# BANK SPECIFIC ATTRIBUTES AND OFF BALANCE SHEET ACTIVITIES OF QUOTED DEPOSIT MONEY BANKS IN NIGERIA

**BY**

**Hussaini ISIYAKU**
**M.Sc/Admin/21720/2012- 2013**

**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.**

**DEPARTMENT OF ACCOUNTING**
**AHMADU BELLO UNIVERSITY,**
**ZARIA**

**MARCH, 2017.**

## DECLARATION

I hereby declare that the dissertation titled "BANK SPECIFIC ATTRIBUTES AND OFF-BALANCE SHEET ACTIVITIES OF QUOTED DEPOSIT MONEY BANKS IN NIGERIA" has been done by me under the supervision of Dr. H. S. Kargi and Mal. J. I. Yero of the Department of Accounting, Ahmadu Bello University, Zaria. The information gathered from literatures has been duly acknowledged in the text and a list of references provided. No part of this dissertation was presented elsewhere for the award of any certificate. I take the sole responsibility of all errors therein.

**Hussaini, ISIYAKU** **DATE**

## CERTIFICATION

This is to certify that the dissertation titled "BANK SPECIFIC ATTRIBUTES AND OFF-BALANCE SHEET ACTIVITIES OF QUOTED DEPOSIT MONEY BANKS IN NIGERIA" by Hussaini, ISIYAKU meets the regulations governing the award of the degree of Masters of Science (M.Sc.) in Accounting and Finance of Ahmadu Bello University, Zaria and is approved for its contribution to knowledge and literary presentation.

**Dr. H. S. Kargi.**

| …… | …….. | ……. |
|---|---|---|
| Chairman, Supervisory Committee | Signature | Date |

**Mal. J. I. Yero.**

| …… | …….. | ……. |
|---|---|---|
| Member, Supervisory Committee | Signature | Date |

**Dr. Salisu Abubakar.**

| …… | ……. | ……. |
|---|---|---|
| Head of Department | Signature | Date |

**Prof. Kabir Bala**

| …… | …… | ……. |
|---|---|---|
| Dean, Postgraduate School | Signature | Date |

## DEDICATION

This dissertation is dedicated to my late father, Alh. Isiyaku Sanda (may Allah have mercy on him, Ameen), my majestic uncle, Alh. Danlami Mohammad (Turakin Mardannin Zazzau), the District Head of Dutsen-wai and my late sister, Hadiza Yahaya (may Allah have mercy on her, Ameen).

## ACKNOWLEDGEMENT

All thanks to Allah (SWT) for the gift of life and Islam, my sincere appreciation goes to the noblest of humans; prophet Muhammad (SAW), his household and companion. I want to sincerely acknowledge the unrelenting guide and support from my parent: Alh. Isiyaku Sanda, Yamunatu Makama and Alh. Dallami Muhammad for their love, care, sympathy and commitment. I appreciate their tireless toiling to ensuring that the ray of intellectual freedom beams on me radiantly.

I would like to acknowledge the priceless support from my untiring supervisors; Dr. H. S. Kargi and Jibril Ibrahim Yero for their critique, contribution and guidance towards the completion of this dissertation. I sincerely appreciate your official and unofficial consideration for attending to me even in the middle of your tight schedules. The kind gesture will remain glued to my heart forever. Needful of mentioning also is; Dr. Salisu Abubakar, the recent head of department for his encouragement and support. I would also acknowledge the current M.Sc. coordinator; Dr. M. S. Tijjani, Dr. H. Sabari, Dr. Salisu Mamman, Dr. A. Haruna, Dr. L. Mailafiya, Dr. I. L. chechet, Mr. Lawal, Mrs. Aisha Nuhu and the lecturers whose name were not mentioned for their role in molding a better understanding of research to me.

I wish to appreciate to the role of my brothers and sisters for their financial, moral and mental support in this historic quest for knowledge. Also in this catalogue, I wish to thank my course mates for their support and critique without which this dissertation could not have been completed. Finally, I wish to thank my friends for their understanding about my serial absence from their indispensible presence. I wholeheartedly appreciate your love and support. May Allah bless you all?

**ABSTRACT**

*This study assesses the relationship between Bank Specific Attributes and Off-balance Sheet Activities of Quoted Deposit Money Banks in Nigeria for a period of 6 years (2009-2014).The sample comprised of the 9 deposit money banks quoted on the Nigerian Stock Exchange as at 31 December, 2014. Secondary data was from the financial statements and the stock exchange Fact Book of quoted companies in Nigeria. Correlational research design was used in the study. Multiple regression technique was employed as a tool of analysis. The bank specific attributes are credit risk, liquidity risk, profitability, capital adequacy and size. The findings revealed a positive and significant relationship of liquidity risk, profitability, capital adequacy, and bank size on off balance sheet activities while credit risk had a negative and insignificant effect on off balance sheet activities. The study concluded that four out of the five explanatory variables; liquidity risk, profitability, capital adequacy, and bank size have relationship with the off balance sheet activities of Nigerian quoted deposit money banks while one has none. Therefore, it is recommended among others that the policy makers should pay attention to these activities and monitor their use, incentives should be there to develop derivatives to manage the increasing liquidity risk and lastly, profitability, capital adequacy and size should be enhanced positively.*

## TABLE OF CONTENTS

**CHAPTER THREE: RESEARCH METHODOLOGY**



**CHAPTER FOUR: DATA PRESENTATION AND ANALYSIS**

**CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS**

## LIST OF FIGURES AND TABLE

## LIST OF APPENDICES

# CHAPTER ONE
# INTRODUCTION

## 1.1 Background of the Study

In the recent decades, banking deregulation, technological changes, financial deepening and innovation have lead to a more market oriented structure where firms greater than ever relying on financial market to fund their investments. This change cut across most financial markets especially in Canada, US, Europe, Asia and in different places around the world (Calmes & theoret, 2010; Calmes, 2004; Roldos, 2006). The resulting outcome is major change in corporate financing characterized by relative cut in the share of bank loan and increased share of bonds and stocks. The transformation is challenging banking business and justified, in part, with the financial deregulation where banks are increasingly allowed to act as security dealer and to offer fiduciary services and portfolio advice to investors. In addition to traditional practices, banks also begin to securitize loans, trade in financial instruments such as guarantees, commercial papers, acceptances, letters of credit, performance bonds, indemnities that are more in line with financial deepening process. These non tradition activities are loosely seen as off balance sheet activities. Off balance sheet activities therefore are transactions that are not currently recognized as assets or liability on the balance sheet but nonetheless give rise to credit risk, contingencies and commitments are reported off balance sheet. Off balance sheet activities have become an issue of global significance gathering controversy.

Off balance sheet activities expose banks to much danger such as earnings management, creative accounting, and insolvency to mention but a few through the use of Special Purpose Vehicles (SPVs). Some banks engaged in manipulating their books, colluding with other banks to artificially enhance their financial positions and consequently stock prices. Practices such as converting non-performing loans into commercial papers and bank acceptances and setting up

Special Purpose Vehicles to hide losses were very common (Akintoye & Owojori, 2011). Moreover, Sanusi (2010) pointed out a series of scandal associated with SPVs such that the CEO of Oceanic Bank controlled over 35% of the bank through SPVs borrowing customers' deposit. A CEO set up SPVs to lend money to themselves for stock price manipulation and purchase of estates all over the world. Some bank management also set up one hundred fake companies for the purpose of perpetrating fraud. Sanusi (2010) also revealed that much of the capital apparently raised by the so called mega bank was fake capital financed from depositors' funds and 30% of the share capital of intercontinental bank was purchased with customers' deposits among others. Thus, it was discovered that in many cases, consolidation was a sham and the banks never raised the capital they claimed they did (Sanusi, 2010).

Deposit Money Banks are linked with specific attributes which impact on their off balance sheet activities either positively or negatively. One of such is credit risk. Banks engage in off balance sheet activities as a risk management instrument against the increasing credit risk (Khasawneh, 2007). Banks used off balance sheet items to generate more income and compensate for the loan losses. Credit risk relates to the risk associated with the quality of a bank earning assets, namely its loan (Tamrat, 2013). Asset quality is also the second component of a bank's CAMEL rating. Moreover, decline in asset quality lead to write off and reduced earnings from the loan portfolio (Chaudhry, 1994). Kargi (2011) pointed that credit risks are found in all activities in which the success depends on counterparties, issuer or borrower performance. Credit risk has traditionally been considered to be the most important risk for a commercial banks and poor quality asset has probably been the cause of more bank failures than any exposures to be discussed. Bennett (1986) claimed that credit risks are found in OBS activities since it provides an opportunity to increase leverage significantly without additional regulatory requirements. Off balance sheet

activities has been beneficial to the banking sector specifically by implementing an additional fee income or constituting new techniques for hedging specific risk (Buckova, 2012 & Ziadeh-Mikati, 2013). Credit risk becomes the most evident risk in the case of OBS items that are direct credit substitutes. This relates to open credit lines, standby letter of credit, loan commitments. The level of credit risk depends also on the revocability of the commitments and guarantees. If they are revocable, the level of credit risk is relatively small. If they are irrevocable the level of credit risk is relatively high (Buckova, 2012).

Liquidity risk cannot be left out in the determination of OBS activities. Liquidity risk is considered a major risk for banks. It arises when a bank is unable to purchase or otherwise obtain the necessary funds to meet its obligations as they fall due. It is, therefore, directly linked to the generation of loss which results from inability to sell assets as well as to raise funds at an economic and moderate cost in order to cover expected or unexpected liabilities (Brunnermeier & Pederson, 2009). It is reduced if a bank holds greater levels of current assets and banks that have greater holding of short term liabilities are potentially exposed to liquidity problems (brewer & lee, 1986). Chaudhry (1994) revealed that liquidity risk is another element that may contribute to greater risk in the banking system when banks are exposed to off balance sheet activities.

Moreover, capital is the cornerstone of a bank's strength and stability. It provides a cushion to protect the position of stakeholders in the event of bank failure. Larger capital reassures creditors and engenders confidence in a banking system. The rules on bank capital requirement not always complemented by appropriate consolidation rules had created an incentives for banks to increase their off balance sheet activities particularly with securitization activities (Lozano & Pasiouras, 2010). Then, increasing credit risk associated with off balance sheet activities can be transmitted

to the bank capital of the exposed bank and may determine an increase in the minimum capital requirement which bank should have for a given exposures. Khasawneh & Al-khadash (2014) opined that banks engaged in OBS activities to waive some regulations and capital requirement. Besides, Hassan & Khasawneh (2009) argued that poorly capitalized banks are more likely to participate in off balance sheet activities than well capitalized banks.

The crucial goal of banking business is to make profit. It is clear that a sound and profitable banking sector might be able to withstand negative shocks and contribute to the stability of the system. Off balance sheet activity is meant to increase profitability of banks and hedge specific risks (Instefjord, 2005 & Rajan, 2006). Unfortunately, off balance sheet activities are used to artificially inflate profits and make deposit money banks look more financially secured than they actually are. More so, profitability can be considered as a measure of a bank's creditworthiness and indicates a client's trust, causing anticipated positive relationship between profitability and off balance sheet activities (Elian, 2012). Furthermore, high profits increase cash flows which can be retained to absorb future losses to reflect the chance to improve creditworthiness. Banks with more credit worthiness would attract or use more of off balance sheet items.

Bank size is expected to play a key role in OBS activities (Tamrat, 2013). Larger banks in terms of total assets are more likely to have greater growth opportunity than smaller banks. It is likely that large banks would have more prospects to diversify their banking businesses, employ high skilled and well trained employees, and take the benefit in proving higher quality services. Larger banks may also have well developed and wide spread networks with access to large and sophisticated clients who are likely to be asking for off balance sheet products (Ma'in, Misni & Mat-Isa, 2015). Furthermore, large banks armed with specialized management skills will handle more off balance sheet items; thus, meeting the demand for large and institutional clients. In

addition, greater market confidence is normally directed at large banks causing less failure possibility (Elian, 2012). However, large banks can be less efficient than smaller ones, because of the loss of control by managers over strategic and operational activities (Dadashi, Malihi, Vakilifard & Barati, 2013).

Consequently, Nigerian capital market structure differs from those in US, UK, Europe and Asia. The emerging capital market in Nigeria is relatively small and highly concentrated within resources and financial shocks, market imperfection and large transaction costs compare to the developed market. With this, it is not clear that the evidence from Nigerian banks in respect of activities off balance sheet is consistent with those in developed and developing nations. Therefore, a comprehensive study anchoring bank specific attributes and off balance sheet activities of DMBs in Nigeria is warranted which will be of interest to stakeholders.

### 1.2 Statement of the Problem

Banking system in Nigeria has recently experienced a crisis which led to the collapsed of stock market by 70% in 2008-2009 as a result of industry strong relationship with the capital market (Sanusi, 2010). To stabilize the banking system and return confidence to the market and investors, the Central Bank of Nigeria (CBN) injected N620 billion of liquidity into the banking sector and replaced the leadership of eight banks (Sanusi, 2010 & Aminu, 2013). So many factors are considered to be the cause; one of such is OBS activities. Before the crises, OBS activities were thought to have reinforced the flexibility, efficiency and resiliency of the financial system (Ashcraft & Schuermann, 2008). After the crises, bad loans, bond and guarantees, letters of credit, bank acceptances, commercial papers, and derivative transactions among others were identified as part of the financial "trap" at the very heart of the downturn. Lozano-Vivas (2012) blamed OBS activities for flooding the market with low quality assets and causative to spreading

risks throughout the European economic system and consequently the world. Shin (2009) posited that severity of the credit crises lies precisely with low quality of off balance sheet items which not passed on to the final investors. Assets in the hands of investors were mostly of high quality whereas low quality assets are sitting on the balance sheet of financial intermediaries.

Considerable studies have been conducted on the relationship between bank specific attributes and off balance sheet activities of banks particularly in developed nations and some parts of Asia with mixed results ( e.g. Pavel & Phillis, (1987); Khasawneh, (2007); Hassan & Khasawneh, (2009); Calmes & Theoret, (2010); Elian, (2012); Haq & Heany, (2012); Nachane & Ghosh, (2012); Buckova, (2012); Khasawneh, Khrisat & Khrawish, (2012); Teixeira, (2013); Khasawneh & Al-khadash, (2014). A common phenomenon in the studies is that bank specific attributes (credit risk, liquidity risk, profitability, capital adequacy and size) are not combined in one study. This means that the importance of combining these attributes in one study is too big to be ignored. Like other countries in the world, Nigerian banking industry face deregulation efforts, low profitability and increasing risks, thus, banks have resulted to off balance sheet activities. It is noted that researchers have focused mainly on developed markets, while little or no attention has been paid to factors determining off balance sheet activities in emerging market expressly in Nigeria. Given the fact that off balance sheet activities are being used extensively in almost all banking in the world and each country and/or region in the world has its own political, technological and economic attributes. It is on this basis that the study is considered inevitable. Consequently, the problem of the study is to assess the relationship between bank specific attributes and OBS activities.

## 1.3 Objective of the Study

The main objective of this study is to assess the impact of bank specific attributes on off balance sheet activities of quoted Deposit Money Banks in Nigeria. The specific objectives are to:

i. investigate the impact of credit risk on OBS activities of Deposit Money Banks in Nigeria
ii. evaluate the impact of liquidity risk on OBS activities of Deposit Money Banks in Nigeria
iii. examine the impact of profitability on OBS activities of Deposit Money Banks in Nigeria.
iv. assess the impact of capital adequacy on OBS activities of Deposit Money Banks in Nigeria.
v. investigate the impact of bank size on OBS activities of Deposit Money Banks in Nigeria.

## 1.4 Statement of Hypotheses

In line with the objectives of the study, five (5) null hypotheses are to be tested in the study.

$H0_1$: Credit risk has no significant relationship with OBS activities of Deposit Money Banks in Nigeria.

$H0_2$: Liquidity risk has no significant relationship with OBS activities of Deposit Money Banks in Nigeria.

$H0_3$: Profitability has no significant relationship with OBS activities of Deposit Money Banks in Nigeria.

$H0_4$: Capital adequacy has no significant relationship with OBS activities of Deposit Money Banks in Nigeria.

$H0_5$: Bank size has no significant relationship with OBS activities of Deposit Money Banks in Nigeria.

## 1.5 Significance of the study

The findings of this study would have benefits to several parties which include bank managers, bank regulators, policy makers, practitioners, financial economist, as well as investors and stakeholders in general.

The knowledge of these factors would help the regulatory authorities and bank managers to formulate future policies aimed at improving the banking services, profitability and structure of the Nigerian banking system. To the financial analyst, the findings will also help them in giving advice and solution to investors' clients.

The result will provide empirical evidence that will justify the need for improved regulation that could facilitate effective monitoring of managers; the result of this research work will also help investors in monitoring and protecting their investment by checking the activities of the manager in relation to the way they handle risk, and the extent they can monitor their activities.

Furthermore, it is hoped that the findings of this research will go a long way in contributing to policy decisions of Nigerian banks and the regulatory body, as regards to ways to improve bank risk management, curtail losses, improve performance and consequently aid in overall economic growth and development of Nigeria. This study will help to enrich literatures on the subject matter by providing empirical evidence on the subject.

## 1.6 Scope of the Study

The study examines bank specific attributes and off balance sheet activities of DMBs in Nigeria for a period of six years (2009-2014). This period is chosen because it is the time banking system experienced a crisis in the country which was prompted by global events, and also the time that banks get more involved in risks. Off balance sheet activity is the dependent variable of the study while credit risk, liquidity risk, capital adequacy, profitability and bank size are independent variables of the study. It is however important to note that banks that are not quoted on the floor of the Nigeria stock exchange are not included in the study. Therefore, sixteen banks are listed on Nigerian stock exchange as at 31st December, 2014 (NSE Fact Book, 2014). The sample size of the study is nine banks drawn from the population using Krejcie & Morgan (1970) sample size formula.

## 1.7 Definition of Key Terms

1. Off Balance Sheet Activities: These are transactions that are not currently recognized as assets or liabilities on the balance sheet but which nonetheless give rise to credit risks, contingencies and commitments are reported off balance sheet. Such transactions include letters of credit, bonds, guarantees, indemnities, acceptances, trade related contingencies such as documentary credit etc.
2. Bank Specific Attributes: Are those variables that relatively affect the bank's decision both internally and externally. They are internal factors mainly influenced by a bank's management decisions and policy objectives.
3. Assets: Are valuable economic resources possessions of an organization. They are future benefit capable of being measured in monetary terms.

4. Deposit Money Bank: Is a financial institution that undertakes among other things the acceptance of deposits, giving of advances, acting as trustee for valuable legacy and offering corporate and project financing. They are financial intermediaries that mobilize savings from surplus economic units to deficit economic units.
5. Profitability: This is used to explain the performance of a business so as to know whether it is viable or not. It is considered as an indicator of management efficiency, growth and success.
6. Liquidity risk: This is the inability of a business to pay its short term creditors or meet its current obligations.
7. Bank Size: This is used to explain the speed and extent of growth that is ideal for a specific bank. It accounts for the existence of economy of scale.
8. Capital adequacy: It measured the ability of a bank to absorb losses and handle risk exposure for shareholders. It indicated the financial strength and stability of a bank.
9. Credit risk: This is the possibility of losing the outstanding loan partially or totally due to credit events (default risk).
10. CAMELS Rating: This is a supervisory rating system on the basis of the adequacy and quality of a bank's capital, assets (loans and investments), management, earnings, liquidity and sensitivity to systematic risk to classify a bank's overall condition.

# CHAPTER TWO
# LITERATURE REVIEW

## 2.1 Introduction

This chapter presents the conceptual and theoretical issues on the variables of the study and a review of the existing literature in the field of the study. The main aim of this chapter is to establish a conceptual and theoretical framework as well as relationships among the variables of the study as provided by previous empirical studies; and to subsequently fill in the gaps which may be discovered in the course of the review. Finally, the theory that linked the variables of the study is covered in this chapter.

## 2.2 Concept of Off-Balance Sheet Activities

OBS activities have become an essential issue in the recent years gathering controversy. This concept has been defined by different scholars: Nachane & Ghosh (2002) stated that off balance sheet activities denotes those activities which involve contingent's commitments or contracts that generates incomes to a bank but normally not captured as asset or liability under conventional accounting procedure. Contingent items may be recorded in a banks' account as contingent commitment banking or note to balance sheet. According to U.S. Securities and Exchange Commission (2002), off balance sheet activities may involve the use of complex structures that includes structured finance or special purpose entities to facilitate a company's transfer of or access to assets. They further outlined the use of OBS items to some companies, such as financing at a lower cost of capital, allocate risks among third parties and improve income among others. CBN (2013) posited that the term "off balance sheet activities" encompasses guarantees, commitments, derivatives and similar contractual arrangements whose full notional principal amount may not necessarily be on the balance sheet. Such exposures are subject to a capital charge irrespective of whether they have been recorded on the balance sheet at market

value or not. Furthermore, Teixiera (2013) pointed that off balance sheet items are an asset or debt that does not appear on a company's balance sheet and are generally ones in which the company does not have legal claim or responsibility for. They include assets which the bank doesn't control but it may have some exposure to losses or is being paid a fee. However, they can result in future losses for the bank that held them and thus, determine the financial health of the bank. These items often materialized in securitization, liquidity lines, guarantees, acceptances, committed credit lines and other potential liability to the extent that these are disclosed. Khasawneh & Al- khadash (2014) saw off balance sheet activities as contingent assets and liabilities that are not directly included in the bank financial statement. These activities may affect the future status of financial institution' s balance sheet as they produce positive as well as negative cash flows.

Off balance sheet activities are contingent liabilities arising from guaranteed commercial papers, letters of credit, performance bonds, guaranties, indemnities and acceptances among others which are not formally reflected on the balance sheet of the financial institutions (CBN, 2014). These transactions are not currently recognized as assets or liabilities on the balance sheet but which nonetheless give rise to credit risk, liquidity risk as well as generate incomes to banks. The outstanding and unexpired commitments are at the end of the year, in respect of these transactions shown by way of note to the financial statement. These activities are largely loan commitments and contingencies that generate income and/or hedge risks (Tamrat, 2013). However, this definition is not sufficient. This is because some off balance sheet activities are evidenced simultaneously in the balance sheet and off balance sheet. The usual examples are derivatives such as futures, forwards or options. These derivative instruments are recorded both

in the balance sheet in their real value and off-balance sheet in their normal value (buckova, 2012).

Off balance sheet activities have been around for a long period of time. Dealing in banker's acceptance, commercial papers, loan commitments, letters of credits, bond performances among others lay at the heart of the Nigerian banking system in the recent years. However, these instruments came to be widely used only when risks escalated sufficiently. In 2009, as a result of the great abuse of BA's and CP's by DMBs and Discount houses, CBN suspended them as off balance sheet items. Initially, Nigerian banks are not into these actions. This action is both risks reducing as well as risks increasing. However, DMBs in Nigeria might be engaging in this to earn additional fee income to make up for declining margins on their traditional lending activities, hedge risks, avoid regulatory costs and taxes since reserve requirements and deposit insurance premiums are not levied on off balance sheet activities. Futures, forwards and options were offered mainly by organized exchange such as Nigerian stock exchange (NSE) and capital market abroad. These are standard contracts for hedging risks associated with volatile market.

Prior studies show that off balance sheet activities could be one of several categories: unused commitment, financial stand by letter of credit, performance standby letter of commercial and similar letter of credit, security lent, security borrowed, credit derivatives, spot foreign exchange contracts, other off-balance liabilities, interest rate contracts, foreign exchange contract, equity derivatives contract and commodity derivative contract. In Nigeria, off balance sheet activities include issuing various types guarantees, commitments and derivatives

### 2.2.1: Letters of Credit (LC)

A letter of credit is a document issued by a bank on behalf of its customers authorizing a third party to draw drafts on the bank up to a stipulated amount with specified terms and condition. Khasawneh (2007) pointed that Letters of Credit are essentially guarantees to underwrite performance that a depository institution sells to buyer of guarantees, causing the depository institution to add to their contingent future liabilities. Banks deal with two types of letter of credit: Commercial Letter of Credit (CLC) and Standby Letter of Credit (SLC). The risks associated with LCs are ambiguous, although, both CLCs and SLCs have the same type of risk exposure, default risk but differ in severity. In the case of CLCs, the bank's role is to provide a formal guarantee that payment for goods sold internationally or domestically will be forthcoming regardless of whether the buyer of the goods defaults on payment. While bank's role with SLCs is to provide a formal guarantee of payment to cover contingencies that are potentially more severe and less predictable like bond performance, which means a higher level of default risk exposure. Accordingly, letters of credit have a risk reducing impact through the diversification affects (Mora, 2010 & Ziadeh- Mikati, 2013).

### 2.2.2: Loan Commitments

According to Khasawneh (2007), a loan commitment is a contractual commitment by a bank to loan to a customer a certain maximum amount at given interest rate terms. The commitment contracts also define the period over which the customer will be able to utilize his contracted loan. It is recognized as contingent liabilities. Credit risk and liquidity risk mainly arise from loan commitment among the traditional off balance sheet items of the bank but the banks will generate fee income for making these commitments to the borrowers (Khambata & Badgi, 2003).

### 2.2.3: Guarantees and Performance Bonds

CBN (2014) revealed that bank provides financial guarantees and bonds to third parties on the request of customers in the form of bid and performance bonds or advance payment guarantees. These agreements have fixed limits and generally do not extend beyond the period stated in each contracts. The amounts reflected in the financial statement as contingent liabilities for bonds and guarantees represent the maximum accounting loss that would be recognized at the balance sheet date if the counter parties failed completely to perform as contracted. Commissions and fees charged to customers for services rendered in respect of bonds and guarantees are recognized at the time the services or transactions are affected. Credit risk also arises from guarantees and performance bonds (Basel, 1999).

### 2.2.4: Commercial Papers and Bankers 'Acceptances

Commercial papers are short term negotiable unsecured promissory notes sold by big and reputable banks to raise money in the money market. Commercial papers are sold in different forms: some papers are sold unsecured while others are secured by bank issued letter of credit or pool assets (Schnabl & Kacperczyk, 2010). This programs are often carried out though SPVs which is sponsored and administered by a bank to provide funding its corporate customers (Aderson & Gasco, 2009). The rates on commercial papers are higher than those on bankers' acceptance and their risk is also higher. Commercial papers played central role during the financial crisis of 2007-2009. Before then, market participants regarded commercial papers as safe assets due to its short maturity and high credit rating. Adidu, Akintoye & Owojori (2011) posited that some bankers repackage their loans as bankers' acceptance and commercial papers and transfer them off balance sheet: thus they have not transfer the credit risk on such loans but only succeeded to illegally understate the volume of their loans.

Acceptances are undertakings by the bank to pay bills of exchange drawn on customers. The bank expects most acceptances to be settled simultaneously with the reimbursement from customers. A banker's acceptance is created when a bank agreed to accept or guarantee a future payment of goods between two firms. Bankers' acceptance has low credit risk because it is backed by the importer, imported goods and importer's bank (Aderson, 2009). Their credit quality is excellent. The incomes and expenses relating to these acceptances are recognized and reported net in the financial statements. CBN (2014) disclosed that Acceptances which meet the conditions set out in Central Bank of Nigeria (CBN) guidelines on the treatment of bankers' acceptances and commercial papers are accounted for and disclosed as contingent liabilities.

### 2.2.5: Derivatives

Derivative contracts are an obligation against a bank and its customers to make a payment in the future under certain circumstances in which the banks and their customers would prefer not to make the payment (Ziadeh-Mikati, 2013). According to Buckova (2011), Banks operate in derivatives activities for hedging, dealing and speculating purposes. In this sense, dealing in derivative consists of taking an intermediary role and making contract available for customers to earn fees. Under these types of contract, banks create a contingent assets and liabilities in exchange of fees. Thus, such items contain both advantage of risk-reducing and risk-increasing characteristic for banks. Some of these items are futures contract, forward Contracts, foreign exchange contracts, interest rate swap contract, and options contract that can be used to hedge specific risks. Khasawneh (2007) noted that contingent credit risk is likely to be present when banks expand their position in futures, forwards, options and swaps contracts. This risk relates to the fact that the counterparty to one of these contracts may default on payment obligations,

leaving the bank not hedge and having to replace the contract at current interest rate, price or exchange rates, which may be relatively unfavorable (Said, 2011).

### 2.2.6: Credit Derivatives

It is a means via which banks transform their credit risk exposure. Unlike loan sale or securitization that eliminates the risk of a loan totally from the bank balance sheet, with credit derivatives the loan is kept on the balance sheet and only the credit risk of the loan is transfer to the protection seller. A bank can acquire credit derivatives as protection buyer 'credit beneficiary' to hedge credit risk relative to a set of loans and also acquire derivatives as protection seller 'credit guarantor' and consequently extended credit protection to other parties (Ziadeh-Mikati, 2013). These derivatives have both benefits for the financial system as well as hidden dangers and systematic risks (Michalak & Uhde, 2012). Furthermore, Wagner & Marsh (2006) noted that credit risk transfers though credit derivative could bring benefits, reduce credit risks, increase liquidity and realize diversification gains to financial institution; however, it could create moral hazard problems to increase systematic risks.

### 2.2.7: Operating Lease

Leasing is a common way to obtain the use of productive assets. According to Ge (2006), lease can be classified as either capital leases or operating leases from the lessee's perspective. Capital leases are similar to purchases by the lease and required balance sheet recognition of an asset or an obligation. In contrast, operating leases are off balance sheet activities for the lessee and are reflected in the income statement as rent expenses (Lipe, 2001). Ge (2006) stated that researchers have reached consensus that many off balance sheet operating leases represent both assets and liabilities. Under Generally Accepted Accounting Principles, when a bank classified a lease as operating, it is not recognized on the balance sheet.

## 2.3 Basel 1 Accord: Treatment of Off Balance Sheet Activities

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 that 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 one means that the risk is very likely to occur and otherwise is zero. This coefficient was the first to induce 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 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). For the latter, the weights used are only four (0, 20, 50 and 100%) where; 0% is given to riskless off balance sheet items, 20% and 50% are given to off balance sheet items exposed to a relatively low risk and 100%, is given to highly risky off balance sheet items (Basel Committee, 1988). This means that off-balance sheet items in the equation of solvency ratio, 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 (Basel Committee, 1988).

In addressing credit risk, the committee found it helpful to draw up a broad framework of analysis which distinguishes between four different categories of off balance sheet activities, namely guarantees and other contingent liabilities, commitments, market related transactions and advisory, management and underwriting functions. These are briefly explained below:

### 2.3.1: Guarantees and Other Contingent Liabilities

These are the more traditional off balance sheet exposures, where a bank has underwritten the obligations of a third party. Default by counterparty on whose behalf a guarantee has been written may trigger an immediate loss, or, more usually, will result in the bank acquiring a substandard claim. They are direct credit substitutes and the credit risk is equivalent to that of on balance sheet exposures (Basel Committee, 1988). The relative degree of credit risk here is 100%. They include guarantees, commercial papers, acceptances, standby letters of credit, documentary letters of credit, and transactions with recourse, warrantees, indemnities, endorsement among others.

### 2.3.2: Commitments

Here a bank has committed itself to future transactions that will normally result in the bank acquiring a credit exposure at some future date. In some cases the commitment is binding on both parties and there may be a predetermined date on which it must be exercised. In other cases, the commitment is binding on the bank alone and the other counterparty may choose whether or when to ask the bank to fulfil its commitment (Basel Committee, 1988). The bank will only be called upon to advance funds or provide a guarantee in circumstances where other parties have refused to do. These transactions include credit lines, undrawn overdraft facilities,

sale and repurchase agreements, outright forward purchases, forward forward deposit, partly paid shares and securities among others. There are no immediate credit risks in these transactions, and there is medium risk premium here which is 50% because of the mitigating circumstances which suggests less than full credit risks (Basel Committee, 1988).

### 2.3.3: Market Related Transactions

These items are essentially derivative transactions. In some cases binding on both parties but in some cases exercisable at one party's discretion (e.g. option). The credit exposure can theoretically be measured in terms of the cost of replacing the stream of cash flows lost as a result of counterparty defaults (Basel Committee, 1988). These includes forward foreign exchange transactions, currency and interest rate swaps, currency futures, currency options, forward rate agreements, interest rate futures and options, stock index futures and options among others. Therefore, the credit risk here is 20% which is moderate. They are mostly hedging mechanisms (Basel Committee, 1988).

### 2.3.4: Advisory, Management and Underwriting Functions

Banks engage in a range of fiduciary and agency functions which involve them in possible claims for negligence or breach of fiduciary obligations. Such activities cannot be regarded as involving a credit risk as such but rather form part of the operational and control risks where a bank's reputation and standing may be at stake (Basel Committee, 1988). Thus, the credit risk coefficient is zero.

## 2.4 Concept of Bank Specific Attributes

Bank specific attributes can be defined as the behavioral patterns of company's operations which can enable them to achieve their objectives throughout the period of their operations (Moh'd, 2005).They are various accounting information reported by banks in their financial statements

for a particular accounting period which can send a message to various stakeholders of the banks about their performance. These attributes vary from one business entity to another. The company's attributes can be determined based on the relevant information disclosed on its financial statement for a particular accounting period (Stainer, 2006).They are those variables that relatively affect the bank's decision both internally and externally (Shehu, 2013).Sufian (2011) stated that Bank specific attributes are internal factors mainly influenced by a bank's management decisions and policy objectives. These attributes refer to certain advantages that a company enjoys over their competitors in the market for the period of their operation. Wiklund & Sherherd (2005) pointed that companies that are able to align their attributes with the environmental characteristics perform better than the other firms. Bank specific attributes are credit risk, liquidity risk, profitability, capital adequacy as well as bank size. These bank specific attributes are internal factors which are surrounded by the management control.

### 2.4.1: Concept of Credit Risk

Credit risk is the probability of financial loss arising from customer or counterparty default. Kargi (2011) indicated that Credit risk is the current and potential risk to earnings or capital arising from an obligor's failure to meet the terms of any credit contract with the bank or otherwise to perform as agreed. This risk is found in all activities in which success depends on counterparty, issuers, or borrower performance. It arises any time bank funds are extended, committed, invested, or otherwise exposed through actual or implied contractual agreements, whether reflected on or off the balance sheet. Thus, risk is determined by factor extraneous to the bank such as general unemployment levels, changing socio-economic conditions, debtors' attitudes and political issues. Gostineau (1992) pointed that credit risk is the possibility of losing the outstanding loan partially or totally, due to credit events (default risk). Credit events usually

included events such as bankruptcy, failure to pay a due obligation, repudiation/moratorium or credit rating change and restructure. Heffernan (1996) saw credit risk as risk that an asset or a loan becomes irrecoverable in the case of outright default, or the risk of delay in the servicing of the loan. In either case, the present value of the asset declines, thereby undermining the solvency of a bank. Kargi (2011) observed that banks are increasingly facing credit risk (or counterparty risk) in various financial instruments other than loans, including acceptances, interbank transactions, trade financing foreign exchange transactions, financial futures, swaps, bonds, equities, options, and in the extension of commitments and guarantees, and the settlement of transaction. Credit risk is said to be direct when it arises from credit facilities such as loans and advances and indirect (contingent) when banks have guaranteed contractual obligations of a client by issuing letters of credit and guarantees. Credit risk also exists when banks and its clients have mutual obligations to exchange (deliver) financial instrument at a future date. The risk of default before settlement, also called pre- settlement risk; arises when the counterparty defaults before the contract matures and bank suffers a financial loss in the process of replacing the unexecuted contract. The settlement risk becomes direct credit risk at the time of default (Buckova, 2012). Credit risk is measured as the provision for loan losses relative to total loans. Ceteris paribus, a higher credit risk may reflect a higher degree of expected loss in the loan portfolio (Tamrat, 2013). The impact of credit risk is likely to be positive because increased in loan loss provision may increase off balance sheet activities, meaning that the risk of the bank is high. Thus, banks may use off balance sheet activities as a risk management instrument to generate more income to compensate for the bad loan loss.

### 2.4.2: Concept of Liquidity Risk

Liquidity risk relates to the risk of insufficient liquid assets to meet the bank obligations as they fall due or bank having to meet the obligations at excessive cost (Anthony, 2008). It is also viewed as the potential inability to meet contractual and contingent financial obligations on or off balance sheet as they come due. Eduardus, Hermeindito & Suprinyatna (2007) stated that liquidity risk is the risk of negative effects on the financial result and capital of the bank caused by the bank's inability to meet its due obligation. The basic role of banks is the maturity transformation of short-term deposits into long-term loans which makes banks inherently exposed to liquidity risk, both of an institution specific nature and that which affects markets as whole. According to Anthony (2008), liquidity risk can best be described as the risk of funding crisis; he also stated that recognizing liquidity risk leads the bank to recognize liquidity itself as an asset. Liquidity risk involves the inability to fund increases in assets, manage unplanned change in funding sources and to meet obligations when required, without incurring additional costs or inducing a cash flow crisis (Kumar & Yadav, 2013).Liquidity risk is considered a major risk for banks. Liquidity risk is defined as total loans to total assets (Nachane & Ghosh, 2002). Ceteris paribus, higher loans to total assets decreased liquidity risk. The impact of loan to total asset ratio is likely to be positive and significant, meaning that banks used more off balance sheet items to manage their increasing liquidity risks (Hassan & Khasawneh, 2009; Khasawneh, 2007).

### 2.4.3: Concept of Capital Adequacy

Capital adequacy is a measure of a bank' buffer capital that protect depositors and promote the stability and efficiency of the financial system (Hassan & Khasawneh, 2009). The present of substantial capital re-assures creditors and engenders confidence in a bank. The capital of a commercial bank may be defined as the value of its net assets. That is total assets less total

liabilities. The capital base normally comprises the bank share capital, various forms of accumulated capital reserve and certain types of sub-ordinate loan stock. The capital base of a bank is vital for the protection of its creditors and depositors, consequently the maintenance of general confidence in its operations and underpinning its long-term stability and growth. The bank capital is essential as it is a measure of the banks' ability to absorb losses which arise from bad debts and trading losses. The adequacy of any given capital base depends not only on the absolute liabilities to be covered, but also is affected by the qualities of the banks' assets(Klaus & Martins, 2006).It is believed that bank with risky assets have to hold higher capital than banks with less risky assets (Tamrat, 2013).The Larger ratio represents higher banks' sensitivity towards public interest and the implementation of the capital adequacy requirement reduces risk taking of commercial banks. It become visible those changes in capital requirements by regulators could have an effect on banks' decision to engage in off balance sheet activities (Elizabeth, 2011). Low regulatory pressure signifies comfortable capital position and banks become active suppliers of off balance sheet items.

### 2.4.4: Concept of Profitability

Profit is the crucial goal of commercial banks. All the strategies designed and activities performed thereof are meant to realize this striking objective. However, this does not mean DMBs have no other goals. DMBs could have also additional social and economic goals. Further, the intent here is to relate the first objective, profitability. Profitability is of vital importance for investors, stakeholders and the economy at large. Profitable banks can lead to future investment that can provide employment opportunities and increase the income of people. Halm (2008) makes known that banks that are more profitable exhibit higher noninterest income ratios. Decrease in bank margins as a result of low-quality loan, encourages the banks to offer

new products and services to increase their profit (Lozano-Vivas & Pasioras, 2010). They argued that the rate of traditional banking has been diminishing while OBS activities have been growing, decreasing profitability of traditional banking and increasing the competitiveness of the markets to actually force banks to undertake OBS activities.

Elian (2013) stated that profitability can be considered as a measure of creditworthiness and signified clients' trust, causing anticipated positive relationship profitability and OBS activities. Moreover, higher profits increase cash flow which can be retained to absorb future losses to reflect the chance to improve creditworthiness (Khasawneh & Hassan, 2009). Profitability is an indication of superior management armed with optimal utilization of bank assets and higher productivity at lower costs, reflecting an improvement in the interest spreads. Profitability is measured by return on assets.

### 2.4.5: Concept of Bank Size

Bank size refers to the speed and extent of growth that is ideal for a specific bank (Aminu, 2013). The size measurement can be carried out in several methods mainly through sales, employees, assets among others. Larger banks are likely to enjoy higher economies of scale and therefore produce at a lower cost economically and efficiently than smaller banks. Moreover, larger banks are likely had high qualified risk management and specialized staff (Elian, 2012). Besides, clients who might engage in OBS activities will not possibly consider small size banks as an option for them since they believe that large banks are too big to fail. Krisat, khrawish & Al-khadash (2012) revealed that larger banks are probably more risk-diversified and would have few incentives to engage in OBS activities

Furthermore, Tamrat (2013) pointed that larger banks also benefit from the economies of scopes that is opportunity for better diversification into different product, business lines and new

markets. This claim is consistent with the general perception that government is less likely to allow big banks to fail. It is believed that bank size may signal specific bank risk and perceived to be safer. Larger banks tend to have higher loan loss provision than small banks and are more diversified and well-capitalized. Elian (2012) posited that greater market confidence is normally directed to large banks, causing less failure possibility. Such indication along with others will encourage banks to expand their activities towards the OBS activities. The coefficient is expected to be positive or negative.

## 2.5 Review of Empirical Studies

This section reviewed relevant empirical literatures on bank specific attributes and off balance sheet activities. Relatively, a number of studies have been conducted on bank specific attributes and off balance sheet activities but are confined to advance economies of the world like US, Europe, Asia and Canada among others. In Africa, the phenomenon is prevalent though limited evidence is forthcoming for the emerging market.

Pavel & Philis (1987) conducted a study to examine the determinants of loan sale of commercial banks using data base formed by 33 US banks for the period 1979-1983. The Ordinary Least Square method was used to estimate the model. They concluded that diversification, capital, capital binding and reserve requirements have important influences on loan sales, suggesting that banks begin to sell loans when capital ratios are low and charge-offs are high. They also concluded that banks with binding capital constraints are more likely to engage in OBS activities such as swap and loan securitization than bank with excess capital. They argued in context of regulatory tax hypothesis.

Tamrat (2013) carried out a study to examine the determinants of off balance sheet activities of Ethiopian banking industry using ordinary least square model for a sample of eight (8) banks

over in the recent eight (8) years (2005-2012). The data were collected from annual report and national bank database. The study used SPSS 16 as tool of analysis. The findings revealed that size, profitability, efficiency, market concentration have positive and significant impact on off balance sheet activities while credit risk and loan ratio are found to be insignificant. Reserve requirement is also a significant determinant while capital adequacy negatively affects off balance sheet activities but not significantly. Furthermore, micro economic determinant: real GDP and interest rate spread have significant impact on off balance sheet activities while inflation revealed insignificant impact.

Khrisat, Khrawish & Khasawneh (2012) conducted a study to examine the determinants of OBS activities in the Jordan banking system during the period 1999-2010 using panel data analysis. The study employed Mansfield (1961) logistic diffusion model that included regulatory and non-regulatory bank specific factors in addition to macroeconomic factors. The data on bank size, total loans, profitability, non-performing loans, capital adequacy, real GDP and international trade was sourced from bank scope CD-ROM and online annual reports of 16 banks. All the variables are significant determinants of off balance sheet activities except capital adequacy which is found to be insignificant, indicating that regulatory tax hypothesis is not in force to determine the OBS activities of Jordan banks. The result showed that OBS activities are real financial innovations and increasing overtime. OBS activities followed the business cycle notion and the usage decision depends on the economic conditions. The OBS activities also followed the economy of scale notion since they required higher qualification and that is more likely in the large size bank.

Teixeira (2013) carried out a study to examine the determinants of OBS items issuance across European banks over the period 2001-2011 using OLS and panel data set giving a particular

relevance to risk management and liquidity seeking against the expectation of US Banks, result showed that in European banks, risk management and liquidity seeking are not significant in determining the increased OBS items whereas performance improvement and compliance with regulatory capital are main motivating factors for European banks entering these structured finance activities.

Ma'in, Misni & Mat-Isa (2015) carried out a study to investigate the determinants of off balance sheet income activities using a sample of 16 Islamic banks and 14 conventional banks listed in the Malaysian Stock Exchange (MSE) for a period of 2008-2013 and 2002-2013 respectively. The mean–median comparison, standard deviations, skewness, kurtosis and jarque bera test revealed that data set is not normally distributed, thus GLS method was adopted. The findings revealed that bank size, profitability and interest rate are positive and significant determinants in Islamic banks meanwhile bank size, profitability and real GDP are the main determinants in Conventional banks. Capital adequacy is insignificant and not a determinants in the both banks.

Hassan & Khasawneh (2009) conducted a study to examine the determinants and policy implications of OBS activities in MENA countries' commercial banks using Mansfied (1961) logistic diffusion model for the period 1996-2007. The data set covers 272 banks in 21 MENA region countries. The study test regulatory tax and market discipline hypothesis in determining OBS activities of MENA commercial banks. The findings revealed that loan ratio, profitability, real GDP, interest rate, institutional factors and technology are positive and significant determinants meanwhile capital was found to be negative and significant. Bank size was positive but not significant determinant of off balance sheet activities. The study revealed that OBS activities don't follow diffusion model and adaptation is decreasing over time. They suggest that there exists an informational economy of scope between loan and OBS activities that is profit

driven. They conclude that banks participate in more OBS activities to reduce risk resulting from granting loans while it is true political and economic events negatively affects banks OBS activities.

Khasawneh & Al Khadash (2014) carried out a study to examine the role of off balance sheet activities in banks profitability and banks risk in the Middle East and North African banking system for the period covering the 2006/2007 financial crises. The study employed two models to analyze the unbalanced panel data obtained from the sampled of 197 banks for 20 countries from 2005 t0 2011. They formed their sample from MENA banking system, including different countries and different bank types. The finding revealed that credit risk, liquidity risk, return on assets and bank size have significant impact on off balance sheet activities. The results indicated that OBS activities are both risk reducing as well as profit generators in MENA banks. The results also indicated the effect of OBS activities on bank profitability is higher in the case banks located in oil producing countries. There is also no significant difference between the impact of OBS activities and bank risk for banks located in oil producing countries. Furthermore, the results show that commercial banks profitability is more sensitive to OBS activities. Bank risk is more sensitive to OBS activities in case of Islamic banks.

Elian (2012) conducted a study on the determinants of OBS business for the banking sector of Gulf Cooperation Council countries (GCCC) using fixed effect model for large sample of 64 banks over in recent fifteen years period (1997-2011). The data was collected from bank scope and IMF database. The results revealed that market power, bank size, loan ratio, net charge off have positive and significant impact on OBS businesses whereas capital, profitability and GDP growth are found to be positively and insignificantly impacting on off balance sheet activities. Regulatory variable, capital items is less important, which is contrary to the long-held market

discipline hypothesis, under which secure banks are liable to engage more in OBS business. The macroeconomic variables reveal that the higher the real GDP growth does not necessarily cause an increase in the OBS activities. However, its positive impact indicates that the OBS business actions follow business cycles, and the overall growth of economy. Prudential regulator as a policy matter, need to consider region wide implication of these findings. Regulating how OBS business is conducted in the region would influence costs and scope of banks hence the monetary policy.

Khasawneh (2007) conducted a study on the determinants of OBS activities in US commercial banks using logistic diffusion model for the period 1996-2005. The data collected from the sampled of 32 banks were source from FDIC call report. The results reject the regulatory tax hypothesis (avoidance of regulatory capital requirement) and conclude that regulations have no major impact in determining banks OBS usage. The result reveals derivatives activities are the real financial innovation and is increasing overtime in the U.S banking industry. Non-regulatory variables such as bank size, bank loan and non- performing loan are significant in the six regions and insignificant in three regions. OBS activities are not profit driven: as profitability is insignificant in the six regions. Macroeconomic factors are significant in determining OBS usage. He also tests market discipline hypothesis and found that OBS activities are risk reducers. Lastly, more capital requirements and regulations on OBS activities may distort the large market positions. OBS derivatives usage depends on economies of scale and is likely to be in larger banks.

Haq & Heaney (2012) carried out a study to examine the factors determining European bank risk using a panel regression model that includes OBS activities in addition to bank specific variables and macroeconomic variables to identify the determinants of bank equity risk and credit risk

using data from eleven (11) European financial institutions. The results suggest a positive relationship between OBS activities and bank risk.

Buckova & Slova (2010) carried out a study to assess characteristic features of the OBS activities of the banking sector of Czech Republic for the period 2004-2009 using co relational analysis, the study compare on and off balance sheet activities, then assesses the profitability of the structured finance and included OBS activities in the context of macroeconomic factors. The result revealed negative and significant impact of profitability and real GDP on OBS activities whereas credit risks have positive and significant on OBS activities.

Buckova (2012) conducted a study to examine the impact of OBS activities on credit risk of the Czech banking sector using logistic model for a period of seven (7) years covering 2005-2011. For this purpose, an expected loss of off-balance sheet activities is calculated. Expenditure loss depends on the probability that the counterpart do not meet its obligation (Probability of default). This calculation is based on Build-up method which quantifies credit risk as an expected loss. The study found negative and significant relationship between expected loss and OBS activities in largest banks of Czech Republic. In his opinion, credit risk from resulting from OBS activities is well managed in the Czech banking sector. The study found that there are many risk resulting from OBS activities but one of the most important risk is credit risks.

Nachane & Ghosh (2007) conducted a study to examine empirically determinants of OBS activities of Indian banks using a sample 56 banks from 1996-2004. The study used a deterministic model that included bank capital, bank size, non performing loan, profitability and market forces. The findings revealed that non performing loan, bank size, profitability, capital have positive and significant impact on off balance sheet activities. They have us believe not

only the regulatory factors but also market forces are at work in the diffusion pattern of OBS activities. They showed that non-performing asset and bank size are of prime concern for foreign as well as public sector banks. Sinha (2006) carried out a study to examine empirically the OBS exposures of Indian banks using DEA approach for a period six (6) years 1999-2004. The study compares Indian banks (Private and Public) with respects to their ability to generate income out of OBS activities. Panel data was used test the impact of operating efficiency, capital adequacy, profitability and non performing loan on OBS risk taking behavior of Indian commercial banks. Study identified that public commercial banks are lagging behind private commercial banks in terms of OBS activities. The findings revealed that capital adequacy, operating profit ratio are positively related to OBS activities while non-performing loan ratios negatively related to off balance sheet activities.

Khambata & Bagdi (2003) carried out a study to examine OBS credit risks of the opt 20 Japanese banks. They blame on the increase in OBS activities to factors that include competition, market pressures and volatility in the market forces, movement towards deregulation, informational innovations and advancement in technology, lower level of profitability from the traditional activities and they also include a desire to minimize the degree of risk linked with such businesses or with expansion of the investment opportunities to secure higher returns required by investors.

Sayilgam & Yildirim (2009) carried out a study to examine the determinants of profitability in Turkish banking sector using panel data for the period 2002-2007. They argue that profitability decreases with growing OBS activities as well as credit risk is found to be positively related with OBS activities. Shin (2009) examined the relationship between securitization and financial stability in US banking sector for a period covering 2007/2008 credit crisis. The data was

collected on credit risks, liquidity risk, leverage and debt value from Federal Reserve Bank of St. Louis's FRED database. The findings revealed that credit risk and liquidity risk positive and significant impact on securitization.

Barrel, Davis, Liadzec & Karima (2012) carried out a study to examine the impact of OBS exposures on banking crises of 14 OECD countries for the period 1980-2008 using multinomial logit model. The study established that capital, liquidity, property price, current account balance and OBS activities have positive and significant impact on probability of banking crisis in OECD countries. They find significant impact of OBS activities on crises occurrence, which imply that OBS activities increasing OECD banks' risks.

Calmes & Theoret (2010) conducted a study to examine the impact of OBS activities on bank returns of Canadian banks for the period 1997-2007. The study shows that increasing OBS activities does not necessarily yield straight forward diversification benefits for banks, however, introducing a risk premium in a standard bank return model and resorting to an ARCH-M procedure, Canadian data revealed that bank risk and return trade off displays a structural break around 1997. The study also revealed that the non-interest income generated by OBS activities no longer impacts bank return negatively. The volatility variable is not significant in any return equations; a risk premium eventually emerges, pricing the risk associated to OBS activities. Also the study finds that bank risk increasing and reducing bank mean accounting return.

Aktan, Chan, Zikovic & Evrim-Mandaci (2013) conducted a study to examine the impact of OBS activities on the performance of banks listed on Istanbul Stock Exchange in Turkey using panel data for the period 2001-2008. The study employed traditional market model. They found that both bank specific risks and foreign exchange rate risks are positively related with OBS

activities. The relation might serve as a warning to bank speculative action using OBS transactions in the market. The result also indicates that OBS activities due to its hedging perceptions improves bank stock returns but have a negative on return on equity. However, OBS activities do not a statistically significant impact on leverage or liquidity.

Ge (2006) conducted a study on the implication of the off balance sheet treatment of operating leases for future earnings and stock returns. Data were obtained from COMPUSTAT annual data of firms for the period 1998 – 2004. Using future earnings and stock returns as dependent variables while operating lease activities as independent variable, the study employed regression analysis. The result revealed that investors seem to incorrectly estimate the implications of OBS lease activities for future earnings because operating lease activities has a negative relationship with future earnings .

Irving & Smith (2014) examined off balance sheet arrangements and company performance during the recent financial crisis. Data were obtained from annual reports (foot notes) of companies in the CRSP monthly stock file cumulated across April 2006 – March, 2007 window. Using market –adjusted buy – and – hold returns and ROA as dependent variable while OBS arrangement as independent variables. The study employed regression analysis. The result revealed that OBS arrangements are negatively and significantly associated with company performance measures during the financial crisis. The study suggested that companies using OBS arrangements were exposed to more risk than companies not using off balance sheet arrangements.

Funq & Cheng (2004) conducted a study to examine the role of information complementarities and market competition in governing the diffusion of OBS financial innovations for a sample of

31 banks during the period 1990-2000 in the Hong Kong banking industry. The study employed two diffusion models based on OLS estimation to analyze unbalanced panel data set of 189 observations. Specifically, two OBS financial innovations are information complementarities if the adopting one lowers the uncertainty of adopting another. In addition, market competition may speed up the diffusion of OBS financial innovations because competitive banks are better able to capture the full profit potential from the successful innovations. The results suggest that information complementarities and market competition are the primary driving forces behind the diffusion process.

Casu & Girardone (2010) conducted a study to examine the relevance of OBS items in explaining productivity change in 5 European banking market over 1994-2000 using the non-parametric Malmquist model. The results indicated that exclusion of non-traditional activities leads to a misspecification of bank outputs. In particular, the inclusion of OBS items results in increase in estimated productivity levels for all countries under the study. However, the impact seems to be greater in technological change rather than efficiency change. Overall, results suggest that despite the uneven distribution of OBS between countries and among different institution in the same countries, these non-traditional activities are increasingly important and failure to account for them would lead to biased conclusions.

Scopelliti (2011) carried out a study to examine whether and how the increase in OBS exposures to credit derivatives may have affected the growth rate of loans over the period 1998-2008, also distinguishing different categories of loan using panel fixed-effect estimation and a panel VAR – analysis from the quarterly data of 39 US commercial banks. The results show that a rise in OBS credit exposures may have after some time lag a negative impact on the growth rate of bank lending due to the potential and actual losses related to OBS activities. However, the effect on

the single category of loans depends on their maturity; a positive impact on bank lending may arise for short term loans such as commercial and industrial loan while a negative effect is stronger for long term loans like mortgages and real estate loans.

Pasioras & Lozano-Vivas (2010) conducted a study to analyze the impact of OBS activities on banking productivity growth using unbalance data set of 4960 observations from 752 publicly quoted commercial banks operating in 87 countries to calculate their productivity growth for the period 1999-2006 using parametric approach: the study employed multi-product translog specification. The results reveal positive relation between cost and OBS activities and also the exclusion of OBS- activities have negative impact on profits to be reported by banks. On the overall, they argue that as bank engaged in OBS activities they experienced an increase in their costs which is however, counterbalanced by the generation of additional revenue, resulting in higher profits.

Lozano-Vivas & Duran (2012) conducted a study to examine OBS activities under adverse selection hypothesis for a sample of banks in the 27 member countries of the European Union during pre-crisis period 1996-2006 and crisis period 2007-2009. They blamed OBS activities for flooding the market with low-quality assets and contributing to spreading risk throughout the economic system. Empirically, this implies that OBS activities is expected to be negatively related to bank failure risks, whereas it is expected to be positively related to the quality of assets used for OBS operations, also it is found to be positively related with credit and liquidity risks

Work by Uzum & Webb (2007) find that the volume of securitization is negatively related to banks' capital ratios.

Chaudhry (1994) carried out a study to examine the impact of OBS activities on commercial banks exposure to market based risk of 135 BHCs listed on NYSE in US by utilizing a two-stage model for the period 1987-1991. The study employed OLS regression model using panel data obtained from FDIC annual call report data. He found that larger banks are more efficient in interest rate risk management as compared to smaller ones. Furthermore, unsystematic risks provide important risk related information which is significant from the point of view of regulators, managers, uninsured depositors and undiversified stockholders.

Ziadeh- Makati (2013) conducted a study to examine the extent to which U.S. Banks engage in OBS activities and possible implication of such engagement on bank-risk exposures and bank failure for the period 2001-2011. Given the heterogeneity of banks OBS activities, the study grouped OBS activities into three and study their alternative role on bank riskiness. The results show that different types of OBS activities impact differently on bank was exposures. Credit substitutes are found to enhance bank loan portfolio and bank performance while putting more pressure on bank liquidity. However, derivatives contracts whether used for hedging or speculating purposes, these contracts are found to implicate higher risk exposure specifically for smaller banks. For larger banks, engaging in derivatives activities has been found to have significant impact on the measures of risks.

Wolff & Papanikolaou (2013) studied how modern banking which gave birth to the OBS leverage activities affected the risk profile of 20 US banks as well as the level of systematic risk before and after the onset of the late 2000s financial crises during the period 2002-2012 using fixed effect model to analyze panel data collected from SIFIS database in US. The result reveals that leverage, both explicit and hidden off the balance sheet, increases individual risk of the

banking firms making them vulnerable to financial shocks. Reverse leverage on the other hand, is beneficial for individual banks health but is found to be harmful for financial stability.

Karim & Gee (2007) carried out a study to examine how OBS activities of locally owned commercial banks in Malaysia affected the performance of the bank's exposure to various forms of risks, bank profit, leverage and liquidity by conducting a panel regression analysis. The result indicated that only the market risk is significantly and positively related to OBS activities. According to them, this might be due to the fact that OBS activities were not the main sources of funds for these banks since the use of OBS items was still in its emerging stage. However, they found that stock returns were negatively related to OBS activities. There was no significant relationship between return on equity, leverage and liquidity ratio with OBS activities.

Lieu, Yeh & Chiu (2005) carried out a study to examine the impact of OBS activities on the cost efficiency of 46 Taiwanese commercial banks for the period 1998-2001 using stochastic cost curve method. The study employed panel data collected from Taiwan stock exchange to estimate and compare cost efficiency with or without OBS output. The study suggests that omitting OBS output in estimating the cost frontier function of banks results in underestimation of bank efficiency by about 5 percent. Cost efficiency and OBS activities are positively related to bank size. Banks with higher employee productivity are more cost efficient. Finally, the study concludes that economies of scope between loans and OBS output are practical.

Angelidis & Lyroudi (2009) conducted a study to examine the impact of OBS activities on the productivity of commercial banks in 11 EU countries for the period 1995- 2002 using DEA approach to calculate the Malmquist indices of total factor productivity change. The results show that productivity varies according to both approaches (with or without OBS items) because some

countries' productivity is enhanced while in others it is worsened. However, when OBS items are excluded as an additional variable, the predicted total factor productivity indices fit better than the actual total factor productivity indices.

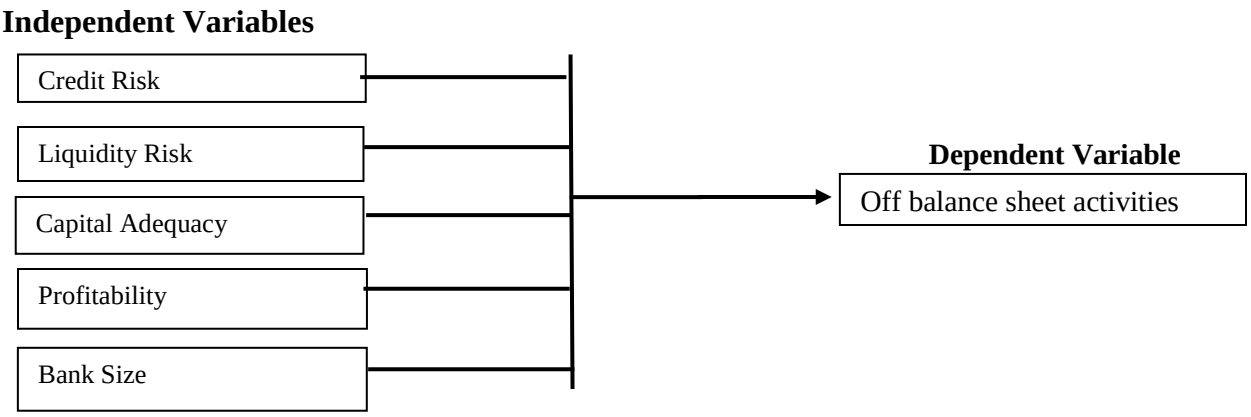
Jabbarzadeh, Morteza & Mohammed (2012) carried out a study to examine the effect of off-balance sheet financing on profitability and leverage ratio of listed commercial banks on Tehran stock exchange (TSE) for the period 2003-2010 using panel regression model. The study employed deductive- inductive method. The results revealed that off balance sheet financing hadn't increased profitability and leverage ratio.

Dadashi, Malihi, Vakilifard & Barati (2013) conducted a study to investigate the relationship between off balance sheet activities with ROE and size in exchange companies and Iranian banks using a sample of nine (9) banks listed on Tehran stock exchange for the period 2006-2010. The study employed regression model to examine the effects. A significant and positive relationship was found between off balance sheet activities and size, however, no significant relationship observed between off balance sheet activities and ROE as well as debt to equity ratio.

### 2.6 Conceptual Framework

Fraenkel & Wallen (2000) posited that most studies cast their problem statement within the context of a 'conceptual' or 'theoretical' framework. A description of this framework contributes to the study in at least two ways because it identifies research variables and clarifies relations among the variables linked to the problem statement. Conceptual framework sets the stages for presentation of the specific research question that drives the investigation being reported. It is used in this study to outline possible courses of action or to present a preferred approach to idea or thought.

**Figure 3.1: Conceptual Framework**




**Source: Authors' Proposed.**

## 2.7 Theoretical Framework

The theoretical framework upon which this study is based is securitization theory. Chaudhry (1994) define securitization as the process in which illiquid bank assets are pooled and latter sold to third parties. The growth of asset securitization can be traced to increasingly costly reserve and capital adequacy requirements. Ashcraft & Shuermann (2008) suggests that securitization may reduce bank risk since the traditional loan is converted into a stream of payments which has a strong resemblance to a bond. Thus, the assessment of risk for instruments with the characteristics of a bond makes risk reduction efforts easier. Furthermore, Johnson & Murphy (1987) assert that securitization keeps assets off balance sheet. But this process creates a contingent claims on balance sheet assets. Nevertheless, through diversification this process would lead to risk reduction. Off balance sheet activities may involve both credit risk and liquidity risk. But according to adverse selection hypotheses, it should be positively related to credit and liquidity risk but might be negatively related to other measure of risks (Teixeira, 2013). This is because of Information asymmetry between issuers and investors which lead to adverse selection problems. This theoretical scheme assumed that investors are risk averse; the

no trade result associated with adverse selection can be avoided in the off balance sheet market if high quality assets offered by high quality issuers are predominant. The study assumed that banks are risk neutral, informed agent of the problems; whereas off balance sheet counterparties e.g. an investor whose acquires securitized asset issued by a banking institution, play the role of less-informed, risk adverse agent who tries to avoid selecting low-quality assets (those with high non-payment probability and low liquidity) from low-quality banks (those with high probabilities of bankruptcy). This argument implied that counterparties in off balance sheet activities are opposite of risk-neutral agents ready to acquire the risk which banking institution want to get rid. Based on this, the following features are identified. First, the on-balance sheet assets used by banks to engage in off balance sheet activities are the most valuable for a risk-averse counterparty, i.e. the safest and most liquid assets. Thus, the off balance sheet activities worsen the risk positions of banks in terms of the default quality and liquidity of their on-balance sheet assets. Second, as a result of the contingent nature of most off balance sheet activities associated assets, investors value more highly off balance sheet items when the issuing banks signals a lower probability of going bankrupt and thus, lower risk of leaving those contingent claims unsatisfied. If we combined these two features, and considering the multiplicity of risks involved in defining a bank's risk position, the consequence is that off balance sheet activities of bank is differently related to different risk types. It should be positively related to credit and liquidity risk but might be negatively related to other measure of risks. Specifically, off balance sheet activities might be negatively related to risk measures that signal how safe a bank's portfolio is in general terms or how close to insolvency it is. Contrary to market discipline hypothesis: This argued that off balance sheet activities are uninsured dependent future claims which are related to other claims on the bank, banks with safer positions will engage more in off balance sheet

activities which will reduce the banks risk. Bank customers will value these claims more when banks are safer, therefore those banks which are already off balance sheet items issuers will have incentives to decrease their risk position and issue additional OBS items (Tamrat, 2013).

Furthermore, Khasawneh (2007) uttered that banks with high break down probabilities have greater moral hazard incentives to engage in OBS activities. It proposed that both underpriced fixed rate deposit insurance and capital requirements provided incentives to increase financial leverage through the issuance of off balance sheet items that are not subject to regulations. This hypothesis argues that capital constrained banks are projected to engage in more off balance sheet activities than less constrained banks. Besides, banks that are about to fail will prefer to have off balance sheet items that are out of accounting rules consideration which allow them book these activities' income immediately whereas income from the on-balance sheet items cannot be booked until the interest is earned. This also suggests that banks with low net interest income (low profitability) would speculate using derivatives, while banks with high net interest income will not hedge, reflecting lower usage of OBS products. Regulatory Tax Hypothesis: This hypothesis shaped a positive relation between banks' off balance sheet activities and regulatory taxes on on-balance sheet assets and liabilities. The regulatory taxes often impose a constraint on a bank's reserve, deposit insurance premium and capital. These constraints will encourage banks to substitute off balance sheet activities for on-balance sheet activities (Lozano-vivas & Duran, 2012).

# CHAPTER THREE
# RESEARCH METHODOLOGY

## 3.1 Introduction

This chapter presents the research design, population and sample size of the study, sampling procedure and design, data collection procedure, technique of data analysis, variables measurement, model specification and justification for the methods and techniques used in explaining and examining the bank specific attributes that influence off-balance sheet activities of sampled Deposit Money Banks for the period of the study.

## 3.2 Research Design

The research design employed in this study was correlation research design. The choice of the design was informed by its effectiveness in revealing cause and effect relationship between two or more variables and the impact of one variable on another. The study also adopted both historical and descriptive research. Historical research had aided the study with a good understanding of the previous empirical evidence on the study variables, from which the study was able to build its theoretical foundation; and provided the historical data used in the study. While descriptive research assists in describing, analyzing and interpreting the data collected from historical records of the sampled banks. Lastly, the study was informed by positivist's philosophical research paradigm, which suggests that the researcher is a passive operator with objective world view in the research process, thus does not have any influence on the research outcome.

## 3.3 Population and Sample Size of the Study

The population of this study included all the listed Deposit Money Banks on Nigerian Stock Exchange and they are sixteen (16) in numbers as at the year ended 31st December, 2014 (NSE Fact Book, 2014). The choice of the banking sector was informed by volume of their activities

and off balance sheet activities were clearly evidenced in Nigerian banking industry. The sample size of this study was computed based on Krejcie & Morgan (1970) sample size formula, which is presented thus:

$n= X^2N (1-P) \div d^2 (N-1) + X^2P (1-P)$

Where:

n = sample size

$X^2$= Chi-square value at d.f. of 1 and 95%confidence level (3.841)

N = Population size

P= Population proportion (assumed to be 0.50)

d = Degree of accuracy (expressed as a proportion, 0.05).

$n= X^2N (1-P) \div d^2 (N-1) + X^2P (1-P)$

$$\frac{3.841*16*0.5(1-0.5)}{0.05(16-1) + 3.841*0.50(1-0.5)}$$

$$\frac{15.364}{0.75+0.96025}$$

$$\frac{15.364}{1.71025}$$

n =8.98348

The sample of the study is nine (9) Listed Deposit Money Banks as adjusted from the above computations. Simple random sampling was the basic sampling method adopted in selecting the sample; this was because it allows equal representation. The list of the population and sample of the study is given in the appendix.

### 3.4 Sources and Methods of Data Collection

In this study, data were collected from secondary sources through the use of the Nigerian Stock Exchange (NSE) Fact Book and published annual reports and accounts of the nine sampled Deposit Money Banks in Nigeria for a period of six (6) years (2009 – 2014) representing 57% of the total population which met the required criteria for sampling. Secondary data was used in this study because of its objectivity, accuracy and nature of the variables under study. The data were collected on off balance sheet items, total assets, loan loss provision, total loans, net income, and equity among others.

### 3.5 Technique of Data Analysis

The study used the Ordinary Least Squares (OLS) estimation method with aid of multiple regression technique to test the panel data on bank specific attributes and off balance sheet activities of quoted DMBs in Nigeria. Stata 10 was used as tool for data analysis. This is because it was considered as user friendly application which provides sophisticated data analysis. The data was subjected to various tests. These robustness and diagnostics tests include: normality test for data, multicollinearity diagnosis, heteroscedasticity test, Shapiro-wilk test for normal data as well as the tolerance and Variance Inflation Factor (VIF) test were used to ensure reliability of the study results.

### 3.6 Variables Measurement

The study used one dependent and five independent variables. The dependent variable is off balance sheet activities, while the independent variables include credit risk, liquidity risk, Profitability, capital adequacy as well as bank size. Provided below are measurement of variables used in the study.

**Table 1: Variables Measurement**

| Variables | proxies/definition | Expected sign |
|---|---|---|
| **Dependent Variable** | | |
| **OBS activities** | This was measured as natural logarithm of risk weighted OBS items (Khasawneh, 2007; Elian, 2012) | |
| **Independent Variables** | | |
| **Credit risk** | This was measured by ratio of loan loss provision to total loans (Ziadeh-Maikati, 2013; Khasawneh& Al- khadash, 2014) | + or - |
| **Liquidity risk** | Liquidity risk was measured by ratio of loan to total Assets (Hassan &Khasawneh, 2009; Elian, 2012) | + or - |
| **Profitability** | Profitability is measured by ratio of net profit after tax to Total asset (Elian, 2012; Khasawneh& Al-khadash, 2014 | + or- |
| **Capital adequacy** | Capital adequacy was measured as ratio of total equity to total assets ( Khasawneh& Al- khadash, 2014) | + or - |
| **Bank size** | The size of the bank was measured by the natural logarithm Of the book value total assets (Chaudhry, 1994; Elian, 12) | + or- |

**Source: Compiled by Author, 2015.**

### 3.7 Model Specification

The model used in this study is mathematically express as: Off balance sheet activity is a function of bank specific attributes. This can be re-specified as off balance sheet activities = f (credit risk, liquidity risk, profitability, capital adequacy, bank size). The proposed model will take the following form base on the above functionality: thus,

$$\mathbf{OBSA_{it} = \beta_0 + \beta_1 CDR_{it} + \beta_2 LDR_{it} + \beta_3 ROA_{it} + \beta_4 CAR_{it} + \beta_5 SIZ_{it} + \mu_{it}}$$

Where:

$OBSA_{it}$= Off balance sheet activities.

$\beta_0$ = Intercept

$\beta_1$ - $\beta_5$ = Coefficient of the independent variables

$CDR_{it}$ = Credit risk.

$LDR_{it}$ = Liquidity risk.

$ROA_{it}$= Bank profitability.

$CAR_{it}$= Capital adequacy.

$SIZ_{it}$= Bank size.

$\mu_{it}$ = Residual or error term of bank ‘i’ in period‘t’.

# CHAPTER FOUR
# DATA PRESENTATION AND ANALYSIS

## 4.1 Introduction

This chapter presents the results of the analyzed data. It begins with the analysis of the samples using descriptive statistics. Correlation matrix was also carried out to determine the relationship between the dependent and independent variables. Regression was used to estimate the degree of impact between the independent variables (credit risk, liquidity risk, profitability, capital adequacy and bank size) and the dependent variable (off-balance sheet activities). It concludes with the discussion of the findings and policy implication.

## 4.2 Descriptive Statistics

Table 4.1 below presents the result of the descriptive statistics of variables, where the minimum, maximum, mean and standard deviations of the data are fully captured.

**Table 4.1: Summary of Descriptive Statistics**

| Variables | N | Min. | Max. | Mean | Std. Dev. |
|---|---|---|---|---|---|
| OBSA | 54 | 7.400 | 9.410 | 8.4270 | 0.43673 |
| CDR | 54 | 0.003 | 0.167 | 0.0415 | 0.02885 |
| LDR | 54 | 0.480 | 0.612 | 0.5412 | 0.02415 |
| ROA | 54 | -0.049 | 0.050 | 0.0153 | 0.01728 |
| CAR | 54 | 0.010 | 0.310 | 0.1561 | 0.06083 |
| SIZ | 54 | 8.260 | 9.640 | 9.0880 | 0.30241 |

**Source: Descriptive Statistics Result from Stata 10**

The data set indicated above contained a total of 54 observations for nine (9) quoted DMBs on the Nigerian Stock Exchange over the study period (2009-2014). Five independent variables were measured against one dependent variable. The dependent variable is OBS activities, and is measured by the natural logarithm of off- balance sheet items. The mean of the off- balance sheet activities is 8.427 with a standard deviation of 0.43673. This value ranges from 7.4 to 9.41. This signifies huge significant differences across the sample of listed DMBs operating in Nigeria. The

off balance sheet items are also said to witness a fast increase which need to be checked by the management of these banks.

Credit risk was measured with the ratio of loan loss provision to total loan and has a mean value of 0.0415 and standard deviation of 0.02885.This value ranges from 0.003 to 0.167. This indicated a moderate significant variation among the value of credit risk of quoted DMBs in Nigeria. The next explanatory variable was liquidity risk and it was measured as the proportion of total loan to total asset and it has a mean value of 0.5412 and a standard deviation of 0.02415. Its value ranges from 0.480 to 0.612. This signifies slight differences among the value of liquidity risk of quoted DMBs in Nigeria.

Profitability was measured by the ratio of net profit after tax to total asset, and has the mean value of 0.0153 and a standard deviation value of 0.01728. Its value also ranges from -0.049 to 0.05. The standard deviation of the sampled banks of profitability was slightly higher than the mean and this could be explained in the losses suffered by some of the sample banks. This implies that standard deviation of the sampled banks of profitability deviates from its mean value up to 0.20%.

Total equity to total asset was used in measuring banks' capital adequacy with a mean value of 0.1561 and a standard deviation value of 0.06083. This value ranges from 0.01 to 0.31. This result indicates a huge variation among the values of capital adequacy across the sample of listed DMBs in Nigeria.

Lastly, bank size was measured by the natural logarithm of total assets, and has a mean value of 9.0880, with a standard deviation of 0.30241. Its value ranges from 8.260 to 9.640. This implies significant differences across the sample of DMBs in Nigeria. This mean value of bank size is an

indication that the variable will impact significantly on off- balance sheet activities of the sampled banks as this will be reflected in the regression result.

The data set were normally distributed and it further substantiated the validity of the regression result. When the Shapiro-wilk test was conducted for testing the normality of the data, the outcome was consistent with the skewness and kurtosis tests conducted and it showed that the data were normally distributed (refer to appendix).

The standard deviations signify the contribution of the variables in the model. SIZ variable has a low contribution with highest standard deviation of 0.30241, whereas CAR, CDR and LDR have higher standard deviation than ROA. This signifies that ROA variable contributes most to the model. The result also shows that SIZ, CAR, CDR and LDR are a noisier measure of off balance sheet activities than ROA.

### 4.3 Robustness Tests

To enhance the validity of all statistical inferences drawn in this study, it was imperative that the study carried out the recommended robustness tests which include multicolliniarity, heteroscedasticity and hausman specification test.

**Multicolliniary test:** The study conducted this test in a bid to ascertain the relationships which exist between the explanatory variables, which will be unfavorable to the outcome of the study. Table 4.3 revealed that the relationships amongst the independent variables were observed to be insignificant except for two that was significantly related. This will not be a basis enough to say that there is multicollinearity except if the tolerance and the variance inflation factor (VIF) are above the required limit. The rule of thumb is that the tolerance value should be less than one and the VIF should be less than 10. The tolerance values of all the variables were less than one; this indicates that there is the presence of harmless multicollinearity. This is because; the closer

the tolerance value is to one, the greater the evidence that there is no collinearity between the explanatory and the explained variable. The VIF is another pleased test for multicollinearity. All the variables had VIF values of less than two, with bank size having the highest value of 1.92 and credit risk having the least value of 1.05 and overall mean of the VIF is 1.43, indicating absence of multicollinearity. For multicollinearity to produce poorly estimated regression, the VIF must lies between 5 and 10 (Kargi, 2007). The table 4.3 below showed this information fully.

**Table 4.2: Multicollinearity Test**

| Variables | VIF | Tolerance |
|---|---|---|
| SIZ | 1.92 | 0.519749 |
| LDR | 1.83 | 0.545562 |
| ROA | 1.21 | 0.824952 |
| CAR | 1.11 | 0.901878 |
| CDR | 1.05 | 0.954612 |

**Source: Stata Output**

**Heteroscedasticity test:** To test for heteroscedasticity, an important assumption of the classical linear regression model (assumption 4) needs to be heeded to. This assumption states that the disturbances μ appearing in the population regression function are homoscedastic. This means they all have the same variance. When the probability of the chi-square value is significant either at 1%, 5% or 10% level of significance, we therefore concluded that there is presence of heteroscedasticity and if otherwise, it showed the presence of homoscedasticity. The Breusch-Pagan/ Cook-Weisberg test for heteroscedasticity revealed a chi-square value of 1.84 with p-value of 0.1744 which is not significant at either 1%, 5% or10% level of significance (refer to appendix). This is an indication of homoscedasticity of the data within the study period. On this basis, the study can rely on the results obtained from the ordinary least square (OLS) estimator

but to validate this, the result from the Hausman specification test revealed a chi 2 value of 14.66 with p-value of 0.0119 that is statistically significant (i.e. the study reject REM). This implied that the test considered the random effect as not the most appropriate estimator. Therefore, the study run heteroscedasticity corrected panel regression (FGLS) which nearly gave the same result like pooled ordinary least square regression. Thus, in the absence of heteroscedasticity, pooled ordinary least square model was used for the study.

## 4.4 Test of Hypotheses

This part presents correlation matrix and regression results. It then discusses the findings in the light of previous studies.

### 4.4.1 Correlations Analysis

Table 4.3 below contains the correlation values between the explanatory variables and the explained variable as well as the independent variable amongst themselves. Asterisks are used to show the level of significance of the two-tailed Pearson correlation coefficient.

**Table 4.3: Correlation matrix**

| Variables | OBSA | CDR | LDR | ROA | CAR | SIZ |
|---|---|---|---|---|---|---|
| OBSA | 1.0000 | | | | | |
| CDR | -0.2164 | 1.0000 | | | | |
| | 0.1160 | | | | | |
| LDR | 0.7069* | -0.1583 | 1.0000 | | | |
| | 0.0000 | 0.2531 | | | | |
| ROA | 0.4581* | -0.0076 | 0.3000* | 1.0000 | | |
| | 0.0005 | 0.9565 | 0.0275 | | | |
| CAR | 0.3729** | -0.1421 | 0.2126 | 0.2474 | 1.0000 | |
| | 0.0055 | 0.3054 | 0.1228 | 0.0713 | | |
| SIZ | 0.8362* | -0.1473 | 0.6665* | 0.3717* | 0.2140 | 1.0000 |
| | 0.0000 | 0.2877 | 0.0000 | 0.0057 | 0.1201 | |

**Source: Stata Output**

*= significant at 1% level, ** =significant at 5% level, ***= significant at 10% level.

Table 4.3 above indicated that credit risk is negatively correlated with off- balance sheet activities of quoted DMBs in Nigeria up to 22% but it is insignificant at 10%. It showed that

credit risk and off balance sheet activities move inversely. It can be explained that increased in off balance sheet activities, decreased credit risk of DMBs in Nigeria. Banks' liquidity risk yielded a positive relationship with off balance sheet activities by 71% and the relationship was significant at 1%, level of significant. Liquidity risk and off balance sheet activities move in the direction. It showed that as off balance sheet activities of DMBs in Nigeria increased, the liquidity would as well increase by 71%. Profitability is positively correlated to off balance sheet activities of DMBs in Nigeria by 46% and it is significant at 1%. It showed that the explained and the explanatory variable move in the same direction. It implies that, banks make more profit, as it engaged more in off balance sheet activities. Capital adequacy and off balance sheet activities of DMBs in Nigeria are positively related by 37% and the relationship was significant at 5%. It showed that, capital adequacy and off balance sheet activities of DMBs in Nigeria moves in the same direction. This implies that bank increased its off balance sheet activities when there is increase in their capital. The following explanatory variable is bank size which is measured by natural logarithm of total asset is positively and significantly related to off balance sheet activities of listed DMBs in Nigeria up to tune of 84% and at 1% significant level. It showed that bank size and off balance sheet activities moves in the same direction. It can be explained that the larger size of the bank, the more it can impact positively on off balance sheet activities of DMBs in Nigeria. Four of the five explanatory variables are positively correlated with the explained variable of DMBs in Nigeria. It shows that liquidity risk, profitability, capital adequacy and bank size move in the same direction with off balance sheet activities, while credit risk move in the opposite direction to off balance sheet activities and the relationship was insignificant

### 4.4.2 Regression Result

The results of Ordinary Least Square regression are shown in table 4.4. Regression analysis has been further applied to test the significance of the model and the explanatory power of the independent variables. The Regression result of the dependent variable (off-balance sheet activities) and the independent variables (credit risk, liquidity risk, profitability, capital adequacy and size) as well as the relationships between the explanatory variables are captured in the model below.

$$\mathbf{OBSA_{it} = \beta_0 + \beta_1 CDR_{it} + \beta_2 LDR_{it} + \beta_3 ROA_{it} + \beta_4 CAR_{it} + \beta_5 SIZ_{it} + \mu_{it}}$$

**TABLE 4.4: Summary of Regression Results (OLS)**

| Variables | Coefficient | T-Value | P-Value |
|---|---|---|---|
| -Constant | -1.7582 | -1.84 | 0.072 |
| CDR | -1.0591 | -1.03 | 0.307 |
| LDR | 4.1562 | 2.56 | 0.014 |
| ROA | 3.3018 | 1.79 | 0.080 |
| CAR | 1.1150 | 2.23 | 0.031 |
| SIZ | 0.8533 | 6.43 | 0.000 |
| $R^2$ | | | 0.7895 |
| F-Statistic | | | 36.00 (0.0000) |
| Hettest: Chi2 | | | 1.84 (0.1744) |
| Mean VIF | | | 1.43 |

**Source: STATA Output**

Table 4.4 shows that the functional relationship between the dependent and independent variables is:

$$\mathbf{OBSA_{it} = -1.7582 - 1.0591 CDR_{it} + 4.1562 LDR_{it} + 3.3018 ROA_{it} + 1.1150 CAR_{it} + 0.8533 SIZ_{it} + \mu_{it}}$$

The table clearly showed that, the $R^2$ which is the multiple co-efficient of determination gives the percentage or proportion of total variation in the dependent variable (Off-balance sheet activities) measured by natural logarithm of OBS items explained by the independent variables jointly.

Hence, the result of $R^2$ value of 79% signifies that of total variation in Off-balance sheet activities is caused by credit risk, liquidity risk, profitability, capital adequacy and size of quoted DMBs in Nigeria; while the remaining 21% is caused by other factors outside the model of this study. This gives a signal that the model is fit and the explanatory variables were carefully selected. The implication of this is that, when there is change in bank specific attributes, Off-balance sheet activities of bank will also be affected by the change directly.

The F-statistic value of 36.00 revealed that the model is statistically significant at the level of 0.0000 (1%), showing the applicability of the overall model. This implied that there is significant possibility; the relationship amongst the variables was not due to mere coincidence. This provided a basis for rejecting all the hypotheses formulated jointly.

**4.4.2.1 : Credit Risk and Off-Balance Sheet Activities**

The regression result revealed that credit risk measured as ratio of loan loss provision to total loan of quoted DMBs in Nigeria has a t-value of -1.03 and a coefficient value of -1.06 which is insignificant at the level of 0.307. On the basis of this outcome, the study therefore failed to reject hypothesis one of the study which states that credit risk has no significant relationship with off-balance sheet activities of DMBs in Nigeria. This result indicated that credit risk is negatively and insignificantly explaining and influencing the OBS activities of DMBs in Nigeria. This implied that increase in Off-balance sheet activities, decreases credit risk of DMBs in Nigeria. The inverse relationship explains that if the off balance sheet activities of Nigerian quoted banks increase by 1%, credit risk will decrease by 1.06. This result is contrary to the argument in adverse selection hypothesis that predicted a positive relation between credit risk and off balance sheet activities. This outcome is therefore inconsistence with the study prior expectation that off balance sheet activities worsen credit risk position of DMBs in Nigeria. This

finding is in line with the work of Tamrat (2013), Teixeira (2013), Buckova (2010), but contradicts those of Sayilgam & Yildirim (2009); Nachane & Ghosh (2012) that found credit risk to be positively and significantly related to off balance sheet activities.

#### 4.4.2.2: Liquidity Risk and Off-Balance Sheet Activities

The regression result revealed that liquidity risk which was measured by loans to total asset of quoted DMBs in Nigeria has a t-value of 2.56 and a coefficient value of 4.16 which is significant at the level of 0.014. Therefore, the study rejects the null hypothesis of the study which states that liquidity risk has no significant relationship with off-balance sheet activities of quoted DMBs in Nigeria. This implies that liquidity risk of quoted DMBs in Nigeria is a positive and significant explanatory variable in explaining and predicting the off-balance sheet activities of quoted DMBs in Nigeria. If the off balance sheet activities of bank increases by 1%, the liquidity risk would increase by 4.16. This outcome therefore consistence with the study priori expectation that increase in off-balance sheet activities would raise the liquidity risk position of DMBs in Nigeria. This is supported by the argument in adverse selection hypothesis. The finding is consistent with those reported by: Khasawneh (2007), Teixeira (2013), Lozano-vivas & Duran (2012) but contradicts those of Hassan & Khasawneh (2009); Aktan, Chan, Zikovic & Evrim-mandaci (2013) that found liquidity risk to be negatively and insignificantly related to off balance sheet activities.

#### 4.4.2.3: Profitability and Off-Balance Sheet Activities

Profitability was measured using net profit after tax to total asset and the result of the regression revealed that profitability of quoted DMBs in Nigeria has a t-value of 1.79 and a beta value of 3.3018 which is significant at the level of 0.080. On this basis, the study rejects the earlier null hypothesis formulated which states that profitability has no significant relationship with off-

balance sheet activities of DMBs in Nigeria. The finding indicated that the profitability of quoted DMB is positively and significantly explaining and influencing the off-balance sheet activities of quoted DMBs in Nigeria. This shows that profitability and off-balance sheet activities of the DMBs in Nigeria move in the same direction; that is the higher the profitability seeking, the higher the off-balance sheet activities of banks in Nigeria. This indicated that for every 1% increases in profitability seeking, the off-balance sheet activities of DMBs would increased by 3.30. This result supported the study earlier expectation that the profitability seeking of quoted DMBs is the likely drive of off balance sheet activities in Nigeria; this is consistence with the argument in moral hazard hypothesis. The finding is in tandem with those related by; Teixeira (2013), Khasawneh & Alkhadash (2014), Hassan & Khasawneh (2009), Khasawneh (2007) and contradicts those of Elian (2012), Buckova & Slova (2010), Pasioras & Lozano-vivas (2010), that found profitability to be negatively related to off balance sheet activities.

#### 4.4.2.4: Capital Adequacy and Off-Balance Sheet Activities

Capital adequacy of Nigerian quoted DMBs was measured by the ratio of total equity to total asset and the result showed that it has a t-value of 2.23 and co-efficient value of 1.1150 with a significant value of 0.031. On the basis of this, the study rejects the null hypothesis of the study which states that capital adequacy has no significant relationship with off-balance activities of DMBs in Nigeria. This means that capital adequacy of the bank is positively and significantly in explaining and influencing the off-balance sheet activities of Nigeria quoted banks. The significant level of 5% shows that the higher the value of capital adequacy, the higher the off-balance sheet activities of Nigerian quoted banks. The positive effect of capital adequacy on off balance sheet activities implies that for every 1% increases in capital adequacy of Nigerian quoted banks, it will caused the off balance sheet activities to grow by 1.1150. This finding

contradicts the argument in moral hazard hypothesis that capital constrained banks are more likely to engage in Off-balance sheet activities but supported the argument in regulatory tax hypothesis. This finding contravene the study earlier expectation that capital constrain is the likely drive of off balance sheet activities in Nigerian quoted banks but supports avoidance of regulatory capital requirement. The finding contradicted those reported by: Pavel & Phillip (1987), Khrisat, Khrawish & Khasawneh (2012) and supported those reported by: Teixeira (2013), Elian (2012), Khasawneh (2007) that found capital adequacy to be positively related to off balance sheet activities.

#### 4.4.2.5: Bank Size and Off-Balance Sheet Activities

The regression result revealed that the bank size measured by the natural logarithm of total assets of quoted DMBs in Nigeria has a t-value of 6.43 and a coefficient value of 0.8533 with a significant level of 0.0000. On this basis, study rejects the null hypothesis of the study which states that bank size has no significant relationship with off-balance sheet activities of quoted DMBs in Nigeria. This signifies that size of Nigerian banks is positively and significantly explaining and influencing the off-balance sheet activities of the aforesaid banks. The positive relationship between bank size and Off-balance sheet activities implies that for every 1% increase in size, off balance sheet activities will as well increase by 0.85. That is the higher the size of the bank which is measured by natural logarithm of total assets, the higher the off-balance sheet activities of Nigerian quoted banks. This outcome is therefore consistence with our previous expectation; larger bank are likely to enjoy higher scale and scope of economies, and thus produce at lower cost and be more efficiency that can smaller banks which would have positive impact on off balance sheet activities. The result confirms those of the following

researchers: Elian (2012), Khrisat, Khrawish & Khasawneh (2012), Khasawneh (2007), Nachane & Ghosh (2012), Lieu, Yeh & Chiu (2005).

### 4.6 Discussion of Findings

The findings of this study enhance a better understanding of the right mix of bank specific attributes as it will impact off- balance sheet activities of quoted DMBs in Nigeria. The study focused basically on credit risk; measured by the ratio of loan loss provision to total loan, liquidity risk; measured as ratio of total loan to total asset, profitability; calculated by ROA ( net profits after tax to total asset), capital adequacy; measured as ratio of total equity to total asset and bank size; measured by the natural logarithm of total asset held by the banks, all as the independent variables and off- balance sheet activities measured by the natural logarithm of OBS items, as the dependent variable. All these factors were put to test in the order to ascertain the best mix that can explain and influence upon off- balance sheet activities of Nigerian quoted DMBs.

Credit risk showed a negative and insignificant impact on the off- balance sheet activities of Nigerian quoted DMBs. This implies that off- balance sheet activities is not prompted by credit risk management considerations as it is statistically insignificant, although, there is inverse relationship between off balance sheet activities and credit risk. This might be caused by increase in nonperforming loans which decrease creditworthiness of bank and this will decrease the amount of off balance sheet activities. This supports the findings of Tamrat (2013); Khasawneh & Hassan (2009) but contradicts that of Lozano-vivas & Duran (2012); Sayilgam & Yildirim (2009). Based on the empirical analysis, the result showed that liquidity risk is significant and positive in explaining and influencing off- balance sheet activities of quoted DMBs in Nigeria. This implies that increase in liquidity risk will create an incentive for banks to hedge using off

balance sheet activities (Khasawneh, 2007 & Teixeira, 2013). This also indicated economies of scope between loan and off- balance sheet activities, suggesting that banks would issue more OBS items to minimize the resulting risk generated from loans. In sum, as the liquidity risk increases, then risk management instruments might be needed to hedge against this risk. Therefore, off balance sheet activities is encouraged by liquidity risk management consideration because it is statistically significant.

Furthermore, the effect of profitability on off- balance sheet activities was found to be positive and significantly in explaining and influencing off- balance sheet activities. This implies that, profitability is considered a measure for creditworthiness as viewed by customers. This confirmed the findings of Khasawneh & Al-Khadash (2012); Teixeira (2013) but contradicts the findings of Irving & Smith (2014). Profitability will increase the customers' valuation of the bank which will serve as incentives to work with profitable banks. In addition, capital adequacy result showed a positive and significant effect on off- balance sheet activities of Nigerian quoted DMBs. This implies that capital adequacy tend to increase the off- balance sheet activities of Nigerian quoted DMBs. Off-balance sheet activities are expected to be larger for banks with higher capital adequacy ratio since these banks are more creditworthy therefore clients would place more trust towards the performance of such banks. Therefore, an argument can be made that off balance sheet activities used to reduce capital requirement since they are free from capital adequacy restriction. This result is in consistent with the findings of Pavel & Philis (1987); Teixeira (2013) but contradicts the findings of Elian (2012); Khasawneh & Khrawish (2012). The result of the bank size revealed that, there is positive and significant impact of bank size on off- balance sheet activities of quoted DMBs in Nigeria. This implies that as the banks grows in size; the prospect of its off- balance sheet activities increases. The positive and

significant impact of bank size is reflecting the economies of scale influence on off balance sheet activities in Nigeria. Growth in size enables banks to attend large status which will give them so many advantages like; lower cost of production and their riskiness will be minimal. These large banks may almost utilize all its potentiality and as such, they tend to engage more in off- balance sheet activities. This supports the findings of Khasawneh (2007), Elian (2012) & Dadashi *et al* (2014).

Lastly, off- balance sheet activities in Nigerian banking sector may be considered as risk increasing activities rather than risk decreasing activities. This finding may be attributed to lower engagement in speculating and hedging activities. The study will have implication on the management team of Nigerian quoted DMBs by outlining some amongst the bank specific attributes that impact off- balance sheet activities. This will go a long way in helping the managers identify those important attributes and know how to improve on them so that clients will be motivated to continue business.

# CHAPTER FIVE
# SUMMARY, CONCLUSIONS AND RECOMMENDATION

## 5.1 Summary

This study was conducted to assess the relationship between bank specific attributes and off-balance sheet activities of quoted Deposit Money Banks in Nigeria for the period of six (6) years covering 2009 to 2014, for a sample of 9 listed DMBs in the above mentioned sector. A panel regression model was adopted for the purpose of explaining and predicting the effect of bank specific attributes on off- balance sheet activities of quoted DMBs in Nigeria. The study focused on five explanatory variables (credit risk, liquidity risk, profitability, capital adequacy, and bank size) as proxy for the bank specific attributes and one dependent variable which is off- balance sheet activities of quoted DMBs in Nigeria.

In analyzing bank specific attributes and off- balance sheet activities in the aforesaid banks, the study made use of the ordinary least square (OLS) regression to investigate the impact. The outcome from the OLS regression results suggested that four out of the five explanatory variables (liquidity risk, profitability, capital adequacy, and bank size) have positive and significant relationship with off- balance sheet activities of quoted DMBs in Nigeria, while credit risk is negatively and insignificantly impacting off- balance sheet activities of the banks.

The study provides additional literature in the field of bank specific attributes and off- balance sheet activities. More so, the outcome of this study will help managers, finance experts, regulators as well as investors with the requisite insight into the interplay between and amongst various banks' factors in determining the off- balance sheet activities in Nigeria.

## 5.2 Conclusions

In view of the findings of this study, the following conclusions are made:

First and foremost, credit risk revealed a negative but insignificant relationship with off- balance sheet activities of Nigerian quoted DMBs. Therefore, the study concludes that off- balance sheet activities are not prompted by credit risk management consideration. This is in line with the finding of Tamrat (2013); Khasawneh & Hassan (2009) who argued that the negative and insignificant effect of credit risk on OBS activities shows that banks do not use OBS activities to compensate for bad loans but it contradicts the findings of Sayilgam & Yildirim (2009); Lozano-Vivas (2012). Secondly, liquidity risk of quoted DMBs in Nigeria has positive and significant impact on off- balance sheet activities. Therefore, the study concludes that off- balance sheet activities are encouraged by liquidity risk management consideration. This support the findings of Khasawneh (2007); Khasawneh & Hassan (2009); Nachane & Ghosh (2002) who posited that bank engage more in OBS activities to reduce their risk resulted from loans but contradict the findings of Tamrat (2013).

Furthermore, profitability revealed a positive and significant relationship with off- balance sheet activities of Nigerian quoted DMBs. The study concludes that the off- balance sheet activities of quoted DMBs in Nigeria is driven by profitability consideration; meaning that the more profitability seeking of a bank is, the higher its penchant to engage in off- balance sheet activities. This confirms the work of Khasawneh (2007); Khasawneh & Hassan (2009); Khasawneh & Al-Khadash (2014); Ma'in, Misni & Mat-isa (2015) but contradict Elian (2012). More so, the banks' capital adequacy showed positive and significant impact on off- balance sheet activities. The study concludes that banks engage in off- balance sheet activities to avoid regulatory capital requirement. The study also concluded that banks with higher capital ratios

would be more creditworthy and clients would place more trust towards the performance of such banks. The evidences in this study are consistent with the work of Khasawneh (2007); Elian (2012); Teixeira (2013) but contravene the work of Khrisat, Khrawish & Khasawneh (2013); Tamrat (2013); Ma'in, Misni & Mat-isa (2015).

Lastly, there was positive and significant relationship between the bank size and off balance sheet activities of quoted DMBs in Nigeria. Bank size plays a significant role in off- balance sheet activities of DMBs in Nigeria. Larger banks engage more in off- balance sheet activities than the smaller banks. This explains a situation whereby banks that have more assets are engaging more in off- balance sheet activities as compared to a small bank. This is consistent with the work of Elian (2012); Khrisat, Khrawish & Khasawneh (2012); Tamrat (2013) but rejected the position of Khasawneh &Hassan (2009) as their findings do not fit the Nigerian environment.

## 5.3 Recommendations

Based on the findings of this study, it is recommended that;

1. The management of quoted DMBs in Nigeria should reduce the level of their credit risk exposure; this could be achieved by including off balance sheet activities in the risk management process of the bank and expected losses should be calculated. This can be done by creating a provision of off balance sheet commitments which would be sufficient for the potential loss of off balance sheet activities. This is because the study revealed a negative and insignificant effect of credit risk on off balance sheet activities.
2. There is need for education and incentive to develop derivatives to manage the increasing liquidity risks of DMBs in Nigeria. This is because the finding of the study revealed a positive and significant effect of liquidity risk on off balance sheet activities.

3. Prudential authorities should focus to liquidity management practices, where banks need to re-evaluate its off- balance sheet positions as part of their overall liquidity management strategies, not so much on off- balance sheet activities for securing fee income.
4. The management of quoted DMBs in Nigeria should increase their assets; this could be done by enhancing their current assets because off balance sheet investors are likely to be interested in liquid assets of banks and expand the scope of their activities in order to increase their size. This is because it impact positively and significantly on off- balance sheet activities of quoted DMBs in Nigeria.
5. The management of quoted DMBs in Nigeria should increase their profitability, suggesting that DMBs should handle off- balance sheet activities for securing fee and commission income. This could also be done by engaging in speculating and hedging activities using derivatives.
6. Capital adequacy of DMBs in Nigeria should be increased by including some OBS items in calculating a risk based capital requirement. This would enhance the creditworthiness of the sample banks and clients would place more confidence towards the performance of such banks
7. Bank policy makers in Nigeria should pay cautious attention to these activities and monitor their use.

## 5.4 Limitations of the Study

The study is associated with the following limitations;

I. The study was strictly ex post facto, not experimental in nature. As such, the link between the explanatory and the explained variables was only based on priori expectation

II. Some of the variables used in the study have alternative ways of measurement which may give rise to different result. There is still other variables which the study does not cover, e.g. competition, market pressure, market power, etc. as well as macroeconomic variables such as GDP, inflation, interest rates among others.

III. Effects of Inflation: the accounting data used is based on historical cost concept; they were not adjusted for inflation. These data are distorted as a result of the uncontrollable inflation the economy is experiencing. Thus, the result obtained may not give accurate position of the banks in the current time.

**5.5 Areas of Further Research**

This study assess the relationship between bank specific attributes and off- balance sheet activities of Nigerian Quoted DMBs and has paved way for further researches in the following areas:

I. The same research can be conducted using firms from other sector of the economy. These sectors may include; insurance firms, pension fund provident among others.

II. Additional variables on bank specific attributes can be added such as; tax, deposit insurance premium and others as well as macro economic factors can be added.

# References


Aderson, R. & Gasco, C. (2009): "The Commercial Paper Market, the Fed and the 2007- 2009 Financial Crisis." *Federal Reserve Bank of St Louis Review,* 91(6):589-612

Aderson, R. (2009): "Bankers' Acceptances: Yesterday's Instrument to Restart Today's Credit Markets?" Economic Synopsis, *Federal Reserve Bank of St. Louis Review*, 5(2):23-27.

Adidu, F., Akintoye, I. & Owojori, A. (2011): "The Challenges of Risk Management in Nigerian Banks in the Post Consolidation Era". *Journal of Accounting and Taxation,* 3(2):23-31.

Aktan, B., Chan, G., Zikovic, S. & Evrim-Mandaci, P. (2013): "Off-Balance Sheet Activities impact on Commercial Banks Performance: An emerging market perspective." *EkonomskaIstrazivanja* – Economic Research, 26(3):117-132.

Angelidis, D. & Lyroudi, K. (2005): "The Magnitude of Off-Balance Sheet Activities for the Valuation of Banking productivity", Working Paper, International Conference on Finance, Copenhagen-Denmark, Sept. 2-4.

Anthony, M. (2008): "Commercial Bank Risk Management: An Analysis of the Process." Financial Institute Centre, Wharton School.

Ashcraft, B & Schuermann, T. (2008): "Understanding the Securitization of Subprime Mortgage Credit." *Federal Reserve Bank of New York Staff Report No.* 318.

Barrel, R., Davis, E., Liadzec, I. & Karima, D. (2012): "Off-Balance Sheet Exposures and Banking Crises in OECD Countries." *Economics and Finance Working Paper: Brunel University.*

Basel Committee on Banking Supervision (1999): "Principles for the Management of Credit Risk." CH- 4002 Basel, Switzerland Bank for International Settlements

Bennett, B. (1986): "Off Balance Sheet Risk in Banking in the case of Standby letter of Credit." *Economic Review*, Federal Reserve Bank of San Francisco, 19-29.

Boot, W. & Thakor, A. (1991): "Off- Balance Sheet Liabilities, Deposit Insurance and Capital Regulation." *Journal of Banking and Finance,* 15(4): 825-846.

Brewer, E. & Lee, C. (1986): "How the Market Judges Bank Risk." *Economic Perspective,* Federal Reserve Bank of Chicago, 10(6): 25-31.

Browbridge, M. (1998): "The Causes of Financial Distress in Local Banks in Africa and Implications for Prudential Policy." UNCTAD OSG/DP/132.

Brunnermeier, M. & Pederson, L. (2009): "Market Liquidity and Funding Liquidity." *Review of Financial Studies,* 22(6): 2201-2238.

Buckova, V. (2012): "Off Balance Sheet Activities and the Assessment of Off-Balance Sheet Credit Risk management in the banking sector of the Czech Republic." *Journal of Banks and Bank System:* 7(3): 17-24.

Buckova, V. & Slova, K. (2010): "Off-balance Sheet Activities of the Czech Banking Sector." *Journal of Banks and Banking Systems,* 13-24.

Calmes, C & Theoret, R. (2010): "The Impact of Off-balance Sheet Activities on Bank Returns: An application of the ARCH-M to Canadian data." *Journal of Banking and Finance*, 34:1719-1728.

Calmes, C. (2004): "Regulatory Changes and Financial Structure: the case of Canada." *Swiss Journal of Economics and Statistics,* 140: 1-35.

Casu, B. & Garardone, K. (2010): "An Analysis of the Relevance of Off- balance Sheet Items in explaining Productivity Change in European Banking." Available at: http://www.cass.city.ac.uk/confrence/mmf2004/files/Giradone%26casu.pdf

Central Bank of Nigeria (2010), "The Nigerian Banking Industry: What Went Wrong and the Way Forward." Annual Convocation Ceremony of Bayero University, Kano-Nigeria.

Central Bank of Nigeria (2013): "Guideline Notes on the Calculation of Capital Requirement for Credit Risks: A Standardized Approach." Available at www.cenbank.ng.org

Central Bank of Nigeria (2014): "Revised Guidelines for Finance Companies in Nigeria: A Standardized Approach." Available at www.cenbank.ng.org

Chaudhry, M.K. (1994), "Commercial Banks' Off-Balance Sheet Activities and their Relationship with Market-Risked Based Measures." 4th AFIR International Colloquium, Orland, 1241-1274.

Dadashi, I., Malihi, S., Vakilifard, H. & Barati, M. (2013): Investigations the Relationships between Off Balance Sheet Activities with Return on Equity and Size in Exchange Companies and Iranian banks. *Technical Journal of Engineering and Applied Sciences,* 3(21); 2841-2844.

Eduardus, T., Hermeindito, P. & Suprinyatna, M. (2007): "Corporate Governance, Risk Management and Bank Performance: Does type of ownership matters?" EADN working paper no. 34

Elhelaly, M.N. (2014): 'Related Party Transactions, Corporate Governance and Accounting Quality in Greece.' *Aston university, Doctor of philosophy student thesis*

Elian M. (2012): "Determinants of Off-Balance Sheet Business in the case of GCCC Banking Sector." *International Journal of Banking and Finance,* 9(3): 46-63. Available at online.http:/epublications.bond.edu/au/ijbf/vol9/vol1/4.

Elizabeth, C. (2011): "Determinants of Off Balance Sheet Usage in Private Banks." *Studies in Economies and Finance,* 28(4):248-259. Available at http//dx.doi.org/10.1108/1086737111171528

Fraenkel, J. & Wallen, N. (2000): "How to Design and Evaluate Research in Education."4th ed. New York, McGraw- Hill.

Fung, M. & Cheng, A. (2004): "Diffusion of Off-balance Sheet Financial Innovation: Information Complementarities and Market Competition." *Pacific Basin Finance Journal,* 12(5): 525-540.

Gastineau, L. (1992): "Dictionary of Financial Risk Management" Swiss Bank and Corporation Chicago.

Ge, W. (2006): " Off-Balance Sheet Activities, Earnings Persistence and Stock Prices: Evidence from Operating Lease. Available at http://www.sec.gov/news/studies/soxoffbalancerpt.pdf

Hahm, j. (2008): "Determinants and Consequences of Non Interest Income Diversification of Commercial Banks in OECD Countries." *Journal of International Economies Studies,* 12(1):89-94

Haq M. & Heaney, R. (2012): "Factors Determining European Bank Risk" *Journal of International Financial Markets, Institutions and Money,* 22(4) 965-718.

Khasawneh, A. & Hassan, K. (2009): "The Determinants and Policy Implication of Off-Balance Sheet Activities in MENA Countries Commercial banks". *Economic Research Forum,* 1-31.

Heffernan, S. (1996): "Modern Banking in Theory and Practice." John Willey and Sons, Chichester.

Hull, J. (1989), "Assessing Credit Risk in a Financial Institutions' Off-balance Sheet Commitments. *Journal of Financial and Quantitative Analysis, 24(4):489-501.*

Instefjord, N. (2005): "Risk and Hedging: Do Credit Derivatives Increase Bank Risk?" *Journal of Banking and Finance,* 29(2):333-345.

Irving, J.H. & Smith, K.J. (2014): "Off Balance Sheet Arrangement and Company Performance during the Recent Financial Crisis." *Journal of economy survey,* 4(4); 73-79

Jabbarzadeh, K., Morteza, M. & Mohammed, S. (2012): "The Effect of Off-Balance Sheet Financing on Profitability and Leverage Rations". Business Intelligent Journal, 5(1): 85-95.

Jensen, M.C & Meckling, W.H (1976): "Theory of Firm: Managerial Behavior, Agency Costs and Ownership Structure." *Journal of Financial Economies,* 3(4); 355-360.

Kargi, H.S. (2007): "The Impact of Dividend Policy on the Value of Petroleum Marketing Firms in Nigeria. *Unpublished Master Students' thesis*, Ahamadu Bello University, Zaria-Nigeria.

Kargi, H.S. (2011): "Credit Risk and the Performance of Nigerian Banks" Ahamadu Bello University, Zaria-Nigeria.

Karim, M. A. & Gee, C.S. (2007): "Off-Balance Sheet Activities and Performance of Commercial Banks in Malaysia". *The ICFAI Journal of Financial Economics,* 5(4):67-80.

Khambata, D. & Badgi, R. (2003): "Off-Balance Sheet Credit Risk of the Opt 20 Japanese Banks." Journal of International Business Regulation, 5, 57-71

Khasawneh, Y. & Hassan, K. (2010): "The Risk of Off-Balance Sheet Derivatives in US Commercial Banks." Networks Financial Institute Working Paper 2009.

Khasawneh, A. & Al-kahadash, H. (2014): "Risk and Profitability in Middle East and North Africa Banking System: An Examination of Off-balance Sheet Activities. The Interntional Journal of Bussiness and Finance Research, 8(3); 13-28.

Khasawneh, Y. (2007): "Determinants of Off-Balance sheet Banking Risk*:* The U.S and International Evidence.*"* University of New Orleans Theses and Dissertations: paper 1076.

Khrisat, F., Khrawish, A., & Khasawneh, Y. (2012) "*The* Determinants of Off Balance Sheet Activities in Jordan Banking System: Panel Data Analysis." *European Journal of Economics, Finance and Administrative Science*, 47.

Klaus, S. & Martins, C. (2006): "Banking Competition and Capital Ratios." The XVth Tor Vergata Conference, the Paris Finance.

Krejcie, R. & Morgan, D. (1970): "Determining Sample Size for Research Activities." *Journal of Educational Psychology and Measurement*, 30 (1): 607-610.

Kumar, M. &Yadav, G. (2013): "Liquidity Risk Management in Banks: A Conceptual Framework." *AIMA Journal of Management and Research*, 7(2): 2-12.

Lieu, P., Yeh, T. & Chiu, Y. (2005): "Off-Balance Sheet Activities and Cost Inefficiency in Taiwanese Banks." The service Industries Journal, 25 (7):925-944.

Lipe, R. (2001): "Lease Accounting Research and the G4 + 1 Proposal." *Accounting Horizons* 15(3): 299 – 310

Lozano-Vivas, A. & Duran, M.A. (2012): "Off-Balance Sheet Activity under Adverse Selection: *The European* Experience." *Journal of Economic Behavior and Organization*, Available at http://dx.doc.org/10.1016/j.ebo.2012008

Ma'in, M., Misni, L. & Mat-isa, S (2015): "Off Balance Sheet Income Activities for Islamic and Conventional Banks in Malaysia." *Journal of Emerging Economies and Islamic Research,* 3(3): 1-10.

Michalak, T. & Uhde, A. (2012): "Credit Risk Securitization and Bank Soundness in Europe." *The Quarterly Review of Economics and Finance,* 32(1): 1452 – 1459.

Mikati–Ziadeh, N. (2013): "Bank Risk Exposure, Bank Failure and Off Balance Sheet Activities: An Empirical Analysis for U.S. Commercial Banks. University of Limoges, France. Limoges cedex 87031.

Mora, N. (2010): "Can Banks Provide Liquidity in a Financial Crisis?" Federal Reserve Bank of Kansas City: Third Quarter Economic Review.

Moh'd, K.H. (2005): Small and Medium-Size Enterprises in Malaysia-Role in Issues. *Sintok University of Utara Malaysia Press*

Nachane, D. & Ghosh, G. (2007): "An Empirical Analysis of the Off-Balance Sheet Activities of Indian Banks." *Journal of Emerging Market Finance,* 6(1): 39-59.

Nachane, D. & Ghosh, S. (2002): "Determinants of Off-Balance Sheet Activities: An Empirical Analysis of Public Sector Banks." *Economic and Political Weekly, Special Issue in Money, Banking and Finance,* 421-428.

Pasiouras, F. (2008): "Estimating the technical and scale efficiency of Greek Commercial Banks: The Impact of Credit Risk, Off-Balance Sheet activities and International Operations." *Research in International Business and Finance,* 22(3), 301-318.

Pasiouvas, F. & Lozano-Vivas, A. (2010): "Bank Productivity Change and Off-Balance Sheet Activities across different levels of Economic Development." *Journal of Financial Engineering Laboratory,* 1-29. Available at: http://ssrn.com/abstract=1531309.

Pavel, C. & Philis, D. (1987): "Why Commercial Banks Sell Loans: An Empirical Analysis.' *Economic Perspective,* Federal Reserve Bank of Chicago, 15:3-14.

Rajan, R. (2006) "Has Financial Development Made World Riskier? *European Financial management,* 12:499-533.

Roldos, J. (2006): "Disintermediation and Monetary Transmission in Canada." *International Monetary Fund Working Paper.*

Said, A. (2011): "Does the Use of Derivatives Impact on Bank Performance: A Case Study of Relative Performance during 2002-2009." *Euro Publishing Journal,* 11(1): 1450-2889.

Sayilgan, G. & Yildirim, O. (2009): "Determinants of Profitability in Turkish Banking Sector." *International Research Journal of Finance and Economics* 28, 207-213.

Schnabl, P. & Kacperczyc, N. (2010): "When Safe Proved Risk: Commercial Papers During The Financial Crisis Of 2007-2009." *Journal of Economic Perspectives*, 24(1):29-50.

Scopelliti, A. (2012): "Off-Balance Sheet Credit Exposure and Asset Securitization: What Impact on Bank Credit Supply?" Available at: alessandro.scopelliti@unirc.it

Security & Exchange Commission (2002): Disclosure in Management's Discussion and Analysis about off Balance Sheet Arrangements, Contractual Obligations and Contingent Liabilities and Commitment. *A proposed rule of U.S. security and exchange commission*

Shehu, U.H. & Bello, A. (2013): "Firm Characteristics and Financial Reporting Quality of Quoted Manufacturing Firms in Nigeria." Journal of accounting and taxation, 7(2): 39-45.

Shin, H.S. (2009): "Secularization and Financial Stability." *The Economic Journal*, 119: 309-332.

Sinha, R. (2006): "Off Balance Sheet Exposure of Indian Commercial Banks: Some Empirical Results." *Indian Institute of Capital Market,* the 9th Capital Market Conference. Available at http://ssrn.com/abstract=977813

Stainer, L. (2006): Performance Management and Corporate Social Responsibility: The Strategic Connection. *Strategic Changes*, 15(5):253-264.

Sufian, F. (2011): "Profitability of the Korean Banking Sector: Panel Evidence on Bank Specific and Macro Economic Determinants." *Journal of Economics and Management*, 7(1): 43 – 72.

Tamrat, K. (2013): "Determinants of Commercial Bank Off Balance Sheet Activities: An Empirical Study of Ethiopian Banking Industry." Addis Ababa University theses and dissertations series 206.

Teixeira, D. (2013): "Off-balance Sheet Items in European Banking: A Panel Data Econometric Model on Risk and Liquidity." FEP-Economia E Gestao.

Uzum. H. & Webb, E. (2007): "Securitization and Risk: Empirical Evidence of US Banks." *Journal of Risk Finance,* 8(1) 11-23.

Wagner, W. & Marsh, I. (2006): "Credit Risk Securitization and Bank Soundness in Europe: The *Quarterly Review of Economics and Finance*, 2(1): 173 – 193.

Wiklund, J. & Shepherd, D. (2005): Entrepreneurial Orientation and Small Busines Performance: A Configurationally approach. *Journal of Business Venturing*, 20, 71-91.

Wolff, C. and Papanikolaou, N. (2013): "The Role of the On and Off Balance Sheet Leverage of Banks in the late 2000s Crisis." *Journal of Financial Stability*, Available at: http://dx.doi.org/10.1016.ij.jfs.2013.12.003

# APPENDIX A: STATA OUTPUT

```
  ___  ____  ____  ____  ____ tm
 /__    /   ____/   /   ____/
___/   /   /___/   /   /___/   10.0   Copyright 1984-2008
  Statistics/Data Analysis             StataCorp
                                       4905 Lakeway Drive
                                       College Station, Texas 77845 USA
                                       800-STATA-PC        http://www.stata.com
                                       979-696-4600        stata@stata.com
                                       979-696-4601 (fax)

28-student Stata for Windows (network) perpetual license:
       Serial number:  1910569294
         Licensed to:  James Lin
                       UC Riverside

Notes:
      1.  (/m# option or -set memory-) 1.00 MB allocated to data
Checking http://www.stata.com for update... host not found
unable to check for update; verify Internet settings are correct.

. use "C:\Users\HUSSAIN\Desktop\STATA10\Stata\external disdata.dta", clear

. xtset id year, yearly
       panel variable:  id (strongly balanced)
        time variable:  year, 2009 to 2014
                delta:  1 year

. su obsa cdr ldr roa car siz, detail

                            OBSA
-------------------------------------------------------------
      Percentiles      Smallest
 1%           7.4           7.4
 5%           7.7          7.69
10%           7.9           7.7       Obs                  54
25%          8.12          7.77       Sum of Wgt.          54

50%         8.385                     Mean            8.427037
                        Largest       Std. Dev.       .4367316
75%          8.75          9.08
90%          8.94          9.25       Variance        .1907345
95%          9.25          9.39       Skewness        .1021656
99%          9.41          9.41       Kurtosis        2.740629

                             CDR
-------------------------------------------------------------
      Percentiles      Smallest
 1%          .003          .003
 5%         .0097         .0062
10%         .0168         .0097       Obs                  54
25%         .0254          .012       Sum of Wgt.          54

50%        .03555                     Mean           .0414981
                        Largest       Std. Dev.      .0288482
75%         .0485         .0874
90%         .0703         .0984       Variance       .0008322
95%         .0984         .1211       Skewness       2.075213
99%         .1671         .1671       Kurtosis       8.780135

                             LDR
-------------------------------------------------------------
      Percentiles      Smallest
 1%           .48           .48
 5%         .4936          .492
10%         .5171         .4936       Obs                  54
25%         .5251         .4996       Sum of Wgt.          54

50%         .5452                     Mean             .5412
                        Largest       Std. Dev.      .0241515
75%         .5558          .5716
90%         .5643           .576       Variance       .0005833
95%          .576           .588       Skewness      -.0584192
99%          .612           .612       Kurtosis       3.732261
```

ROA

| | Percentiles | Smallest | | |
|---|---|---|---|---|
| 1% | -.049 | -.049 | | |
| 5% | -.015 | -.02 | | |
| 10% | 0 | -.015 | Obs | 54 |
| 25% | .01 | -.013 | Sum of Wgt. | 54 |
| 50% | .02 | | Mean | .0153333 |
| | | Largest | Std. Dev. | .0172791 |
| 75% | .02 | .04 | | |
| 90% | .03 | .04 | Variance | .0002986 |
| 95% | .04 | .05 | Skewness | -.8894036 |
| 99% | .05 | .05 | Kurtosis | 5.418094 |

CAR

| | Percentiles | Smallest | | |
|---|---|---|---|---|
| 1% | .01 | .01 | | |
| 5% | .03 | .03 | | |
| 10% | .08 | .03 | Obs | 54 |
| 25% | .13 | .06 | Sum of Wgt. | 54 |
| 50% | .16 | | Mean | .1561111 |
| | | Largest | Std. Dev. | .060825 |
| 75% | .19 | .24 | | |
| 90% | .22 | .26 | Variance | .0036997 |
| 95% | .26 | .3 | Skewness | -.035392 |
| 99% | .31 | .31 | Kurtosis | 3.490641 |

SIZ

| | Percentiles | Smallest | | |
|---|---|---|---|---|
| 1% | 8.26 | 8.26 | | |
| 5% | 8.67 | 8.37 | | |
| 10% | 8.7 | 8.67 | Obs | 54 |
| 25% | 8.85 | 8.67 | Sum of Wgt. | 54 |
| 50% | 9.125 | | Mean | 9.087963 |
| | | Largest | Std. Dev. | .3024078 |
| 75% | 9.32 | 9.5 | | |
| 90% | 9.44 | 9.57 | Variance | .0914505 |
| 95% | 9.57 | 9.59 | Skewness | -.4647952 |
| 99% | 9.64 | 9.64 | Kurtosis | 2.87887 |

```
. su obsa cdr ldr roa car siz
```

| Variable | Obs | Mean | Std. Dev. | Min | Max |
|---|---|---|---|---|---|
| obsa | 54 | 8.427037 | .4367316 | 7.4 | 9.41 |
| cdr | 54 | .0414981 | .0288482 | .003 | .1671 |
| ldr | 54 | .5412 | .0241515 | .48 | .612 |
| roa | 54 | .0153333 | .0172791 | -.049 | .05 |
| car | 54 | .1561111 | .060825 | .01 | .31 |
| siz | 54 | 9.087963 | .3024078 | 8.26 | 9.64 |

```
. swilk obsa cdr ldr roa car  siz
```

| | Shapiro-Wilk W test for normal data | | | | |
|---|---|---|---|---|---|
| Variable | Obs | W | V | z | Prob>z |
| obsa | 54 | 0.99117 | 0.441 | -1.753 | 0.96023 |
| cdr | 54 | 0.81966 | 9.013 | 4.710 | 0.00000 |
| ldr | 54 | 0.97834 | 1.082 | 0.170 | 0.43266 |
| roa | 54 | 0.94782 | 2.608 | 2.054 | 0.02001 |
| car | 54 | 0.98133 | 0.933 | -0.148 | 0.55881 |
| siz | 54 | 0.97404 | 1.297 | 0.558 | 0.28852 |

```
. pwcorr obsa cdr ldr roa car siz, star (0.05) sig
```

| | obsa | cdr | ldr | roa | car | siz |
|---|---|---|---|---|---|---|
| obsa | 1.0000 | | | | | |
| cdr | -0.2164<br>0.1160 | 1.0000 | | | | |
| ldr | 0.7069*<br>0.0000 | -0.1583<br>0.2531 | 1.0000 | | | |
| roa | 0.4581*<br>0.0005 | -0.0076<br>0.9565 | 0.3000*<br>0.0275 | 1.0000 | | |
| car | 0.3729*<br>0.0055 | -0.1421<br>0.3054 | 0.2126<br>0.1228 | 0.2474<br>0.0713 | 1.0000 | |
| siz | 0.8362*<br>0.0000 | -0.1473<br>0.2877 | 0.6665*<br>0.0000 | 0.3717*<br>0.0057 | 0.2140<br>0.1201 | 1.0000 |

```
. reg obsa cdr ldr roa car siz
```

| Source | SS | df | MS | | |
|---|---|---|---|---|---|
| Model | 7.98051453 | 5 | 1.59610291 | Number of obs | = 54 |
| Residual | 2.12841323 | 48 | .044341942 | F( 5, 48) | = 36.00 |
| | | | | Prob > F | = 0.0000 |
| | | | | R-squared | = 0.7895 |
| | | | | Adj R-squared | = 0.7675 |
| Total | 10.1089278 | 53 | .190734486 | Root MSE | = .21058 |

| obsa | Coef. | Std. Err. | t | P>\|t\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| cdr | -1.059114 | 1.026213 | -1.03 | 0.307 | -3.122454 | 1.004226 |
| ldr | 4.156238 | 1.621452 | 2.56 | 0.014 | .8960906 | 7.416385 |
| roa | 3.301808 | 1.843775 | 1.79 | 0.080 | -.4053513 | 7.008966 |
| car | 1.114984 | .500741 | 2.23 | 0.031 | .1081762 | 2.121791 |
| siz | .8533384 | .1326721 | 6.43 | 0.000 | .5865833 | 1.120093 |
| _cons | -1.758164 | .9560774 | -1.84 | 0.072 | -3.680487 | .1641581 |

```
. hettest

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

         chi2(1)      =     1.84
         Prob > chi2  =   0.1744

. vif
```

| Variable | VIF | 1/VIF |
|---|---|---|
| siz | 1.92 | 0.519749 |
| ldr | 1.83 | 0.545562 |
| roa | 1.21 | 0.824295 |
| car | 1.11 | 0.901878 |
| cdr | 1.05 | 0.954612 |
| Mean VIF | 1.43 | |

```
. xtreg obsa cdr ldr roa car siz, fe

Fixed-effects (within) regression               Number of obs      =        54
Group variable: id                              Number of groups   =         9

R-sq:  within  = 0.6469                         Obs per group: min =         6
       between = 0.7334                                        avg =       6.0
       overall = 0.6975                                        max =         6

                                                F(5,40)            =     14.66
corr(u_i, Xb)  = 0.3472                         Prob > F           =    0.0000

------------------------------------------------------------------------------
        obsa |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
         cdr |  -.2433381   .9722246    -0.25   0.804    -2.208277    1.721601
         ldr |   4.057805   1.201021     3.38   0.002     1.630452    6.485158
         roa |  -.5175429   1.517228    -0.34   0.735    -3.583975    2.548889
         car |  -.4750735   .4262379    -1.11   0.272    -1.336532    .3863855
         siz |   .7327399   .1434822     5.11   0.000     .4427515    1.022728
       _cons |  -.3359623   1.182302    -0.28   0.778    -2.725484     2.05356
-------------+----------------------------------------------------------------
     sigma_u |  .22977892
     sigma_e |  .14398013
         rho |  .71806523   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0:     F(8, 40) =      7.83                 Prob > F = 0.0000

. est store fixed

. xtreg obsa cdr ldr roa car siz, re

Random-effects GLS regression                   Number of obs      =        54
Group variable: id                              Number of groups   =         9

R-sq:  within  = 0.6350                         Obs per group: min =         6
       between = 0.8032                                        avg =       6.0
       overall = 0.7475                                        max =         6

Random effects u_i ~ Gaussian                   Wald chi2(5)       =     97.48
corr(u_i, X)       = 0 (assumed)                Prob > chi2        =    0.0000

------------------------------------------------------------------------------
        obsa |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
         cdr |  -.5438158    .965116    -0.56   0.573    -2.435408    1.347777
         ldr |   4.149676   1.254397     3.31   0.001     1.691103    6.60825
         roa |   .5258487   1.541251     0.34   0.733    -2.494948    3.546646
         car |   -.04993   .4287132    -0.12   0.907    -.8901925    .7903325
         siz |   .7956719   .1357123     5.86   0.000     .5296807    1.061663
       _cons |  -1.027505   1.089723    -0.94   0.346    -3.163324    1.108313
-------------+----------------------------------------------------------------
     sigma_u |  .15089226
     sigma_e |  .14398013
         rho |  .52342823   (fraction of variance due to u_i)
------------------------------------------------------------------------------

. est store random

. hausman fixed random

                 ---- Coefficients ----
             |      (b)          (B)            (b-B)     sqrt(diag(V_b-V_B))
             |    fixed        random       Difference          S.E.
-------------+----------------------------------------------------------------
         cdr |  -.2433381    -.5438158        .3004777        .1173536
         ldr |   4.057805     4.149676       -.0918713               .
         roa |  -.5175429     .5258487       -1.043392               .
         car |  -.4750735      -.04993       -.4251435               .
         siz |   .7327399     .7956719        -.062932        .046576
------------------------------------------------------------------------------
                           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(5) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                          =       14.66
                Prob>chi2 =      0.0119
                (V_b-V_B is not positive definite)
```

```
. xtgls obsa cdr ldr roa car siz

Cross-sectional time-series FGLS regression

Coefficients:  generalized least squares
Panels:        homoskedastic
Correlation:   no autocorrelation

Estimated covariances      =         1          Number of obs      =        54
Estimated autocorrelations =         0          Number of groups   =         9
Estimated coefficients     =         6          Time periods       =         6
                                                 Wald chi2(5)       =    202.47
Log likelihood             =  10.68472          Prob > chi2        =    0.0000

------------------------------------------------------------------------------
        obsa |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
         cdr |  -1.059114   .9675233    -1.09   0.274    -2.955425    .8371966
         ldr |   4.156238   1.528719     2.72   0.007     1.160003    7.152473
         roa |   3.301808   1.738328     1.90   0.058    -.1052529    6.708868
         car |   1.114984   .4721032     2.36   0.018     .1896783    2.040289
         siz |   .8533384   .1250844     6.82   0.000     .6081774    1.098499
       _cons |  -1.758164   .9013984    -1.95   0.051    -3.524873    .0085441
------------------------------------------------------------------------------

. xttest0


. xttest0

Breusch and Pagan Lagrangian multiplier test for random effects

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

        Estimated results:
                         |       Var     sd = sqrt(Var)
                ---------+-----------------------------
                    obsa |   .0057415       .0757729
                       e |   .0044596         .06678
                       u |    .000345       .0185753

        Test:   Var(u) = 0
                                 chi2(1) =     0.41
                              Prob > chi2 =     0.5219

.
```

**APPENDIX B: List of Banks That Form the Sample of the Study**

1. **Access Bank Plc**
2. **Diamond Bank Plc**
3. **Fidelity Bank Plc**
4. **First Bank Of Nigeria Plc**
5. **FCMB Bank Plc**
6. **Guaranty Trust Bank Plc**
7. **Sterling Bank Plc**
8. **United Bank For Africa Plc**
9. **Zenith Bank Plc**

**APPENDIX C: List Of Banks Quoted On The NSE as at December 31, 2014.**

1. **Access Bank Plc**
2. **Diamond Bank Plc**
3. **Ecobank Nigeria Plc**
4. **Fidelity Bank Plc**
5. **First Bank Of Nigeria Plc**
6. **FCMB Bank Plc**
7. **Guaranty Trust Bank Plc**
8. **NPF Microfinance Bank Plc**
9. **Skye Bank Plc**
10. **Stanbic IBTC Bank Plc**
11. **Sterling Bank Plc**
12. **Union Bank Of Nigeria Plc**
13. **United Bank For Africa Plc**
14. **Unity Bank Plc**
15. **Wema Bank Plc**
16. **Zenith Bank Plc**