.02	0.0088
2012	0.152727	0.743603	0.025673	0.030036	0.073864	0.063802	19.79622	0.075	0.0012
2013	0.332021	0.537968	0.039482	0.06997	0.078356	0.122529	19.81601	0.125	0.0012
2014	0.294428	0.160733	0.035807	0.084522	0.083638	0.139826	19.8397	0.125	0.0014
2015	0.310709	0.054717	0.010773	0.002526	0.037383	0.099274	19.9098	0.31	0.0013
2016	0.193527	0.126421	0.040147	0.068683	0.087463	0.053081	20.01537	0.2	0.0014
2017	0.295768	0.109785	0.024121	0.073686	0.076783	0.038881	19.99702	0.225	0.0014
2018	0.433453	0.356364	0.029855	0.045746	0.046567	0.070655	19.36774	0.225	0.115
Zenith Bank Plc.									
2008	0.395467	0.225152	0.010996	0.002164	0.035205	0.418363	21.24224	0.023	0.112
2009	0.427047	0.542056	0.011802	0.084547	0.234783	0.218421	21.17681	0.01	0.009
2010	0.279866	0.349707	0.023581	0.096482	0.074333	0.096434	21.30181	0.01	0.006
2011	0.468144	0.144505	0.014056	0.083053	0.084546	0.109611	21.50102	0.02	0.008
2012	0.514934	0.171495	0.040189	0.079682	0.086222	0.108539	21.6143	0.075	0.0012
2013	0.355751	0.258227	0.021367	0.006424	0.073832	0.073852	21.78025	0.125	0.0012
2014	0.296219	0.535212	0.027107	0.074847	0.094564	0.085938	21.95401	0.125	0.0014
2015	0.298155	0.115674	0.026378	0.058267	0.032637	0.086446	22.0452	0.31	0.0013
2016	0.245748	0.108123	0.030261	0.038821	0.078264	0.027691	22.17809	0.2	0.0014
2017	0.330561	0.052449	0.036813	0.063747	0.095562	0.024374	22.29887	0.225	0.0014
2018	0.545463	0.506677	0.003233	0.078473	0.067275	0.008767	22.5345	0.225	0.115