BANK SPECIFIC DETERMINANTS OF CAPITAL ADEQUACY OF LISTED DEPOSIT MONEY BANKS IN NIGERIA

BY

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BEING A DISSERTATION SUBMITTED TO THE SCHOOL OF POSTGRADUATE STUDIES, AHMADU BELLO UNIVERSITY ZARIA, IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF MASTER OF SCIENCE (M.Sc) DEGREE IN ACCOUNTING AND FINANCE

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DECLARATION

I hereby declare that this research work titled “Bank specific Determinants of Capital Adequacy of Listed Deposit Money in Nigeria**”** is a genuine product of my effort; and to the best of my knowledge, it has never been previously published in any form or submitted for the award of degree in any institution of learning in Nigeria. All the works and articles consulted have been cited and acknowledged in the references accordingly. Moreover, I assume full responsibility of any error which might exist in the work.

Aminu USMAN

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M.Sc./Admin/21877/2012-2013	**SIGNATURE**	**DATE**

CERTIFICATION

This to certify that this Dissertation titled "Bank Specific Determinants of Capital Adequacy of Listed Deposit Money Banks in Nigeria" by Aminu Usman meets the requirements for the award of Master of Science Degree in Accounting and Finance of Ahmadu Bello University, Zaria. Hence, it is approved for its contribution to knowledge and literary presentation.

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DEDICATION

This research work is dedicated to Almighty Allah (S.W.A.), my parents, wife and daughters.

ACKNOWLEDGEMENTS

In the name of Allah (S.W.T), the Most Merciful and the Most Beneficent. All praise is due to Allah (S.W.T), the Creator of the universe. May the peace and benedictions of Allah be upon his noble messenger, the best of mankind, Prophet Muhammad (S.A.W), his household and his companions. I also thank Him for seeing me through this M.Sc Accounting and Finance program.

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Abstract

This study is an empirical analysis of bank specific determinants of capital adequacy of Listed Deposit Money Banks in Nigeria for the period of 2008-2015. The listed DMBs are 15 as at 31st December, 2015, out of which 14 banks were selected based on the availability of data. Specifically, the study seeks to identify the effect of Return on Asset, loan, leverage, deposits asset, loan loss provision and liquidity on the capital adequacy of listed deposit money banks in Nigeria. The study adopts Correlational and expost facto Designs and data were analyzed with the aid of Ordinary Least Square multiple regression technique using 112 firm-year panelled observations. Data were extracted from the audited annual reports and accounts of the selected banks. The study reveals that loan leverage, loan loss provision and liquidity are negative and have significant impact on the capital adequacy of listed deposit money banks at 5%, 1%, 1% and 1% level of significance respectively. The study also found out that return on asset and deposits asset have no significant impact on the capital adequacy of listed deposit money banks. The study concludes that, loan asset, leverage, loan loss provision and liquidity constitute the determinants of capital adequacy of listed deposit money banks. Therefore, it is recommended among others that the Management of Listed Deposit Money Banks in Nigeria should ensure that loan terms and repayment are strictly monitored and scrutinized by the manager in charge of loans so that the negative significance of loan asset on banks will be reversed to a positive one, debt financing (leverage) should be discouraged by increasing the amount of equity in the capital structure.

CHAPTER ONE
INTRODUCTION

1.1 Background to the Study

Banks occupy an important position in the financial sector and their activities are subject to regulation and supervision for the purpose of preserving financial stability. The banking sector of an economy stimulates the economic competence by mobilizing savings to investment channels. It serves as a bridge between savers and borrowers and to execute all tasks concerned with the profitable and secure channelling of funds. Beyond the intermediation function, the financial performance of banks has significant implications for economic growth of an economy as sound financial performance rewards the investors and other stakeholders for their investment and encourages additional investment. On the other hand, poor banking performance may lead to banks' failure and collapse which could negatively impact on the economic growth of the economy. Banks serve as means of transmitting monetary policy of the federal government at the macroeconomic level. At micro economic level, banks are major source of financing for businesses and individuals. Banks therefore facilitate spending and investment that fuel growth in the economy.

The soundness of banking systems plays a vital role not only for local depositors but for foreign creditors and investors as well. If there is an increase in bad loans and investments, the liabilities of the domestic banks will exceed the real value of their assets and depositors will likely engage in bank run which will precipitate a banking crisis. Although the risk can be avoided through a government's deposit insurance, complete reliance on the deposit insurance can encourage banks to engage in riskier lending

(Feldstein, 2003). A systemic collapse can also hinder the ability of the deposit insurance fund to cover all of the deposits. It is not possible to eradicate bank failure completely, but governments want to make the possibility of default for any given bank very small. Through this, it is hoped to boost the confidence of private individuals and businesses in the banking systems by creating a stable economic environment. A major difference exists between bank and non-bank firms in terms of bankruptcy. The bankruptcy of large non-banking firms has relatively lesser impact on the economy as a whole compared with the collapse of a bank. The bankruptcy of a bank results in a systemic crisis that adversely affects the economy at large. This is mainly because bank failures adversely affect investors' confidence in the financial system and this will decrease credit supply which in turn results in economic recession. Furthermore, the banking business depends to a large extent on public confidence which helps banks to attract deposit and invest same in profitable investment opportunities.

Banks are expected to have adequate amount of capital in order to support its business expansion; to serve as a buffer to prevent any unexpected loss that banks might face and also to absorb losses arising from a various risks that they face. Banks are also required to have a buffer according to the provisions of the minimum capital requirement set by the regulatory authorities.

Bank regulators everywhere in the world are concerned with the safety of depositors' funds. It is for this reason the capital adequacy becomes relevant and important. Capital adequacy refers to the amount of equity capital and other securities which a bank holds as reserves against risky assets as a hedge against the probability of bank failure (Greuning & Sonja, 2003). It also refers to the extent to which the assets of a bank exceed its liabilities, and is thus a measure of the ability of the bank to withstand a financial loss. Capital adequacy in banking business gives protection against sudden financial losses. According to the Capital Adequacy Standard set by Bank for International Settlements (BIS), banks must have a primary capital base equal at least to eight percent of their assets.

The regulatory authorities use Capital Adequacy Ratio (CAR) as an important measure of “safety and soundness” for banks and depository institutions because they view capital as a buffer or cushion for absorbing losses (Abdul-Karim, 1996). Bank regulators are very much concerned about capital adequacy because their primary responsibility is to prevent bank panics and contagions. Capital adequacy is an indicator of bank’s risk exposure. Adequate capital in banking is a confidence booster. It boosts the confidence of the customer, the public and the regulatory authority in the continued financial viability of the bank. The depositor is confident that his money is safe; the general public is also confident that the bank is in a position to give genuine consideration to their credit and other banking needs in good and bad times and the regulatory authority is optimistic that the bank is or will remain a going concern. All things being equal, a bank with a high ratio of capital to assets will be in a better position to absorb a sudden loss than a bank with a low capital-asset ratio. Capital adequacy generally affects all entities. But as a term, it is most often used in discussing the position of firms in the financial section of the economy, and precisely, whether firms have sufficient capital to cover the risks that they confront.

Requiring banks to increase their capital seems to be a plausible regulatory response to the risk of a systemic crisis which additionally can improve the soundness and safety of the banking sector. The requirements that compel banks to hold sufficient capital may alter their attitudes towards risk. Illustratively, when a bank holds a large amount of equity capital, the bank has more to lose if it fails, and is consequently more likely to pursue less risky activities.

Banks and credit institutions are considered particularly important for economic growth and social welfare. To ensure viability of the banking sector and to reduce the risk of bank failures, the industry has been subjected to extensive regulation and supervision for many years. The Basel Committee on Banking Supervision is a central organ that develops and standardizes banking regulation. The first standardized framework on banking regulation; Basel I, was released in 1988 and the centerpiece of the document was capital adequacy within the banking industry. In 2004, the framework was superseded by the Basel II Accord. The Basel II framework was supposed to be more risk sensitive and it encouraged banks to use internal models to determine capital levels. However, the recent financial crisis demonstrated that the Basel II Accords were not robust enough to assess the risks that banks faced. As a response to the crisis, the Basel Committee released the Basel III framework in December 2010. Basel III framework was as a result of the large number of bank failures in recent years and previous frameworks (Basel I and II) were unable to assess the risks that Banks face. The purpose of the Basel III Accord is to increase the resilience of the financial system and to create a competitive level playing field worldwide. Basel III is an extension of the previous frameworks. However, the capital requirements are more strict and the Basel Committee has also added other liquidity requirements in the framework.

In general, the Basel documents are set of rules for banking regulation and supervision. In particular, they set the global capital adequacy standards. That means, they prescribe globally accepted standards for improving banks' ability to absorb economic and financial shocks, improving risk management practices in banks, strengthening transparency and disclosure requirements for banks and have been adopted by more than 140 countries of the world. They are international agreements that describe the risk sensitive framework for the assessment of regulatory capital and require banks to take adequate precaution.

In Nigeria, the capital base of banks was raised up by the CBN from N2 billion to N25 billion minimum with effect from 31st December, 2005. The upward review of the capital base has resulted in bigger, stronger and more resilient financial institutions (Olalekan & Adeyinka, 2013). According to Nwokoji (2013), the average CAR of the banks in the industry was consistently above the stipulated minimum of 10.0 per cent in the first half of 2012. The industry average CAR stood at 17.7 per cent, compared with 17.9 and 5.0 per cent at the end of December 2011 and the corresponding period of 2011 respectively.

This examines if these banks are committed by capital adequacy ratio and Basel accord standards which was determined internationally at 8% and the study also examines the relationship between Capital Adequacy Ratio and Return on asset, Loan asset Ratio, Leverage, Deposit Asset Ratio, Loan Provision Ratio, and Liquidity.

1.2 Statement of the Problem

The Global financial crisis of 2008 reveals weaknesses in the banking system. It was clear that the Basel II capital adequacy framework was not robust enough to address the problems of the banking industry because despite the fact that banks were able to meet the capital requirements of the supervisory institutions, it was not adequate for them to maintain the financial stability. Banks in different countries, including European banks, which have invested in the United States mortgage market were seriously affected. In order to avoid bank bankruptcies, particularly governments of the EU countries gave the unprecedented support to the banking sector. In view of this discouraging situation, a more stringent capital strengthening measure; that is Basel III, was adopted.

The capital adequacy standards under the Basel Accord have been widely adopted throughout the world by bank regulators. In Nigeria, the Central Bank of Nigeria (CBN) reviewed upward the capital base of banks from N2 billion to N25 billion minimum with effect from 31st December, 2005. According to (CBN., 2004), out of 89 banks in Nigeria as at 2004, 62 were classified as sound/satisfactory, 14 as marginal and 11 as unsound, while 2 of the banks did not render any return during the period. The weakness of some of the ailing banks were manifested by their over drawn position with the CBN, high incidence of non-performing loan, capital deficiencies, weak management et cetera. In addition to this, with unending exchange rate depreciation of naira, the level of capital in banks before the consolidation, (N2 billion) became grossly inadequate to meet domestic and global realities in the financial system (Ezike & Oke, 2013).

CBN as the regulatory authority in the banking sector always tries to fix minimum capital requirement for banks that will enable them to carry out their banking business and meet all their expenses as at when due without any financial difficulty. However, banks still become insolvent or even failed despite satisfying the regulatory minimum capital requirement. For example, in 2009 CBN declared 5 banks as insolvent despite the fact that they satisfied the 2005 25 billion minimum capital requirement. The banks were Afribank, Union Bank, Oceanic Bank, Bank PHB and Intercontinental Bank. In 2011, the Central Bank of Nigeria declared the take-over of Bank PHB, Sterling Bank and Afribank by investors; in other words, it calls for the nationalization of those banks.

The adoption of Basel capital accord in Nigeria rendered most of the studies in this area outdated because most of the studies carried out in this area did not adopt a risk based approach in calculating their capital adequacy ratio as suggested by the Basel committee on banking supervision. Thus, the aim of this study is to fill the identified gap in the literature by adopting a risk based approach using multiple regression models to examine the bank specific determinants of Capital adequacy of Listed Deposit Money Banks in Nigeria.

1.3 Objectives of the Study

The main objective of this study is to examine the bank specific factors that determine the Capital Adequacy Ratio (CAR) of listed Deposit Money Banks in Nigeria. Other specific objectives are:

i. To examine the impact of Return on Asset on the Capital Adequacy Ratio of listed Deposit Money Banks in Nigeria.

ii. To identify the impact of Loan Asset Ratio on the Capital Adequacy Ratio (CAR) of listed Deposit Money Banks in Nigeria.

iii. To investigate the impact of Leverage on the Capital Adequacy Ratio (CAR) of listed Deposit Money Banks in Nigeria.

iv. To assess the impact of Deposit Asset Ratio (DAR) on the Capital Adequacy Ratio (CAR) of listed Deposit Money Banks in Nigeria.

v. To determine the impact of loan provision ratio on the Capital Adequacy Ratio (CAR) of listed Deposit Money Banks in Nigeria.

vi. To evaluate the impact of Liquidity on the Capital Adequacy Ratio (CAR) of listed Deposit Money Banks in Nigeria.

1.4 Research Hypotheses

In line with the objectives of the study, the following hypotheses are formulated in a null form:

H_{01}: Return on Asset has no significant impact on the Capital Adequacy Ratio (CAR) of listed Deposit Money Banks in Nigeria.

H_{02}: Loan Asset Ratio has no significant impact on the Capital Adequacy Ratio (CAR) of listed Deposit Money Banks in Nigeria.

H_{03}: Leverage has no significant impact on the Capital Adequacy Ratio (CAR) of listed Deposit Money Banks in Nigeria.

H_{04}: Deposit Asset Ratio (DAR) has no significant impact on the Capital Adequacy Ratio (CAR) of listed Deposit Money Banks in Nigeria.

H_{05}: Loan Provision Ratio has no significant impact on the Capital Adequacy Ratio (CAR) of listed Deposit Money Banks in Nigeria.

H_{06}: Liquidity has no significant impact on the Capital Adequacy Ratio (CAR) of listed Deposit Money Banks in Nigeria.

1.5 Scope of the Study

This research work focuses on determinants of capital adequacy in Nigeria Deposit Money Banks for the period of eight years (2008-2015). The choice of the period is predicated upon the fact that the Nigerian economy witnessed a lot of transformation during this period. It was a period after the consolidation of the Nigerian banking industry and the period also witnessed global financial crisis as well as economic recession.

The study used banking sector as its domain because that is where the issue of capital adequacy is more pronounced. The concept of capital adequacy appeared in the middle of the 1970's because of the expansion of lending activities in the banks without any parallel increase in its capital since capital ratio was measured by (total capital/total assets). The population of the study consists of the fourteen listed deposit money banks in the Nigerian financial system as at 31st December, 2015.

The study used Capital adequacy ratio as dependent variable measured by shareholders fund divided by risk weighted asset. The independent variables are Return on Asset, Loan Asset Ratio, Leverage Ratio, Deposit Asset Ratio (DAR), Loan Provision Ratio and Liquidity.

1.6 Significance of the Study

A study on Determinants of Capital Adequacy in Nigeria Deposit Money Banks will assist in policy formulation as well as capital regulation in the banking sector. Thus, this study will be of great importance to bank regulators in their policy formulation of minimum capital requirements for banks and defining the threshold at which to intervene in the management of failing banks. Thus, this study will be of great importance to the Central Bank of Nigeria (CBN) in its policy formulation on minimum capital requirement for Deposit Money Banks and defining the level at which to come to the aid of ailing banks. The Nigeria Deposit Insurance Corporation (NDIC) will also find this research useful in safeguarding the interest of depositors and Deposit Money banks. Also, other non-bank financial institutions such as insurance companies will find the research relevant in capital planning and maintenance.

Financial analysts as well as accountants in practice will also find the research and data analysis useful for financial decisions and client advisory services. Academics will also find this study useful for the expansion of the frontiers of knowledge in capital adequacy ratio. The shareholders will also find this study useful in making an informed decision and determining the efficiency of the management in managing the affairs of the company.

The findings of this study would add to the existing body of knowledge as the study was geared towards filling the identified gap in the literature and it will help in adding value to this subject and be a source of knowledge to students.

CHAPTER TWO
LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2.1 Introduction

This chapter reviews concepts that are fundamental to the study. In this chapter, various empirical literature that are relevant to the research work are also reviewed as well as the theoretical framework that underpins the study.

2.2 Concept of Bank Capital

Bank capital is that part of the asset of a bank that has no contractual commitment for it to be repaid in the future. It is, thus, available as a cushion in case the liabilities of a bank rise or the value of its assets declines. Capital is a loss absorber, that is to say, it represents a buffer against unexpected adverse events. It plays a very important role in strengthening the safety of the banking system by increasing the resilience of the banks.

Ikpefan (2013), defined bank capital narrowly, as the amount invested by the shareholders that gives them the right to benefit from all the future profits earned by the bank, and widely as the amount owners' funds that are provided in order to support the business of the bank. These funds are the proportion of bank's asset that are due to ordinary shareholders otherwise referred to as equity shareholders of banks. Olalekan and Adeyinka (2013) observed that these funds perform a number of functions but scholars are unanimous that the fundamental and overriding function is to provide a cushion against losses not covered by current earnings and to protect depositors and other creditors of the bank against loss in the event of liquidation.

Bank capital was defined in tiers by the Basel Committee and the definitions has been reviewed over time and slightly modified in every Basel Accord. It was in the Basel III that the big modification appeared due to the development of financial practices and products particularly in the time leading to the 2007-2008 crises. Capital was divided into two main elements by the Basel committee; that is, Tier 1 capital otherwise known as core capital and Tier 2 capital also known as supplementary capital.

2.2.1 Tier 1 Capital:

Tier 1 Capital is regarded as the most important element of banks´ capital. It represents at least 50% in Basel I and II of the total eligible capital held by banks. This type of capital consists of the following;

a. Permanent shareholder equities: These represent the issued and fully paid ordinary shares and non-cumulative perpetual preference shares (CBN, 2014).

b. Disclosed reserves: These are created or increased by allocations of retained earnings or other surplus such as share premiums, retained profits, general reserves and legal reserves (CBN, 2014).

In Basel III accord, tier 1 Capital knew, among others, two main updates; first, it should not be less than 6.0% of risk weighted assets. Second, it was divided into two elements;

a. Common Equity Tier 1: It mainly includes common shares issued by the bank, stock surplus and retained earnings. It should be at least 4.5 % of risk weighted assets (Basel Committee, 2011).

b. Additional Tier 1 Capital: It consists of instruments that are qualified to be in Additional capital and are not included in Common Equity Tier 1 capital such as instruments issued by the bank.

Investments in own shares, cash flow hedge reserve, Shortfall of the stock of provisions to expected losses and deferred tax assets are among other instruments that must be deducted from Tier 1 under Basel III accord.

2.2.2 Tier 2 Capital:

Tier 2 Capital represents the supplementary capital in Basel I and II. Tier 2 capital consists of the following:

a. Undisclosed reserves: Their inclusion is conditioned by the approval of supervisors. Although they are not identified in the balance sheet, they must be at the same quality level as disclosed capital reserve (Basel Committee, 1988).

b. Revaluation reserves: These refer to the revaluation of assets to take into account the increase in their value. They could appear either on the face of the balance sheet as a revaluation reserve or at the historic cost of acquisitions. The difference between the old and new value of unrealized securities is subject to a discount of 55% (Basel Committee, 1988).

c. General provisions/general loan-loss reserves: These are created to hedge against unknown future losses, otherwise they should be excluded.

In Basel II framework, the General provisions/general loan-loss reserves experienced some modifications; they became about 12.5 % of risk weighted assets for banks applying the Standardized Approach for credit risk assessment and 0.6 % of risk weighted assets for banks using the IRB Approach for credit risk (Basel Committee, 2006).

d. Hybrid (debt/equity) capital instruments: These combine features of equity capital and debt. So they may take losses without leading to bank´s failure. They may also oblige banks to pay interest that could be postponed in case banks are facing profitability difficulties (Basel Committee, 1988).

e. Subordinated term debt: It consists of conventional unsecured subordinated debt capital instruments with maturity greater than five years. They are subject to an amortization program in the last five years; a cumulative discount factor of 20% will be applied. They must not also exceed 50% of Tier 1 capital (Basel Committee, 1988).

In Basel III Accord, Tier 2 Capital must be subordinated to depositors and general creditors of the bank and can have a maturity of at least five years. This type of capital is no more limited to 100% of tier 1 capital since the minimum required total capital must be 8% of the risk weighted assets and the minimum required Tier 1 capital must be 6% of the total risk exposure (Basel Committee, 2011).

2.3 Concept of Capital Adequacy Ratio

Capital adequacy ratio is an important issue that has drawn the attention of researchers and academics. It is an important issue in banking currently which evaluates the efficiency and stability of banks. According to Al-Sabbagh (2004), capital adequacy is an indicator of risk exposure of banks (that is how banks are exposed to risks). Risk in the banking industry is classified into various types including credit risk, market risk, interest rate risk and exchange rate risk that are considered in the CAR calculation. According to Abdul-Karim (1996), regulatory authorities use capital adequacy ratio to evaluate the soundness of banks and other depository institutions because, to them, capital serves as a cushion to absorb losses. Capital adequacy ratio is the ratio which measures the ability of a bank in terms of meeting liabilities and risks such as credit risk, market risk, operational risk, and exchange rate risks. It is a measure of how much capital is used to support the banks' risk assets. It represents a total amount of funds that a bank should keep and plan to maintain in order to conduct its business in a prudent and orderly manner (Kishore, 2007). It is the minimum amount that is necessary to boost confidence in banks and effectively fulfill the principal task of preventing bank failure by absorbing losses without being strained into costly liquidation and enable banks to take advantage of profitable growth opportunities (Akintoye & Somoye, 2008).

Basel Capital Accord is an international standard for the calculation of capital adequacy ratios (Gleeson, 2010). The Accord recommends minimum capital adequacy ratios that banks should meet. Using minimum capital adequacy ratios causes promotion in stability and efficiency of the financial system by decreasing the likelihood of insolvency in banks.

Basel Capital Accord is a product of the Basel Committee. Basel Committee is a group of eleven nations which decided to form a cooperative council to harmonize banking standards and regulations within and between all member states. Their goal, as stated in the Founding Document of the Basel Committee, is to "…extend regulatory coverage, promote adequate banking supervision, and ensure that no foreign banking establishment can escape supervision" (Basel Committee, 1988). To achieve this goal, France, Germany, Italy, Japan, the Netherlands, Sweden, Switzerland, the United Kingdom, the United States, and Luxembourg agreed in Basel, Switzerland to form a quarterly committee comprising of each country's central banker and lead bank supervisory authority. At each meeting, the authorities of each country are authorized to discuss the status of the international banking system and propose common standards that can assist the Committee in achieving its goals but as the Founding Document clearly states, the Basel Committee cannot enact legally binding banking standards. Therefore, it is up to the member states themselves to implement and enforce the recommendations of the Basel Committee. Basel Committee has so far issued three different capital accords in 1988, 2004 and 2010. These capital accords are known as Basel I, Basel II and Basel III and the accords have been helpful in terms of harmonising banking supervision, regulation, and capital adequacy standards across the member countries.

2.3.1 Basel 1 Accord

In July 1988, the first Basel Capital Accord was released by the Basel Committee. It was released to guarantee a certain level of solvency and stability for internationally active banks. It aims mainly on establishing international convergence of supervisory rules concerning capital adequacy of banks that engage in international business (Basel Committee, 1988). It should be stressed that the framework is limited to credit risk in assessing capital adequacy (Basel Committee, 1988). It determines a minimum amount of capital for international banks and designs common capital standards to be applied to internationally active credit institutions. Solvency ratio or the target standard ratio is the main element of the Basel I framework (Basel Committee, 1988). International banks were encouraged to implement the target standard ratio by the end of 1992. The ratio requires banks to put aside a certain level of capital reserve which must be at least 8% of the total bank assets and off balance sheet activities weighted by risk coefficients. These coefficients range from 0 to 1 where 1 means that the risk is very likely to occur. This ratio (target standard ratio) was the first ratio that induces banks to limit their exposure to credit risk since each bank is required to set the ratio of eligible capital to risk weighted assets at 8%.

The equation of the solvency ratio can be presented as follows:

$$\frac{\text{Total capital}}{\text{Risk weighted Asset}} = \frac{\text{Tier 1 capital} + \text{Tier 2 capital}}{\text{Risk weighted Asset}} \geq 8\%$$

The weighted risk, considered by the committee, is determined according to the risk level of the instruments; it includes both assets and off-balance sheet exposures (Basel Committee, 1988). The weights used are only five (0, 10, 20, 50 and 100%) where; 0% is given to riskless assets such as cash, claims on central governments and central banks dominated in national currency and funded in that currency and other claims on OECD central governments and central banks; 10% and 20% are given to assets exposed to a relatively low risk consisting of cash items in collection, loans to banks of the OECD countries, loans guaranteed by OECD banks and loans to banks and public sector companies from countries outside the OECD maturing within one year; 50% is the weight on loans secured by mortgage on residential property and 100%, is given to highly risky assets. It includes claims on the private sector, non OECD bank loans maturing in more than one year and all other assets on the balance sheet (Basel Committee, 1988). In order to take into account the off-balance sheet items in the equation of solvency ratio, they should be converted to credit risk equivalents, first, by estimating their credit risk exposure, then deriving the credit conversion factors which will be multiplied by the nominal principal amounts of off-balance sheet transactions. Once they are converted, they will be assigned one of the five weights applicable to the category of the counterparty for an on-balance-sheet activity (Basel Committee, 1988).

Even though Basel I was a step in the right direction there were also important failures. In Basel I, the primary focus was on credit risk which is indeed the major risk incurred by banks. However, banks are also facing other types of risks which created a loophole concerning risk shifting. The Basel I capital requirements did not include market risk and banks could shift their risk from priced credit risk to un-priced market risk until the Market Risk Amendment of 1996 which imposed a capital charge for market risk exposure (Alen, 2004).

Banks also go round the system by taking on more risk without having to increase their capital requirements. One strategy they used was to splice their least risky bank loans and securitize them. Money gained from selling these securitised loans in the market could be added to the banks' reserves, and they would then be able to give out more loans. Another method was to swap long-term debt holdings for short-run debt. Because short-run debt had a risk weight of 20% while the long-term debt carried a 100% risk weight, banks could reduce their risk on paper, but in reality the risk was the same.

Another source for criticism in the framework was that emerging market economies adopted the framework because it was seen as a sign of regulation and financial stability (Alen, 2004). Because of the definition in the Framework that government debt and national currency was viewed as low risk, emerging market economies could reduce their risk by shifting bank and sovereign debt holdings from OECD sources to domestic sources. However, in many emerging markets the government debt was very risky and the currencies fluctuate thereby causing regulators to underestimate the risk in these markets (Balin, 2008).

Another criticism was the risk weights used on borrowers. A company with rating AAA has a lower credit risk than companies with lower credit rating, but Basel I did not distinguish between high quality and low quality commercial credit and this meant that loan to various companies with different credit ratings received the same risk weight under Basel I (Allen & Saunders, 2004).

2.3.2 Basel 11 Accord

Basel II was released after Basel I Accord went through several modifications and changes in order to correct some of the deficiencies that were identified by its critics. The Basel Committee added a capital requirement for market risk in 1996 to include the risk arising as a result of banks' excessive trading in foreign exchange, marketable securities and various financial instruments (Ahmed & Khalidi, 2007). The revision process of the Basel framework started already in 1999. The proposal of a new Accord went through extensive consultative process and was circulated to supervisory authorities around the world. However, it was in 2004 that a complete revision of the minimum capital standard was released. The revised document is generally known as Basel II (Basel Committee, 2006). Basel II Accord is far more complex than the Basel I document because the comprehensive version of the framework is more than 300 pages long whereas the Basel I framework was explained in less than 30 pages. The Committee's major objective with the new Accord is to further strengthen the resilience of the international banking sector. Moreover, the Committee addresses the importance of a level playing field where capital adequacy regulation is not a source of competitive inequality between internationally active banks (Basel Committee, 2006). Basel II is founded on three distinct pillars; Minimum Capital Requirements, Supervisory Review Process and Market Discipline. For the purpose of this study however, attention will be given to Pillar I which is the Pillar that addresses the issue of calculating capital adequacy, and is also the Pillar that attempts to correct the deficiencies identified in Basel I. Pillars II and III which deal with supervisory review standards and market discipline issues, respectively, are important aspects of capital regulation but do not have a direct relation on the determination of bank capital adequacy, and therefore are outside the scope of this study.

In pillar I, the calculation of minimum capital requirements was thoroughly revised to address some of the shortcomings in the calculation of capital adequacy ratio in the Basel I accord, there are still some key elements that remain. Most notably is that the target standard ratio of capital is unchanged at 8% minimum. However, as a response to the narrow scope of Basel I the denominator of the target standard ratio was designed to also include operational risk in addition to market risk and credit risk. A capital charge for operational risk would serve as a cushion against losses as a result of flaws in internal processes, human errors or other external events (Balin, 2008). The capital adequacy ratio of Basel II is explained as follows:

$$\frac{\text{Tier 1 capital} + \text{Tier 2 capital}}{\text{Credit risk} + \text{market risk} + \text{operational risk}}$$

The components of Tier 1 capital and Tier 2 capital and the subtraction from capital are very much the same in Basel I and Basel II. It means that the quality of the eligible capital was not improved in the Basel II framework even though it had been recognized that financial institutions were creating innovative capital instruments. Furthermore, Basel II continued to limit Tier 2 capital to an amount equal to Tier 1 capital (Basel

Committee, 2006). Despite the fact that the numerator of the capital ratio equation was mainly unchanged from Basel I to Basel II, the denominator was subject to considerable changes. The banks were now required to keep 8% capital of the total amount of credit risk, market risk and operational risk which they were exposed to. Another change was that banks now have the option to choose the way they calculated capital requirements for credit risk, market risk and operational risk.

2.3.3 Basel 111 Accord

Basel Committee on Banking Supervision (BCBS) released another framework known as Basel III accords which was published on 16 December 2010 in order to strengthen global capital, liquidity and risk assessment rules and to ensure higher resiliency of the banking sector. The reason for this is to change and complement preceding rules (Basel II) in order to prevent the consequences of market failures revealed by the crisis. The change will improve the ability of the banking sector to absorb shocks arising from financial and economic stress. (BCBS, 2010). Basel III revises and improves the three Pillars introduced in Basel II. Furthermore, Pillar I was also strengthened with several changes in capital requirements namely; establishing a better risk coverage, imposing capital conservation and countercyclical buffers and establishing a leverage ratio. New liquidity requirements are also incorporated in Pillar I for the purpose of improving liquidity risk measurement and monitoring. Basel III reflects the BCBS's attempt to apply lessons learned from the financial crisis and apply them to the existing framework of banking regulation. Therefore, Basel III does not replace Basel II, rather it augments it. Basel III accord was designed to revise both the quantity and quality of the regulatory capital, by redefining the eligible capital and requiring additional capital buffers. The framework was also extended to cover all material risks that credit financial institution face and reduce the on and off balance sheet leverage.

The Basel III accord was primarily created to take care of the issues of the financial crisis of 2008 which resulted from Basel II shortcomings. However, despite the fact that the Basel III framework came up with capital and liquidity standards aimed at strengthening the resilience of the banking sector, some critics are of the view that it is still not adequate. First, it imposed additional capital requirements but did not revise risk assessment methods. Second, the framework is meant for commercial banks whereas other financial institutions like insurance funds are not subject to Basel III capital requirements. Third, large banks are not adequately regulated, they still enjoy their "the too big to fail" status

2.4 Determinants of Capital Adequacy ratio

Capital adequacy ratio (CAR) is the ratio that is set by the regulatory authority in the banking sector and it is used to measure the soundness of the banking system. This ratio ensures that the bank has the ability to absorb reasonable amount of losses (Harold, 1999). Central Bank of Nigeria is responsible for setting and monitoring capital adequacy ratio to protect the interest of both depositors and creditors, thereby ultimately maintaining the confidence in the banking sector (Adegbite & Oke, 2010). CAR ensures that banks are capable of meeting the liabilities and other risks such as credit risk, market risk, operational risk, and others.

Banks generally hold a CAR well above the regulatory requirement and the buffers are deliberately maintained and reflect banks' internal considerations, their responses to market discipline and the regulatory framework (Hanke, 2013). CAR of banks is determined by a number of internal and external factors such as risk level of banks, economic cycles, business strategy, credit rating et cetera in addition to the regulatory requirements.

2.4.1 The Risk Level of Banks

It is generally agreed that capital serves as a buffer for absorbing unexpected losses thereby reducing the probability of insolvency and the expected bankruptcy cost to be incurred. It was however observed by Milne (2002) that the minimum CAR set by the regulatory authorities may not fully reflect banks' risks. That means there are some risks in the banking sector that regulators may ignore, but these risks affect banks' capital holding decisions. As such, the view of the banks on the appropriate level of capital may be quite different from the minimum level set by the regulator. That means regulatory capital may not be enough to take care of the risks of the banks.

Banks therefore, assess their own risk differently from the assessment involved in the calculation of Risk Weighted Asset under the Basel Capital Accord. Their view that regulatory capital is not enough to safeguard against risks causes banks to hold capital in excess of the regulatory requirement (capital buffer). The fact that the actual CARs maintained by large banks are lower than those of smaller banks seems to support the hypothesis that risk is a relevant criterion (Lindquist, 2004). The general view is that big banks usually face a lower risk than small banks due to the fact that a particular investment of a big bank constitutes a small percentage of the total investment of a large bank than of a small one. Thus, the portfolios of large banks are more diversified compared to that of small banks. Also, risk management and control is better in large banks compared to small banks due to scale economies in monitoring loans and screening borrowers. Therefore, it is expected that the amount of capital needed to cover the risks of big bank will be greater than that of a smaller banks all things being equal.

Therefore, the level of risk and size of banks make CAR of banks to be different from the one set by regulatory authority. Thus, risk is a determinant of the level of CAR maintained by banks.

2.4.2 Economic Cycles

Economic cycles also affects the level of CAR maintained by banks because capital holdings can change over time in order to take care of fluctuations in risk arising from differences in economic environment that are not captured by the fixed risk weights attached by the regulator to the assets (Burns & Mitchel, 1996). During the period of recession, the likelihood of a fall in capital is high due to possible increases in the write-offs and provisions. Banks therefore tend to be cautious by holding more capital, and those relying on credit rating to gain access to capital markets may also need to increase their capital holdings to maintain their ratings during a recession. In a boom period, risks are less likely to occur and banks can safely hold less capital. Therefore, one could then expect that during a recession, banks would hold higher CARs than during a boom.

Thus, Economic cycle is an important determinant of Capital Adequacy Ratio. In the positive economic cycle period where there is low risk, the banks can retain low capital ratio and make more investments in other financial sectors of the economy. However, when there is negative economic cycle, banks may need a relatively high capital or may face sudden economic losses. Thus, in order to hedge that risk banks maintain high capital ratio.

2.4.3 Business Strategy

Banks also maintain high CAR for strategic reasons. That is to say, capital may be held in order to finance future business growth and exploit future business opportunities, such as mergers and acquisitions. Accumulating excess capital by retaining earnings could be a bank's business strategy, giving rise to the persistence of a capital buffer (Lackman, 1986).

Another possible strategic reason for holding excess capital is the adjustment cost. Adjusting the levels of capital in order to take care of possible changes in market conditions could be costly to banks due to the time it takes between the period decisions to adjust the capital level is taken and the completion of the transactions for such adjustments (Diamond & Raghuram, 2000). The possible reasons responsible for this delay are the need for legal, regulatory and procedural work and transaction costs to be incurred such as fees to investment banks and lawyers. Indirect costs could also arise as a result of information asymmetries between bank management and investors. Investors may consider any issuance of new capital or a disposal of existing capital as a signal that the bank considers the market price to be above or below its real value and this will make the share price to change excessively, thereby raising the adjustment cost. Therefore, an excess or a deficiency of capital arises due to the difficulties in capital adjustment. However, the consequence of falling short of capital is more serious, so banks are more likely to be "over-capitalised" than "under-capitalised" (Diamond & Raghuram, 2000). In other words, a part of the observed capital buffer may be held for precautionary purposes, due to frictions in adjusting capital level.

Excess capital can also be retained in a bank even in the absence of profitable investment opportunities because banks usually refrain from returning surplus capital to shareholders in case the action generates bad signals in the market which may jeopardize the banks' earning abilities (Brock & Suarez, 2000). This consideration would lead management to simply follow the past practice of choosing the level of CAR, which results in a downward rigidity of the capital ratio.

2.4.4 Credit Rating

It was observed by Harold (1999) that Creditors and depositors will demand higher interest rates or withdraw funds when they perceive a bank is risky. Their assessment of the risk of the bank may be different from that of the regulator authority because they do not have access to same information. Therefore, they may necessitate the bank to maintain capital that is different from that required by the regulatory authority and the bank may choose to hold a higher level of capital. Banks may also hold higher levels of capital in order to get a rating that facilitates their access to specific capital markets. Thus, rating is a determinant of the level of CAR maintained by banks.

2.4.5 Minimum Capital Requirement

Regulatory requirement is important component which majorly contributes to the Capital Adequacy Ratio (CAR) in the banking sector. Regulatory authority sets the CAR which becomes an obligation for the banks to comply with. Depending on the regulatory rules and the supervisor's reaction to a breach of the capital requirement, and how serious the regulatory interventions may be, banks may choose to hold a CAR higher than required to reduce the risk of an accidental breach (Kim & Santomero 1988). Thus, avoiding the consequences of a potential breach of regulatory capital induces banks to hold a higher level of CAR.

2.5 Review of Empirical Studies

This section provides insights and understanding of prior studies done by various authors in different countries at different periods in the same field. This helps us to develop hypothesis on one hand and to compare the findings of proposed research. A number of researchers have provided insights into the capital adequacy. Brief overviews of the studies are presented in this study:

Shingjergji and Hyseni (2015) examined the determinants of CAR of Albanian banking System for the period of 2007-2014. The study used ordinary least square to test the relationship between dependent and independent variable using quarterly data from the first trimester of 2007 until the third trimester of 2014. The study used CAR as dependent variable while return on asset, return on equity, non performing loan, bank size, and loan to deposit ratio were used as independent variables. The result indicates that profitability indicators such as ROA and ROE do not have any influence on CAR while non performing loans, loan to deposit ratio and equity multiplier have negative and significant impact on CAR. In this study, only bank size was found to have positive impact on CAR. The major weakness of this study is that robustness tests for heteroscedasticity and multicollinearity were not carried out and the study restricted itself to OLS regression without going further to test for fixed effect, random effect and Hausman. Secondly, the sample size and sampling technique is not stated in the study. As such it was not clear whether the sample used is a good representation of the population or whether the researcher used census sampling.

Dreca (2013) examined the factors influencing CAR in selected Bosnian banks for the period of 2005-2010. Using a sample of 10 banks, pooled OLS was adopted to analyze the relationship between dependent and independent variables, the result indicates that size, deposit asset ratio, loan asset ratio, return on equity and leverage have significant effect on CAR. On the other hand, loan loss reserve and net interest margin do not appear to have significant effect on CAR while variables like loan loss reserve, return on equity, Net interest margin and leverage are positively related with CAR. The result of this study would have been more reliable if the researcher had run for robust OLS after running LM test.

A study conducted by Aktas, Acikalin and Celik (2015) aims to evaluate the impact of bank-dimensional and environmental factors on bank's capital adequacy ratio in South Eastern European region. Annual data from 71 commercial banks from 10 different countries in South East European region for the period of 2007-2012 is used. The result of the study show that among the bank-dimensional explanatory Variables: bank size, return on asset, leverage, liquidity and net interest margin have statistically significant effect in determining CAR for the region. Among all the environmental factors: (economic growth rate, eurozone stock market volatility index, deposit insurance coverage and governance) have statistically significant effect on capital adequacy ratio for the banks in South East European region. The major weakness of this study is that it ignores the important contribution of the Basel capital Accord on CAR. Any study on CAR without making reference to important contribution of the Basel committee on banking supervision is deficient.

The objectives of the study conducted by Meconnen (2015) were to examine whether the following bank specific variables: Size, deposit asset ratio, loan asset ratio, liquidity, return on asset, return on equity, net interest margin and leverage have effect on CAR of Ethiopian commercial Banks. The study period was 2004-2013 and the sample size was 8 banks. The study used secondary data which was gathered from the annual reports of the banks under study. Panel data regression was used and the result revealed that return on asset, deposit ratio, and size have positive effect on capital adequacy while return on equity and net interest margin have a negative effect on capital adequacy. However, liquidity, loan asset and leverage were not found to have any significant impact on capital adequacy.

Furthermore, a similar study conducted in Nigeria by William (2011) investigated the impact of banks characteristics, financial structure and macroeconomic indicators on banks' capital base using an error correction model during 1980-2008 in Nigeria. The dependent variable is CAR while the independent variables are rate of inflation, real exchange rate, demand deposit, money supply, political instability, return on investment, total credit loan and liquidity risk and openness of the economy. The author concludes that the money supply is a very important determinant of the capital adequacy base in Nigeria having a high and very strong level of significance. The real interest rate is negatively related to capital adequacy base which could mean that an increase of real interest rate dampen the capital adequacy base. The real exchange rate is a significant determinant but its coefficient is not as expected while the deposit liabilities and liquidity risk are not statistically significant. The author finds out that investments and political instability are correctly signed and statistically significant to explain the capital adequacy base in Nigeria.

A study conducted by Al-Sabbagh (2004) investigated the impact of 9 bank specific variables affecting CAR of Jodanian Banks by studying the financial statement of 17 sampled banks in two periods. That is 1985-1994 which represent the period before applying the Basel Committee Standards for CAR in Jordanian Banks while the second period covers 1995-2001 which is the period after applying the Basel Committee Standards for CAR. Using correlation coefficient and regression analysis, the study found negative relation between CAR and bank size while CAR was positively affected by ROA, loan to asset ratio, and equity ratio. CAR has a positive relation to risky asset ratio in the period 1985-1994 while the relation is negative in the period 1995-2001. CAR is negatively affected by deposits asset ratio between 1985-1994 and positively affected by a size of bank deposits in a period 1995-2001. CAR is negatively affected by loan provision ratio and positively affected by dividend pay-out ratio in the period 1995-2001

In the same vein, Bateni, Vakilifard and Asghari (2014) examined the various influential factors on Capital Adequacy Ratio of Iranian Banks such as Loan asset ratio, return on equity, return on asset, equity ratio, risk asset ratio, Deposit asset ratio and size. Hypotheses were tested using regression analysis on a sample of 6 Iranian Banks for the period of 2006-2012. The results obtained indicate negative relationship between bank size and CAR and positive relationship between loan asset ratio, return on equity, return on asset, equity ratio and CAR. Risk asset ratio and deposit asset ratio do not have any impact on CAR. The major weakness of this study is that the sample size is too small and therefore the findings cannot be generalized.

Aspal and Nazneen (2014) investigated the determinants CAR of Indian Private sector Banks during the period of 2008-2012. Secondary data of 20 sampled banks were analyzed using multiple regression to explain the effect of explanatory variables: loan asset ratio, asset quality, management efficiency, liquidity and sensitivity on the dependent variable which is capital adequacy ratio. The results highlighted that capital adequacy ratio is negatively correlated with proxy variables of lending (loans), asset quality and management efficiency. However, liquidity and sensitivity are positively correlated. The regression results have revealed that Loans, Management Efficiency, Liquidity and Sensitivity have statistically significant influence on the capital adequacy of private sector banks. However, the independent variable asset quality has negligible influence on capital adequacy of Indian private sector banks. Moreover the study reveals that the Indian private sector banks maintain a higher level of capital requirement than prescribed by Reserve Bank of India. Finally in the study it is also found that Indian private sector banks have excessive funds to meet their obligation and have opportunity to give more advances to public by protecting owner's stake. The major weakness of this study is that SPSS was used for analysis and as such robustness tests for heteroscedasticity and multicollinearity were not carried out. The study also did test for fixed effect, random effect and hausman in order to choose the most appropriate model.

Furthermore, in another study conducted by Buyuksalvarci and Abdioglu (2011) which empirically analyzed determinants of CAR of Turkish Banks for the period of 2006-2010. Specifically, the study sought to find if bank specific variables proxied by bank size, Deposit asset ratio, loan asset ratio, loan loss reserve, liquidity, profitability, net interest margin and leverage have any impact on CAR of Turkish Banks. The study adopted multiple regression technique and data were collected from secondary source through the annual reports and accounts of the 24 sampled Banks. The findings revealed that loan asset ratio is negatively and strongly influencing CAR of Turkish Banks. The results of the study indicated that loan asset ratio, return on equity and leverage have a negative effect on CAR, while loan loss reserve and return on assets positively influenced CAR. On the other hand, size, deposit asset ratio, liquidity and net interest margin do not appear to have any significant effect on CAR.

Al-tamimi and Fakkhri (2013) examined the determinants of CAR in commercial banks of Jordan during the period of 2000-2008 using annual report and account of 12 sampled banks. The dependent variable is CAR while as independent variable, the study used liquidity, Return on asset, Return on equity, interest rate risk, capital risk and credit risk. Using Multiple Linear Regression Analysis and the Correlation Coefficient (Pearson Correlation), the study shows that there is a statistically significant positive correlation between the degree of capital adequacy in commercial banks and the following independent variables: liquidity risk, and the rate of return on assets. On the other hand, there is an inverse relationship with statistical significance between the degree of capital adequacy of commercial banks and the following independent variables: the rate of return on equity and interest rate risk. The study also found that there is an inverse relationship that is not statistically significant between the degree of capital adequacy in commercial banks and following independent variables: capital risk, credit risk, and revenue power ratio.

Abusharba, Triyuwono, Ismail and Rahman (2013) examined the determinants of the capital adequacy ratio in the Indonesian Islamic banking industry. Secondary data were obtained from Islamic banks annual reports and Islamic banking statistics that derived from Bank Indonesia covering the period of 2009 until the end of 2011. Multiple linear regression analysis and pair-wise correlation matrix are used to explain the effect of explanatory variables; profitability (ROA), assets earning quality, (NPF), deposits structure (DEP), liquidity (FDR) and operational efficiency (OEOI) on a proxy variable which is the capital adequacy ratio (CAR). The study found that profitability and liquidity are positively related to the capital adequacy requirements. Meanwhile, uncollectable funds measured by non performing financing (NPF) is significant but negatively related to the capital adequacy ratio. On the other hand, depositor's funds and operational efficiency have no significant effect on capital adequacy of Indonesian Islamic banks. Moreover, this study revealed that all selected Islamic commercial banks in Indonesia are committed over than 8 percent minimum of capital requirements during the period of global financial crises. Finally, it was found that Indonesian Islamic banks have an excessive fund to meet their obligations and protect the owners of capital.

Asarkaya and Ozcan (2007) examined the determinants of capital structure in the Turkish banking sector covering 2002-2006 periods. The study proposed an empirical model in order to find out the factors that explain the reason why banks hold capital beyond the amount required by the regulators. They used a panel data set that employs bank-level data from the Turkish banking sector and estimated the model with generalized method of moments. The findings of their study suggested that lagged capital, portfolio risk, economic growth, average capital level of the sector and return on equity are positively correlated with capital adequacy ratio and share of deposits are negatively correlated with capital adequacy ratio.

Almazari (2013) in his study focused his attention on the relationship between capital adequacy ratio and the profitability of the Saudi Arabia commercial Banks. The study measures efficiency with the Capital Adequacy Ratio (CAR) and the Cost income Ratio (CIR) while the profitability is measured by return on asset and return on equity. The study revealed that there is a positive relationship between capital adequacy and profitability and negative relationship between cost income ratio and profitability. The study also finds a positive relationship between banks size and profitability and negative relationship between capital indicators and profitability in the Saudi banks.

Massod and Ansari(2016) analysed the bank specific factors which had an impact on the determination of Capital Adequacy Ratio (CAR) of Pakistani commercial banks during the period of 2008-20014 using annual report and account of 14 Pakistani banks which were included in Karachi Stock Exchange. The impact of ROA(Return on Assets), ROE (Return on Equity), LAT (Loan to Asset ratio), LLR (Loan Loss Reserves), NPL (Non-Performing Loans), DAR (Deposit Asset Ratio), EAR (Equity Asset Ratio) and Ownership concentration was analysed by using Fixed Effect Method and the validity was tested by Hausman test. The results proved that Random Effect Model is better suited in this case. The results revealed that the LAT and ownership concentration had a significant but a negative impact on the CAR. The EAR, DAR, LLR had a significant and positive impact on the determination of CAR, whereas the Size of the Bank, ROA, ROE and NPL had no impact on CAR.

Olarenwaju and Akande (2016) carried out an empirical analysis of capital adequacy determinants in Nigerian banking sector during the period of 2005-2014. Secondary data of 15 quoted banks were analysed using multiple regression to explain the effect of explanatory variables: Return on asset, Return on equity, Credit risk, Deposit asset ratio, liquidity, size, GDP and inflation on the dependent variable which is capital adequacy ratio. The result highlighted that capital adequacy is positively correlated with return on asset and bank size and negatively related with credit risk, deposit asset ratio and liquidity. The major problem with this study is the measurement of the dependent variable. The way the dependent variable is measured in this study is an old method of measuring CAR which did not take into consideration the various risks associated with banking business.

Gabriel (2015) empirically examined the impact of micro-prudential indices on capital adequacy ratio of deposit money banks in Nigeria. Multiple regression model was adopted as the tool of analysis using data from 12 sampled banks over a ten year period from 2005-2014. Four independent variables were included in the model after which three (including deposit asset ratio, return on asset and asset quality ratio) were found to have significant impact on capital adequacy ratio. The study found out that capital adequacy ratio of Nigerian Banks is well above the regulatory minimum. Also, Nigerian banks loans to deposit ratio is within the regulatory limit. The study recommends that Nigerian deposit money banks should adopt a more robust data management system and also ensure strict compliance with various capital regulations. The result of this study would have been more reliable if the researcher had run for robust OLS after running LM test.

2.6 Theoretical Framework

Capital adequacy ratio determination, maintenance and regulation is fundamental in banking and has attracted the interest of different scholars in finance, banking, economics and accounting. Thus contributors to this all-important subject area have used different theories to carry out their studies. Prominent among these theories are discussed below:

2.6.1 Moral Hazard Theory

Moral hazard is a situation in which a party insulated from risk behaves differently from how it would behave if it was fully exposed to the risk. Paul Krugman (2009) describes moral hazard in finance as any situation in which one person makes the decision about how much risk to take, while someone else bears the cost if things go badly. For example financial bail outs of lending institutions by governments, central banks or other institutions can encourage risky lending in the future, if those that take the risks come to believe that they will not have to carry the full burden of potential losses.

Moral hazard is a special case of information asymmetry; a situation in which one party in a transaction has more information than another. It may occur if a party that is protected from risk has more information about its actions and intentions than the party paying the negative consequences of the risk. In the bank industry for example, information asymmetries and deposit insurance shield banks from the disciplining control of depositors. This irresponsiveness of funding costs to the risk of banks gives rise to moral hazard behaviour on the part of the banks. Merton (1977) for example shows that banks have an incentive to decrease capital-to-asset ratios and to increase asset risk thereby increasing the probability that they will default and extract wealth from the deposit insurance system. Furlong and Keeley (1989) show that-by exposing banks' own funds to potential risks-flat capital requirements can reduce but do not eliminate moral hazard incentives. This is mainly because the amount of capital a bank has to set aside against credit risk does not depend on the bank's asset quality.

In contrast Koehn and Santomero (1980) argue that flat capital requirements may even increase risk-taking incentives instead of lowering them. As the forced increase in expensive capital financing reduces a bank's expected return, the bank, in turn, tries to increase its profitability by investing in riskier assets. Based on the moral hazard theory in bank, the theory predicts that banks hold just as much as capital as required by regulation.

2.6.2 Capital Buffer Theory

The capital buffer theory predicts that banks hold safety cushions above the regulatory capital requirement. Stolz (2007) define capital buffer as the capital that banks hold in excess of the regulatory minimum capital requirement. It is due to the fact that the banks may not be able to adjust capital and risk instantaneously due to adjustment costs or illiquid markets. Furthermore, under asymmetric information, raising equity capital could be interpreted as a negative signal with regard to a bank's value (Myers & Majluf 1984), rendering it unable or reluctant to react to negative capital shocks instantaneously. However, to breach regulations trigger costly supervisory actions that can possibly lead to a bank's closure. Consequently banks have an incentive to hold more capital than required (a capital buffer) as an insurance against violation of the regulatory minimum capital requirement (Milne & Whalley 2001). This theory will specifically guide us to understand the capital ratio requirement advised by the BIS through the regulatory agent.

Thus, the theoretical framework adopted for this study is the buffer theory of Calem and Rob (1996) cited in Ikpefan (2012).

CHAPTER THREE
RESEARCH METHODOLOGY

3.1 Introduction

This chapter deals with the research methodology adopted for the study. The chapter discusses research design, sources and method of data collection, population and sampling technique, technique of data analysis, variable measurement and model specification.

3.2 Research Design

Correlational research designs is employed in the study using panel data for a period of eight years (2008-2015). The justification for adopting correlational design is based on the purpose of the study which is to study the relationship between capital adequacy ratio and its determinants during the period. The study used correlational research design in order to actually find and explain the degree to which the independent variables correlated with the dependent variable. This design is consistent with that adopted in similar studies conducted by Dreca (2013), Al-Sabbagh (2004), Bokhari & Ali (2012), Romdhane (2012), Buyukşalvarcı, & Abdioglu, (2011), Al-Tamimi & Fakhri(2013) and Williams (2011).

3.3 Population and sample of the Study

The population of this study includes all the fifteen (15) listed Deposit Money Banks on the Nigerian Stock Exchange that carried out banking business between 2008 and 2015 and published their annual report during the period. Of the fifteen listed deposit money banks, one bank has been filtered out and a sample of fourteen banks have been selected on the basis of availability of data. Therefore, the sample of the study is 14 listed deposit money banks in Nigerian Stock Exchange. The rationale behind the choice of banking industry is due to the fact that banks are more involved in high risk commercial activities and the concept of capital adequacy is more pronounced in the banking industry. Furthermore, the sector is one of the oldest and biggest sectors in the Nigerian economy. It is highly liquid, profitable and is reputed to enjoy continual growth both in size and in operations.

3.4 Sources of Data

The data for this study is obtained from published financial statements of the sampled banks and NSE fact book thus making the data source completely secondary in nature. The financial statements are obtained from the internet.

3.5 Method of Data Collection

The study employed secondary method of data collection. This is because the estimation of the models adopted in the study requires the use of quantitative data. The data were obtained from the annual reports and accounts of the sample companies and Nigerian Stock Exchange fact book in order to achieve the objective of the study.

3.6 Techniques of Data Analysis

The technique of data analysis for the research is Ordinary Least Squares (OLS) Multiple Regression. OLS was used as a basis of comparison with previous empirical studies. However, using traditional Ordinary Least Square (OLS) alone may produce spurious regression problem that can lead to statistical bias (Granger & Newbold, 1974). Fixed and Random effect regression models have been estimated using Stata 13 as a tool of analysis. Various tests have been conducted ranging from multicollinearity test, heteroscedasticity test, hausman specification test and lagrangian multiplier test in order to ensure the reliability of the result.

Multiple regressions are the appropriate method of analysis when research has a single dependent variable and multiple independent variables (Agbadudu, 2002). The reason behind the choice of multiple regression technique is that it reveals the actual impact the independent variables have on the dependent variable. It has proven to be a powerful tool in developing economic and business model for the purpose of analysing the relationship between variables (MC Clave & Benson, 1988).

3.7 Variables Measurement

The study uses one dependent and six independent variables. The dependent variable is CAR, while the independent variables include: Return on Asset, Loan Asset ratio, Leverage Ratio, Deposit Asset ratio, Loan loss provision ratio and liquidity ratio. Variables in this study are measured using ratios to measure the proxies used for the variables of the study. The table below presents the summary of these variables and their measurements as used in the study.

Table 3.1:Variables Measurement

VARIABLE	NATURE	MEASUREMENT
Capital Adequacy Ratio	Dependent	Total Capital/Risk-Weighted asset as used in Al-sabbagh(2004), Dreca(2013),Mekonnen(2015), etc
Return On Asset	Independent	Net Income/Total asset
Loan Asset Ratio	Independent	Total loans/Total asset
Leverage Ratio	Independent	Total equity/Total Liabilities
Deposit Asset Ratio	Independent	Total Deposit/Total asset
Loan Provision Ratio	Independent	Loan Loss provision/Total Loan
Liquidity Ratio	Independent	Liquid asset/total debt & borrowings

Sources: Compiled by Author

3.8 Model Specification

In order examine the factors that determine the Capital adequacy of listed Deposit Money Banks in Nigeria, a multiple linear regression model is built. The model captures all the variables of the study as follows:

$$CAR_{it} = \beta_0 + \beta_1 ROA_{it} + \beta_2 LAR_{it} + \beta_3 LEV_{it} + \beta_4 DAR_{it} + \beta_5 LLP_{it} + \beta_6 LIQ_{it} + \varepsilon it$$

Where:

CAR_{it}= Capital Adequacy Ratio of bank *i* at a period t

ROA_{it}= Return on Asset of bank *i* at a period t

LAR_{it}= Loan Asset Ratio of bank *i* at a period t

LEV_{it}= Leverage of bank *i* at a period t

DAR_{it}= Deposit Asset Ratio of bank *i* at a period t

LLP_{it}= Loan Provision Ratio of bank *i* at a period t

LIQ_{it}= Liquidity of bank *i* at a period t

β_0 = Intercept

β_{1-6}= Coefficient of the independent variables

$\mathcal{E}_{it}$= Residual or error term

3.9 Regression Diagnostics

In order to avoid drawing spurious, incorrect and misleading inferences from the results of the multiple regression analysis, a number of tests were performed on the data to ascertain the extent to which the data complied with the assumptions of the classical linear regression model. Specifically, the tests were performed on the data to determine the degree of:

i) Multicollinearity; and

ii) Heteroskedasticity.

The values of the tolerance and variance inflation factors (VIF) were used to test for multicollinearity. Tolerance and VIF values are two advanced measures of assessing multicollinearity between the independent variables. According to Gujarati (2004), if the variables have VIF above 10 and tolerance values above 1, there is strong indication of the existence of harmful muticollinearity.

The test for heteroskedasticity is conducted to check whether the variability of the error terms is constant or not. Thus the presence of heteroskedasticity signifies that the variation of the residuals or error term is not constant and would affect inferences in respect of the beta coefficients, coefficient of determination (R^2) and the F-statistic of the study. To test for the existence of heteroskedasticity, the study adopted the Breusch-Pagan/Cook Wiesberg test.

CHAPTER FOUR
DATA PRESENTATION, ANALYSIS AND INTERPRETATION

4.1 Introduction

This chapter presents the data collected and analysed as well as discussion of findings. It begins with descriptive statistics and correlation analysis in order to understand the nature and extent of relationship between and among the study variables. It also discusses and interprets the results generated from the regression outputs and tests the hypotheses of the study. It concludes with discussion on the policy implication of the results.

4.2 Descriptive Statistics

This section presents and discusses the results of the descriptive statistics. The sample descriptive statistic is first presented in Table 4.1 where minimum, maximum, mean, and standard deviation for the dependent variable and independent variables used in the study are described.

Table 4.1: Summary of Descriptive Statistics

VARIABLES	OBSERVATION	MEAN	STD. DEV.	MIN.	MAX.
CAR	112	16.07	4.70	10.12	30.98
ROA	112	2.19	1.69	0.02	9.54
LAR	112	42.69	10.62	14.98	64.23
LEV	112	85.74	8.23	69.02	123.29
DAR	112	70.44	12.83	33.83	107.38
LLP	112	-4.87	13.33	-108.45	50.28
LIQ	112	11.73	7.98	1.65	46.22

Source: Stata Output (Appendix C)

The above table presents the descriptive statistics for the dependent and explanatory variables. The result from the table provides some insights into the nature of listed deposit money banks in Nigeria for the period 2008-2015. It shows the mean, standard deviation, the minimum and maximum for each of the variables. The average CAR for the sampled banks during the period of the study is 16.07. This figure is above the regulators requirement of 10% as stipulated in the Central Bank of Nigeria 2010 Prudential Guidelines for Deposit Money Banks. The minimum and maximum capital adequacy ratio during the study period was -10.12 and 30.98 respectively. This therefore means that the Nigerian banking industry is well capitalized and remained strong despite the various challenges caused by the global financial crisis and economic recession. Furthermore, the standard deviation of capital adequacy ratio (CAR) which is the average measure of the spread of the observed annual capital adequacy ratios from the mean value is 4.70. This shows that there is disparity between the capital adequacy ratios of the various banks indicating that some banks are more capitalized than the others.

The table also shows that the sampled banks have an average Return on Asset of 2.19. High return on Assets signifies high profitability while low return on assets signifies low profitability. The figure is very low and it signifies that Nigerian banks are not making enough profit during the period under review. This is not unconnected with the difficulties that banks are going through as a result of economic recession that Nigerian economy is experiencing presently. The minimum and maximum Return on asset is 0.02 and 9.54 which further lend credence to the fact that profit earned by the banks is very low during the period under review. The standard deviation is 1.69 which signifies that the variation in profit is not much among the banks.

The average Loan Asset Ratio for the listed deposit money banks in Nigeria during the period of the study stood at 42.69. This indicates that only 42.69% of the banks' assets are financed by loan. The minimum and maximum loan asset ratio is 14.98 and 64.23 respectively. This indicates that some banks have more of their assets financed by loan compared to others and this is further corroborated by standard deviation figure of 10.62 which proves that there is relative high variation in loan asset of various banks.

The average deposit to asset ratio on the other hand is 70.44 and this signifies that depositors money are secured as only an average of 70.44 of banks total asset will be required to pay back depositors in the event of liquidation. The standard deviation figure of deposit asset ratio is 8.23 and this means that there is high variation in the deposits of the various banks and some banks have more customers than the others. This position is further supported by the minimum and maximum value of 33.83 and 107.38 respectively. Aside the assurance provided to depositors of banks by the Nigerian Deposit Insurance Corporation (NDIC), bank customers first of all want to be sure that there is no risk of bank failure, where one exists, they would want to generally satisfy themselves that the assets of the banks are sufficient to settle their claims.

Loan Provision ratio portrays a minimum and maximum values of -77.33 and 684.86 respectively. It also shows a mean value of 50.17 and standard deviation of 107.95 during the period of the study. Finally, Liquidity has an average of 11.73 with a standard deviation of 7.98. The minimum and maximum values are 1.65 and 42.22 respectively.

4.3 Correlation Matrix

The Correlation Matrix is a technique of analysis that explains the relationship between dependent and independent variables and also the relationship between the independent variables among themselves. The correlation values were obtained from the

Pearson correlation using two-tailed level of significance of the following explained and explanatory variables respectively (CAR = Capital Adequacy Ratio, ROA = Return on Asset, LAR = Loan Asset Ratio, LEV = Leverage Ratio, DAR = Deposit Asset Ratio, LLP = Loan Loss Provision and LIQ = Liquidity.

Table 4.2: Correlation Matrix

Variables	CAR	ROA	LAR	LEV	DAR	LLP	LIQ
CAR	1.0000						
ROA	0.0315 0.7420	1.0000					
LAR	-0.0522 0.5845	-0.2826* 0.0025	1.0000				
LEV	-0.6042* 0.0000	0.1888* 0.0462	-0.2735* 0.0035	1.0000			
DAR	-0.3283* 0.0004	-0.1152 0.2265	0.2334* 0.0133	0.1771 0.0618	1.0000		
LLP	0.0506 0.5960	-0.0003 0.9976	0.1317 0.1663	-0.4197 0.0000	-0.1771 0.0617	1.0000	
LIQ	-0.2806* 0.0027	-0.0604 0.5269	-0.0619 0.5169	0.0583 0.5417	0.1436 0.1310	0.1609 0.0902	1.0000

Source: Stata output (Appendix D)

The above table shows that return on asset and Loan Loss Provision Ratio are positively correlated with capital adequacy ratio of the listed deposit money banks in Nigeria with a coefficient of 0.0315 and 0.0506 respectively. On the other hand, loan asset ratio, leverage, deposit asset ratio and liquidity are negatively correlated with capital adequacy ratio of listed deposit money banks in Nigeria with a coefficient of -0.0522, -0.6042, -0.3283, and -0.2806 respectively.

The table also shows that leverage, Deposit Asset Ratio and Liquidity significantly affect capital adequacy ratio of listed deposit money banks in Nigeria at 1%, 1% and 5% level of significance respectively. On the other hand, return on Asset, Loan asset ratio and Loan loss provision ratio do not appear to have any significant impact on the capital adequacy ratio of listed deposit money banks in Nigeria.

The relationship between the variables themselves (autocorrelation) is not found to be significant, except for some of them that are found to be significantly related. Though this may not be enough to surmise that multicollinearity exists among the explanatory or exogenous variables of the study, unless the Variance Inflation Factor and tolerance values are comparatively beyond the established rule of thumb. Thus, the tolerance value and Variance Inflation Factor (VIF) are advanced measures for assessing harmful multicollinearity among the explanatory variables. The Variance Inflation Factor and tolerance values are determined with the use of STATA 13 and were found to be concurrently smaller than ten and one respectively, indicating the absence of harmful multicollinearity. Therefore, this signifies the adequacy of fitting the model of the study with six independent variables.

4.4 Robustness Test

In a bid to ensure the reliability and validity of the statistical inferences to be drawn from the study, this section presents the outcome of the robustness tests conducted. These tests include multicollinearity test, heteroskedasticity test, Hausman specification test and Lagrangian multipler test.

4.4.1 Multicollinearity Test

This was carried out to ascertain whether there exists correlation among the explanatory variables themselves, which may affect the result of the study. Table 4.2 shows the matrix of the linear relationship among the explanatory variables of the study.

From the table, only leverage and return on asset, deposit asset ratio and loan asset ratio, deposit asset ratio and leverage and liquidity and loan loss provision ratio are positively and significantly related, while loan asset ratio and return on asset, leverage and loan asset ratio, loan loss provision ratio and leverage and loan loss provision ratio and deposit asset ratio are negatively and significantly related. However, despite significant relationship among some of independent variables, this may not be enough to conclude that multicollinearity exists. To further substantiate the lack of multicollinearity between the independent variables, collinearity diagnostics are conducted and the Variance Inflation Factor (VIF) and tolerance values indicate absence of multicollinearity in the data. The variance inflation factor and (VIF) and tolerance values for all the explanatory variables were found to be less than ten and one respectively indicating absence of harmful multicollinearity among the independent variables.

4.4.2 Heteroscedasticity Test

This test is conducted to check whether the variability of error terms is constant or not. The presence of heteroskedasticity signifies that the variation of the residuals or error term is not constant which would affect inferences in respect to beta coefficient, coefficient of determination (R^2) and F-statistic of the study. To test the existence of heteroskedasticity, the present study adopted the Breusch-Pagan/Cook Wiesberg test using Stata 13. The Null hypothesis assumes that the variance of the residuals is constant. If the P value is significant at 5%, then there is substantial evidence to reject the null hypothesis, indicating the presence of Heteroskedasticity. However, the result of the Breusch-Pagan/Cook Wiesberg shows that Chi2 (1) is 9.88 with a P-value of 0.0017 which revealed the presence of heteroscedascesticity in the study model. This has violated assumption number four of classical linear regression model which emphasized the constant variance in the data. Therefore as a result of the presence of heteroscedasticity, the study conducted a Hausman specification test for Fixed and Random effect model which served as a means of addressing or normalizing the individual disparities within units. This is to enable the study to draw a valid and reliable conclusion.

4.4.3 Hausman Specification Test

In order to decide between fixed and random effect models output, Hausman specification test is conducted. The Hausman test is designed to detect violation of the random effects modelling assumption that the explanatory variables are orthorgonal to the unit effects. If there is no correlation between the independent variables and the unit effects, then the estimates of β in the fixed effects model should be similar to estimates of β in the random effects model. The Hausman test statistic H is a measure of the differences between the two estimates. Under the null hypothesis of orthogonality, H is distributed chi-square with degrees of freedom equal to the number of regressors in the model. A finding that ($p < 0.05$) is considered an evidence that at conventional levels of significance, the two models are different enough to allow us reject the null hypothesis, and thus to reject the random effects model in favour of the fixed effects model. Where the Hausman test does not depict a clear difference ($p > 0.05$), however, it does not necessarily emphasize that random effects estimator is 'safely' free from bias, and thus to be preferred over the fixed effects estimator. Therefore, the result obtained from Hausman specification test conducted in this study indicates that ($p > 0.05$) and as such the random effect is chosen over the fixed effects model.

4.4.4 Lagrangian Multiplier Test

The Lagrangian Multiplier test helps one to decide between a random effect regression and OLS regression. The test is conducted after running the random effect model. The rule is that if it is significant, random effect is the preferred model otherwise OLS regression. In this study, we failed to reject the null and conclude that a random effect is not appropriate and this is evidenced by a p-value of 0.2044. The study therefore adopts OLS regression.

4.5 Regression Results and Discussions

This section presents the regression result of the dependent variable which is capital adequacy ratio (CAR) and the independent variables of the study (ROA, LAR, LEV, DAR, LLP and LIQ). It follows with analysis and interpretation of the association between the variables.

The summary of the regression results obtained from the model of the study $(CAR_{it} = \beta_0 + \beta_1 ROA_{it} + \beta_2 LAR_{it} + \beta_3 LEV_{it} + \beta_4 DAR_{it} + \beta_5 LLP_{it} + \beta_6 LIQ_{it} + \varepsilon_{it})$ is presented in the table 4.3 below.

Table 4.3: Summary of Regression Results

Variables	Coefficient	T-Value	P-Value	Tolerance	VIF
Constant	59.29875	7.48	0.000		
ROA	0.02528947	1.52	0.131	0.884583	1.13
LAR	-0.0739053	-2.17	0.032	0.788380	1.27
LEV	-0.4139344	-3.37	0.001	0.720023	1.39
DAR	-0.0606307	-1.64	0.104	0.834985	1.20
LLP	-0.1074827	-2.57	0.012	0.758620	1.32
LIQ	-0.1074827	-2.52	0.013	0.909576	1.10
R^2	0.54				
F Statistics	13.61				
Prob.	0.0000				

Source: Stata Output (Appendix E)

The R^2 (0.54) which is the combined coefficient of determination indicates the extent to which the independent variables explain the total variation in the dependent variable. Thus, it signifies that 54% of the total variation in the capital adequacy ratio of listed deposit money banks is caused by return on asset, loan asset ratio, leverage ratio, deposit asset ratio, loan provision ratio and liquidity. The F-Statistic value of 13.61 and its p-value of 0.0000 shows that the model overall was statistically significant at 1%. This shows that the model is fit and the explanatory variables were carefully selected. The value of F-Statistics which is statistically significant at 1% level of significance (0.0000) means that there is 54% probability that the association amongst the variables of the study is not just by chance.

4.6 Test of Hypotheses

This section presents the analysis carried out in order to test the hypotheses formulated for the study as presented in chapter one. The regression result used for the hypotheses testing is presented in Table 4.3

The table indicates that only one variable (return on asset) is positive while the remaining five variables (loan asset ratio, leverage ratio, deposit asset ratio, loan loss provision ratio and liquidity) are negative. Three of the independent variables (leverage ratio, loan loss provision ratio and liquidity) are significant at 1%. One of the independent variables (loan asset ratio) is significant at 5% level while two of the independent variables (return on asset and deposit asset ratio) are not significant at all levels. A detailed results for each hypothesis is presented below:

4.6.1 Hypothesis 1: Return on asset has no significant impact on the capital adequacy ratio of listed deposit money banks in Nigeria.

Return on Asset measured as the ratio of net income to total asset is found to be statistically insignificant at all levels. That is, it is not significantly associated with the capital adequacy ratio of listed deposit money banks in Nigeria. Hence, Return on Asset does not significantly influence the capital adequacy ratio of listed deposit money banks in Nigeria. Therefore, the result reported provides evidence for the failure to reject the null hypothesis one, $H_{01.}$ Hence, the study fails to reject this null hypothesis.

From table 4.3, it is seen that the T-value for return on asset is 1.52 and the coefficient value of 0.2529 with a p-value of 0.131. This signifies that return on asset does not significantly influence capital adequacy of listed deposit money banks in Nigeria. This implies that increase in return on asset may not necessarily lead to any decrease in the capital adequacy of listed deposit money banks in Nigeria since it is not significant at all levels. The result is surprising because it is not in line with our apriori expectation that the more the listed deposit money banks make profit, the higher will be their capital adequacy ratio. The possible explanation for this result is that the study covered the period when Nigerian banks were affected by global financial crisis as well as economic recession. The period is associated with very low returns in terms of profit. Consequently, it has forced some banks to embark on a number of measures to reduce their operating cost to the lowest minimum including laying off their staff in order to be able to stay in business.

The findings of this study is in line with earlier studies conducted by Shingjergji and Hyseni (2015) and the findings contradict that of Aktas, Acikalin and Celik(2015).

4.6.2 Hypothesis 2: Loan asset ratio has no significant impact on the capital adequacy ratio of listed deposit money banks in Nigeria.

Loan asset ratio which is measured by ratio of loans to total asset is found to be negatively and statistically significant at 5% level. This signifies that it is associated with the capital adequacy ratio of listed deposit money banks in Nigeria. It therefore means that loan asset ratio negatively and significantly affects the capital adequacy of listed deposit money banks in Nigeria.

In view of the result reported as regards loan asset ratio, the variable is statistically significant in driving the capital adequacy ratio of listed deposit money banks in Nigeria. The study takes it as an evidence for rejecting the null hypothesis two of the study which states that loan asset ratio has no significant impact on the capital adequacy ratio of listed deposit money banks in Nigeria. Hence, the study fails to reject the null hypothesis two.

From table 4.3, it is seen that the T-value for loan asset ratio is -2.17 and the coefficient value of -0.0739 with a p-value of 0.032. This signifies that loan asset ratio negatively and significantly influence the capital adequacy ratio of listed deposit money banks in Nigeria at 5% level of significance. This implies that for every 1% increase in loan asset ratio, capital adequacy ratio will decrease by -0.0739. This result is not in line with our apriori expectation because increase in loan issued to customers is expected to increase the profit of a bank as a result of interest and other charges that are associated with bank loan. However, as a result of economic recession being experienced in the country, increase in loan may result in increase in bad debt thereby increasing the amount of losses and reducing capital adequacy.

The finding of this study is in line with earlier studies conducted by Shingjergji and Hyseni (2015), Buyuksalvarci and Abdioglu (2011), and Dreca (2013) and the study contradicts the findings of Meconnen (2015).

4.6.3 Hypothesis 3: Leverage has no significant impact on the capital adequacy ratio of ratio listed deposit money banks in Nigeria.

Leverage which was measured as the ratio of equity to total liabilities was found in this study to be negative and statistically significant at 1% level. This reveals that it is strongly related with capital adequacy ratio of listed deposit money banks in Nigeria.

As a corollary to the result reported with respect to leverage ratio depicting that it is strongly influential in influencing the capital adequacy ratio of listed deposit money banks in Nigeria, the result therefore, provides an evidence for rejecting the null hypothesis three. Thus, the study rejects hypothesis three.

From table 4.3, it can be seen that the T-value for leverage ratio is -3.37 and a coefficient value of -0.4139 and a p-value of 0.001. This signifies that leverage strongly, negatively and significantly influences the capital adequacy ratio of listed deposit money banks in Nigeria at 1% level. This implies that for every 1% increase in leverage, capital adequacy ratio will decrease by 0.4139. This result is not in line with our apriori expectation because increase in leverage is expected to increase capital adequacy of deposit money banks making it possible for them to expand their businesses and earn more profit. However, increase in leverage in a period of economic recession and declining profit may not achieve the desired objective as the bank must bear all the expenses that are associated with debt despite the fact that it is not making enough profit to take care of all these expenses. The finding is in line with earlier studies conducted by

Aktas, Acikalin and Celik (2015). It is however in contrast with the findings of Meconnen (2015).

4.6.4 Hypothesis 4: Deposit asset has no significant impact on the capital adequacy ratio of listed deposit money banks in Nigeria.

Deposit Asset Ratio measured as the ratio of total deposit to total asset was found to be statistically insignificant at all levels. That is, it is not significantly associated with the capital adequacy ratio of listed deposit money banks in Nigeria. Hence, deposit asset ratio has not significantly influenced the capital adequacy ratio of listed deposit money banks in Nigeria during the period under study. Therefore, the result reported provides evidence for the failure to reject the null hypothesis four, $H_{04.}$ Hence, the study fails to reject the null hypothesis four.

Table 4.3 reveals that deposit asset ratio has a T value of -1.64 and the coefficient of -0.0606 with a p-value of 0.104. This signifies that deposit does not significantly influence capital adequacy of listed deposit money banks in Nigeria. This implies that increase in customers deposit may not necessarily lead to any decrease in the capital adequacy of listed deposit money banks in Nigeria since it is not significant at all levels. The possible reason for this is that customers deposit can be withdrawn at anytime without notice and also many people were not able to save because of the economic situation in the country. Thus, deposit is insignificant in determining capital adequacy.

The finding of this study is in line with earlier studies conducted by Bateni, Vakilifard and Asghari (2014) and Aspal and Nazneen (2014) and the study contradicts the findings of Shingjergji and Hyseni (2015).

4.6.5 Hypothesis 5: Loan loss provision has no significant impact on the capital adequacy ratio of listed deposit money banks in Nigeria.

Loan loss provision ratio which was measured as the ratio of loans loss provision to total loans was found to be negatively and statistically significant at 1% level which signifies that it is associated with the capital adequacy ratio of listed deposit money banks in Nigeria. This therefore means that loan loss provision negatively and significantly affects the capital adequacy of listed deposit money banks in Nigeria.

As a corollary to the result reported with respect to loan loss provision ratio depicting that it is strongly influential in determining the capital adequacy ratio of listed deposit money banks in Nigeria, the result provides an evidence for rejecting the null hypothesis five. Thus, the study rejects the null hypothesis five.

Table 4.3 reveals that loan loss provision has a T-value of -2.57, coefficient value of -0.0816 and a p-value of 0.012. This implies that loan loss provision significantly influences capital adequacy ratio of listed deposit money banks in Nigeria at 1% level of significance. This means that 1% increase in loan loss provision will lead to a decrease in capital adequacy of listed deposit money banks in Nigeria by 0.0816.

The finding of this study is in line with earlier studies conducted by Dreca (2013), and the study contradicts the findings of Buyuksalvarci and Abdioglu (2011).

4.6.6 Hypothesis 6: Liquidity has no significant impact on the capital adequacy ratio of listed deposit money banks in Nigeria.

Liquidity measured as the ratio of liquid assets to total debt & borrowings was found to be negative and significantly associated with Capital Adequacy Ratio at 1% level of significance (p-value of 0.013). This means that Liquidity negatively and significantly influences the Capital adequacy of Listed Deposit Money Banks in Nigeria. Therefore, Liquidity has significantly influenced the capital adequacy ratio of Listed Deposits Money Banks in Nigeria. Therefore, the result reported provides an evidence to reject the null hypothesis six of the study. Thus, hypothesis six, H_{06} is rejected.

The regression result as depicted in Table 4.3 shows that Liquidity has a T-value of -2.52 and a coefficient value of -0.1075 with a p-value of 0.013 which is significant at 1% level of significance. This reveals that liquidity is negative and significantly affects the capital adequacy of listed deposit money banks in Nigeria. This implies that for every one (1%) increase in the liquidity level of Listed Deposit Money Banks in Nigeria, their capital adequacy will decrease by 0.1075.

The findings of this study is in line with earlier studies conducted by Altamimi and Fakkhari (2013), Aktas, Acikalin and Celik (2015) and Aspal and Nazneen (2014) and contradicts that of Meconnen (2015) and Buyuksalvarci and Abdioglu (2011).

4.7 Policy Implication of major findings

The study has several theoretical, practical and regulatory implications for both deposit money banks, policy makers, and regulators in the banking industry. The implications represent the contributions of this study which are expected to benefit the existing body of knowledge within accounting, finance and banking researches, regulators and providers of banking services.

The findings of this study have important policy implications since they reveal significant level of relationship between capital adequacy ratio and various bank specific variables such as profitability, loans, leverage, deposits, loan loss provision and liquidity. The study reveals that adequate capital is very important in a bank as it serves as cushion against losses not covered by current earnings. It has also become a confidence booster to depositors, public and the regulatory authorities.

The analysis reveals that return on asset which is used as profitability proxy was found to be statistically insignificant in influencing capital adequacy of Listed Deposit Money Banks in Nigeria. This implies that return on asset does not have any significant impact on capital adequacy of Listed Deposit Money Banks in Nigeria. Thus, change in return on asset may not lead to any change in the capital adequacy especially in a period of economic recession. Thus, regulatory authorities and other stakeholders should not use profitability in trying to determine the capital adequacy of banks.

In addition, the analysis in the study shows that loan asset ratio is negatively and significantly influencing the capital adequacy of listed deposit money banks in Nigeria. This implies that loan asset is an important factor in determining the capital adequacy of listed deposit money banks in Nigeria. An increase in loan would lead to decrease in the capital adequacy of listed deposit money banks. This may be as a result of the fact that bank loans to customers mostly become bad debt due to the economic recession and hardship being experienced by most Nigerians during the period under review.

Furthermore, the study indicates that leverage has been found to be negatively and significantly influencing the capital adequacy of listed deposit money banks in Nigeria. That means the higher the leverage, the lower the capital adequacy of listed deposit money banks. This may be as a result of various costs and conditionality that accompany debt financing and these costs are very difficult for banks to bear during a period of financial crisis that is associated with substantial decrease in banks' ability to make profit.

Furthermore, based on the analysis of findings in the study, deposit asset was found to be statistically insignificant in influencing the capital adequacy of listed deposit money banks in Nigeria. This implies that deposit does not play any significant role in predicting the capital adequacy. Therefore, regulatory authorities and other stakeholders should not consider deposits in trying to determine the capital adequacy of banks.

Moreover, the analysis conducted in the study reveals that loan loss provision has a negative and significant impact on the capital adequacy of listed deposit money banks in Nigeria. This implies that an increase in loan loss provision would lead to a decrease in the capital adequacy of listed deposit money banks in Nigeria. Increase in loan loss provision is made in order to take care of an increasing bad debt and increase in bad debt would subsequently lead to decrease in capital adequacy of listed deposit money banks.

Likewise, the analysis shows that liquidity is negatively and significantly influencing capital adequacy of Listed Deposit Money Banks in Nigeria. This implies that liquidity plays an important role in capital adequacy of Listed Deposit Money Banks in Nigeria. The result reveals that the higher the investment in short-term liquid asset, the lower the capital adequacy. The implication of this result is that stakeholders should not consider liquidity as an indication that a bank is well capitalized.

The findings above have implications to all the stakeholders of listed deposit money banks in Nigeria. Therefore, the various stakeholders of the banks should be aware of the importance of capital adequacy and the factors that influence it. More particularly, the stakeholders should take into cognizance the influence of loans, leverage, loan loss provision and liquidity. Also, return on asset and deposit should not be overlooked as they have an extent to which they influence capital adequacy.

CHAPTER FIVE
SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary

This study empirically examined the determinants of capital adequacy ratio of Listed Deposit Money Banks in Nigeria. The study employed ordinary least square (OLS) multiple regression model with the object of explaining, ascertaining and predicting the level of capital adequacy ratio as a result of either a positive or negative change in the selected independent variables of the study. The OLS model was employed and used to estimate the association and impact of six explanatory variables (Return on asset, loan asset ratio, leverage ratio, deposit asset ratio, loan loss provision ratio and liquidity ratio) on one dependent variable (Capital adequacy ratio).

The study investigated the extent to which the explanatory variables influenced the capital adequacy ratio of Listed Deposit Money Banks in Nigeria. The independent variables of the study were used in formulating hypotheses one to six. While the dependent variable (Capital adequacy ratio) was proxy as the total capital (Tier 1 and Tier two capital) divided by the risk weighted asset of the listed deposit money banks in Nigeria.

The findings of this study were obtained from the panel data collected for the period 2008–2015 from a population of fifteen (15) Listed Deposit Money Banks in Nigerian Stock Exchange as at 31st December, 2015. The result shows that four of the independent variables (loan asset ratio, leverage, loan loss provision and liquidity) are statistically significant while two of the variables (return on asset and deposit asset ratio) are statistically insignificant in influencing the capital adequacy ratio of the Listed Deposit Money Banks in Nigeria. One of the variables (return on asset) is positive and insignificant in influencing capital adequacy while four of the variables (loan asset ratio, leverage, loan loss provision and liquidity) are negative and significantly influencing capital adequacy of listed deposit money banks in Nigeria at 5%, 1%, 1%, and 1% respectively.

5.2 Conclusions

As a corollary to the discussion and analysis in the preceding chapter, the study concludes as follows:

Firstly, the study made an attempt to statistically and empirically provide evidence on the combination of six bank specific variables (return on asset, loan asset ratio, leverage, deposit asset ratio, loan loss provision and liquidity) that constitute the determinants of capital adequacy of listed deposit money banks in Nigeria.

Secondly, the study found a positive and insignificant association between return on asset and capital adequacy ratio. It is therefore concluded that return on asset does not influence the capital adequacy of listed deposit money banks in Nigeria during the period under study and is not one of the determinants of capital adequacy of listed deposit money banks in Nigeria.

In addition, loan asset was found to have negative and significant impact on capital adequacy of listed deposit money banks in Nigeria. The study concludes that loan asset is one of the determinants of CAR as it plays a prominent role in determining the CAR of listed deposit money banks in Nigeria.

The study also found a negative significant influence of leverage on the capital adequacy of listed deposit money banks in Nigeria. Thus, the study concluded that leverage is amongst the determinants of CAR as it plays a crucial role in predicting the CAR of listed deposit money banks in Nigeria.

More so, the study found a negative and insignificant association between deposit asset and capital adequacy ratio. It is therefore concluded that deposit asset does not influence the capital adequacy of listed deposit money banks in Nigeria during the period under study since it is not one of the determinants of capital adequacy of listed deposit money banks in Nigeria.

The study also found a negative and significant association between loan loss provision and capital adequacy ratio of listed deposit money banks in Nigeria. Thus, the study concluded that loan loss provision is among the determinants of capital adequacy as it plays a crucial role in predicting the capital adequacy of listed deposit money banks in Nigeria.

Finally, the study found a negative and significant association between liquidity and capital adequacy of Listed Deposit Money Banks in Nigeria. Thus, the study concludes that liquidity is one of the determinants of capital adequacy of listed deposit money banks in Nigeria.

On the whole, the study concluded that the explanatory variables have significantly played a role in determining the capital adequacy, except for return on asset and deposit asset ratio which are found to be insignificant in determining the capital adequacy of listed deposit money banks in Nigeria.

5.3 Recommendations

In view of the above conclusions that were made based on the findings of the study, the following recommendations to the entire stakeholders concerned with the capital adequacy of deposit money banks are made.

i. The Management of Listed Deposit Money Banks in Nigeria should ensure that loan terms and repayment are strictly monitored and scrutinized by the manager in charge of loans. There must be adequate collateral tendered by the clients and the credit worthiness of these customers must be thoroughly ascertained before granting bank loans so that the negative significance of loan asset on banks will be reversed to a positive one.

ii. The CBN should order the listed deposit money banks in Nigeria to reduce the proportion of debt in their capital structure as it was found to have negative impact on the capital adequacy of listed deposit money banks in Nigeria.

iii. The management of listed deposit banks should reduce the amount of their provision for loan loss as it was found to have negative impact on the capital adequacy.

iv. The CBN should ensure that the liquidity of Listed Deposit Money Banks in Nigeria is always at optimum level by regulating their deposit – liquidity - loans nexus, as it has been empirically found that liquidity is one of the factors that determine the capital adequacy.

5.4 Limitations of the Study

Like any other research, the result of this study is subject to some limitations due to the following factors:

Firstly, the study limited itself to the listed Deposit Money Banks in Nigeria. Hence, its findings and recommendations are only applicable to listed Deposit money banks in Nigeria, as findings and recommendations of bank specific determinants of capital adequacy may not be the same in other countries.

In addition, the study considered only six bank specific variables without considering the others. The result may be different if other bank variables are considered.

5.5 Areas for Further Research

The study focused on only six determinants of capital adequacy ratio using data from individual selected banks. This suggests the urgent need and high importance of conducting more research to include other micro data for variables not included in this study such as equity ratio, Dividend payout ratio, Risky asset ratio, Bank size, Net interest margin, return on equity as well as working on measuring capital to deposits ratio or capital to debts ratio along with variables of the current study.

The study also did not consider the impact of macroeconomic variables such as monetary policy rate (MPR), inflation rate (INFR), interest rate (INTR), Gross Domestic Product (GDP), Per Capital Income (PCI), Annual National Budget (ANB), Regulatory Capital Adequacy Ratio (RCAR), exchange rate (EXR) and capital market indices on capital adequacy ratio. Therefore, another research with the same topic can be conducted using some of the variables mentioned above.

Furthermore, the Outcome of this research might be different if it is carried out during the period of economic boom when most of the economic problems we are experiencing today would have been solved. Thus, somebody can carry out a research using the same topic with the same variables in a period of economic boom.

Finally, the same research can be replicated for another domain in the financial sector other than deposit money banks such as insurance companies.

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APPENDIX A: DESCRIPTIVE STATISTICS

```
. xtset id year, yearly
       panel variable:  id (strongly balanced)
        time variable:  year, 2008 to 2015
                delta:  1 year
. su car roa lar lev dar llp liq, detail
```

car

	Percentiles	Smallest		
1%	10.27	10.12		
5%	10.81	10.27		
10%	11.61	10.37	Obs	112
25%	12.5	10.45	Sum of Wgt.	112
50%	14.405		Mean	16.07241
		Largest	Std. Dev.	4.703781
75%	18.645	28.28		
90%	23.29	28.59	Variance	22.12555
95%	25.62	29.89	Skewness	1.218012
99%	29.89	30.98	Kurtosis	3.928472

roa

	Percentiles	Smallest		
1%	.04	.02		
5%	.23	.04		
10%	.41	.12	Obs	112
25%	1.17	.17	Sum of Wgt.	112
50%	1.9		Mean	2.192589
		Largest	Std. Dev.	1.690331
75%	2.68	6.43		
90%	4.28	7.83	Variance	2.857218
95%	5	8.68	Skewness	1.782298
99%	8.68	9.54	Kurtosis	7.495736

lar

	Percentiles	Smallest		
1%	15.25	14.98		
5%	21.27	15.25		
10%	30.07	15.75	Obs	112
25%	35.43	15.97	Sum of Wgt.	112
50%	43.865		Mean	42.68554
		Largest	Std. Dev.	10.61515
75%	49.865	59.79		
90%	54.36	60.7	Variance	112.6813
95%	56.91	63.38	Skewness	-.6528933
99%	63.38	64.23	Kurtosis	3.200973

lev

	Percentiles	Smallest		
1%	70.11	69.02		
5%	72.05	70.11		
10%	76.7	70.29	Obs	112
25%	81.355	71.41	Sum of Wgt.	112
50%	85.69		Mean	85.74348
		Largest	Std. Dev.	8.228109
75%	88.475	110.37		
90%	91.31	112.88	Variance	67.70178
95%	97.24	116.48	Skewness	1.527644
99%	116.48	123.29	Kurtosis	8.510434

dar

	Percentiles	Smallest		
1%	35.29	33.83		
5%	48.14	35.29		
10%	52.28	45.84	Obs	112
25%	63.46	47.5	Sum of Wgt.	112
50%	70.315		Mean	70.43911
		Largest	Std. Dev.	12.83421
75%	78.42	91.46		
90%	87.06	92.43	Variance	164.717
95%	90.21	102.31	Skewness	-.1182369
99%	102.31	107.38	Kurtosis	3.513608

llp

	Percentiles	Smallest		
1%	-56.9	-108.45		
5%	-16.08	-56.9		
10%	-11	-42.22	Obs	112
25%	-5.36	-18.36	Sum of Wgt.	112
50%	-2		Mean	-4.866875
		Largest	Std. Dev.	13.32782
75%	-1.045	.04		
90%	-.59	.13	Variance	177.6308
95%	-.09	1.35	Skewness	-4.36372
99%	1.35	50.28	Kurtosis	38.53311

liq

	Percentiles	Smallest		
1%	1.65	1.65		
5%	2.49	1.65		
10%	3.16	1.94	Obs	112
25%	4.965	2.19	Sum of Wgt.	112
50%	10.71		Mean	11.72687
		Largest	Std. Dev.	7.978861
75%	16.02	29.33		
90%	22.27	29.41	Variance	63.66223
95%	24.54	34.32	Skewness	1.171688
99%	34.32	46.22	Kurtosis	5.111567

APPENDIX B: CORRELATION MATRIX

```
. pwcorr car roa lar lev dar llp liq, star (0.05) sig
```

	car	roa	lar	lev	dar	llp	liq
car	1.0000						
roa	0.0315	1.0000					
	0.7420						
lar	-0.0522	-0.2826*	1.0000				
	0.5845	0.0025					
lev	-0.6042*	0.1888*	-0.2735*	1.0000			
	0.0000	0.0462	0.0035				
dar	-0.3283*	-0.1152	0.2334*	0.1771	1.0000		
	0.0004	0.2265	0.0133	0.0618			
llp	0.0506	-0.0003	0.1317	-0.4197*	-0.1771	1.0000	
	0.5960	0.9976	0.1663	0.0000	0.0617		
liq	-0.2806*	-0.0604	-0.0619	0.0583	0.1436	0.1609	1.0000
	0.0027	0.5269	0.5169	0.5417	0.1310	0.0902	

APPENDIX C: REGRESSION RESULT AND TEST FOR THE PRESENCE OF HETEROSKEDASTICITY AND MULTICOLLINEARITY

```
. reg car roa lar lev dar llp liq

      Source |       SS       df       MS              Number of obs =     112
-------------+------------------------------           F(  6,   105) =   20.78
       Model |   1333.0401     6  222.173351           Prob > F      =  0.0000
    Residual |  1122.89642   105  10.6942516           R-squared     =  0.5428
-------------+------------------------------           Adj R-squared =  0.5167
       Total |  2455.93652   111  22.1255542           Root MSE      =  3.2702

------------------------------------------------------------------------------
         car |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
         roa |   .2528947   .1952418     1.30   0.198    -.1342337    .6400232
         lar |  -.0739053   .0329321    -2.24   0.027    -.1392036   -.0086069
         lev |  -.4139344    .044457    -9.31   0.000    -.5020845   -.3257844
         dar |  -.0606307    .026467    -2.29   0.024    -.1131099   -.0081515
         llp |  -.0816211   .0267388    -3.05   0.003    -.1346393    -.028603
         liq |  -.1074827     .04079    -2.64   0.010    -.1883617   -.0266037
       _cons |   59.29875   4.216625    14.06   0.000     50.93796    67.65954
------------------------------------------------------------------------------

. hettest

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

         chi2(1)      =     9.88
         Prob > chi2  =   0.0017

. vif

    Variable |       VIF       1/VIF
-------------+----------------------
         lev |      1.39    0.720023
         llp |      1.32    0.758620
         lar |      1.27    0.788380
         dar |      1.20    0.834985
         roa |      1.13    0.884583
         liq |      1.10    0.909576
-------------+----------------------
    Mean VIF |      1.23
```

APPENDIX D: RESULT OF FIXED AND RANDOM EFFECTS MODEL USING STATA

```
. xtreg car roa lar lev dar llp liq, fe

Fixed-effects (within) regression               Number of obs      =       112
Group variable: id                              Number of groups   =        14

R-sq:  within  = 0.4443                         Obs per group: min =         8
       between = 0.7039                                        avg =       8.0
       overall = 0.5290                                        max =         8

                                                F(6,92)            =     12.26
corr(u_i, Xb)  = 0.0361                         Prob > F           =    0.0000

------------------------------------------------------------------------------
         car |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
         roa |   .2725934   .2311368     1.18   0.241    -.1864642     .731651
         lar |  -.0258972   .0415275    -0.62   0.534    -.1083744      .05658
         lev |  -.3690061   .0542659    -6.80   0.000    -.4767829   -.2612292
         dar |  -.0895621   .0348996    -2.57   0.012    -.1588757   -.0202485
         llp |  -.0791147   .0276743    -2.86   0.005    -.1340783   -.0241511
         liq |    -.11727   .0432774    -2.71   0.008    -.2032226   -.0313174
       _cons |   55.51887   4.970421    11.17   0.000     45.64719    65.39056
-------------+----------------------------------------------------------------
     sigma_u |  1.5146329
     sigma_e |  3.1597586
         rho |  .18684458   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0:     F(13, 92) =     1.57              Prob > F = 0.1069

. est store fixed
```

```
. xtreg car roa lar lev dar llp liq, re

Random-effects GLS regression                   Number of obs      =       112
Group variable: id                              Number of groups   =        14

R-sq:  within  = 0.4378                         Obs per group: min =         8
       between = 0.7665                                        avg =       8.0
       overall = 0.5420                                        max =         8

                                                Wald chi2(6)       =    111.31
corr(u_i, X)   = 0 (assumed)                    Prob > chi2        =    0.0000
```

car	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
roa	.2547186	.2004599	1.27	0.204	-.1381755	.6476127
lar	-.0615132	.0342848	-1.79	0.073	-.1287102	.0056838
lev	-.4002134	.0459596	-8.71	0.000	-.4902925	-.3101343
dar	-.0671809	.0278525	-2.41	0.016	-.1217708	-.012591
llp	-.080576	.0263881	-3.05	0.002	-.1322956	-.0288563
liq	-.1095306	.0406994	-2.69	0.007	-.1893	-.0297612
_cons	58.07979	4.327814	13.42	0.000	49.59743	66.56215
sigma_u	.80558567					
sigma_e	3.1597586					
rho	.06103317	(fraction of variance due to u_i)				

```
. est store random
```

APPENDIX E: RESULT OF HAUSMAN SPECIFICATION TEST USING STATA 13

```
. hausman fixed random
```

	Coefficients (b) fixed	Coefficients (B) random	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
roa	.2725934	.2547186	.0178748	.1150655
lar	-.0258972	-.0615132	.035616	.0234326
lev	-.3690061	-.4002134	.0312073	.0288532
dar	-.0895621	-.0671809	-.0223812	.0210291
llp	-.0791147	-.080576	.0014612	.0083389
liq	-.11727	-.1095306	-.0077394	.0147135

```
                           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)
                          =        5.23
                Prob>chi2 =      0.5141
                (V_b-V_B is not positive definite)
```

APPENDIX F: LAGRANGIAN MULTIPLIER TEST

```
. xttest0

Breusch and Pagan Lagrangian multiplier test for random effects

        car[id,t] = Xb + u[id] + e[id,t]

        Estimated results:
                         |       Var     sd = sqrt(Var)
                ---------+-----------------------------
                     car |   22.12555       4.703781
                       e |   9.984074       3.159759
                       u |   .6489683       .8055857

        Test:   Var(u) = 0
                             chibar2(01) =     0.68
                          Prob > chibar2 =   0.2044


. reg car roa lar lev dar llp liq, robust

Linear regression                                      Number of obs =     112
                                                       F(  6,   105) =   13.61
                                                       Prob > F      =  0.0000
                                                       R-squared     =  0.5428
                                                       Root MSE      =  3.2702

------------------------------------------------------------------------------
             |               Robust
         car |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
         roa |   .2528947   .1663284     1.52   0.131    -.0769037    .5826931
         lar |  -.0739053    .034023    -2.17   0.032    -.1413667   -.0064439
         lev |  -.4139344   .1226747    -3.37   0.001    -.6571757   -.1706932
         dar |  -.0606307   .0369218    -1.64   0.104    -.1338398    .0125783
         llp |  -.0816211   .0318082    -2.57   0.012    -.1446909   -.0185514
         liq |  -.1074827   .0426412    -2.52   0.013    -.1920323   -.0229331
       _cons |   59.29875   7.925832     7.48   0.000     43.58329    75.01422
------------------------------------------------------------------------------
```

APPENDIX G

LIST OF DEPOSIT MONEY BANKS AND SAMPLE SELECTED FOR THE STUDY

S/N	BANKS	STATUS IN NSE	REMARKS
1	Access Bank Plc	Listed in NSE	Selected
2	Diamond Bank Plc	Listed in NSE	Selected
3	Fidelity Bank Plc	Listed in NSE	Selected
4	First Bank of Nigeria Plc	Listed in NSE	Selected
5	First City Monument Bank Plc	Listed in NSE	Selected
6	Guarantee Trust Bank Plc	Listed in NSE	Selected
7	Skye Bank Plc	Listed in NSE	Selected
8	Sterling Bank Plc	Listed in NSE	Selected
9	Stanbic IBTC Bank Limited	Listed in NSE	Selected
10	United Bank for Africa Plc	Listed in NSE	Selected
11	Zenith Bank Plc	Listed in NSE	Selected
12	Wema Bank Plc	Listed in NSE	Selected
13	Unity Bank Plc	Listed in NSE	Selected
14	Union Bank of Nigeria Plc	Listed in NSE	Selected

Source: CBN Website & NSE Fact book, 2015