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# Impact of Capital Adequacy on the Performance of Nigerian Banks using the Basel Accord Framework

**Jalloh MAMOUD ABDUL**

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Jönköping International Business School (JIBS),
Jönköping University, P.O. Box 1026,
SE-551 11 Jönköping, Sweden,
Web: http://www.ju.se/earp, E-mail: EARP@ju.se

**Preface**

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Editor: Almas Heshmati
Professor of Economics
Jönköping International Business School (JIBS),
Jönköping University, Room B5017,
P.O. Box 1026, SE-551 11 Jönköping, Sweden,
E-mail: Almas.Heshmati@ju.se

Assisting Editor: Olivier Habimana
Candidate for PhD in Economics
College of Business and Economics, University of Rwanda
E-mail: Olivier.Habimana@ju.se

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Jalloh MAMOUD ABDUL
College of Business and Economics
University of Rwanda
Kigali, Rwanda
E-mail: abdulmoud99@gmail.com

**Abstract**

Capital adequacy is sufficiency of the amount of equity to absorb any unexpected shocks that a bank may face. According to the Capital Adequacy Standard set by the Bank for International Settlements (BIS), banks must have a primary capital base equal at least to 8 per cent of their assets. Since bank-specific characteristics differ in Nigeria, the Central Bank of Nigeria (CBN) set an arbitrary ₦25 billion minimum capital base after considering all capital adequacy variables (total assets, owners' funds, customers' deposits and loans and advances) to forestall all future financial downturns. This study examines the impact of these variables on banks' performance in Nigeria. Data was collected using the cross panel methodology from nine deposit money banks with significant foreign operations. The results of the ordinary least square (OLS) regression show that 76 per cent ($R^2$) of the variations in profit after tax (PAT) were caused by independent variables. The study further shows that a unit change in total assets (TA), loans and advances (LA), customer deposits (CD) and owners capital (OC) led to 4.1, 1.6, 3.7 and 1.7 per cent change in PAT respectively. The study therefore recommends that the banks' regulators should not only focus on capital adequacy but also on supervisory review and market discipline ($1-R^2$) to maintain banks' financial strength and stability in Nigeria.

Keywords: Capital adequacy, Basel accord, equity, supervisory and stability.

## 1. Introduction

The importance of the banking sector is premised on the fact that banks are the foremost channel of savings and allocations of credit in an economy (Ariccia and Marquez, 2004). The banking sector facilitates a vital financial intermediation function by transferring the deposits into productive investments; it is also the fuel injection system which stimulates economic competence by mobilizing savings to investment channels. It serves as a bridge between savers and borrowers and executes all tasks concerned with the profitable and secure channeling of funds.

Beyond their intermediation functions, the performance of financial institutions and banks has significant implications for economic growth. Sound financial performance rewards the stakeholders for their investments and encourages additional investments. On the other hand, poor banking performance may result in banks' failure and collapse which may also affect/hamper the economic growth of the country. According to Ezike and Oke (2013) due to the nature of banking and the crucial role of banks in capital formation, banks should be looked at more closely. Like in its developed counterparts this was also one of the key functions of the Central Bank of Nigeria (CBN) which led to banks' consolidation in 2004 (CBN, 2010).

The Nigerian banking sector witnessed dramatic post consolidation growth in 2005 and this development posed a lot of challenges for the industry and also for regulators. The initial perceptions that the Nigerian banking system was sound and insulated from the global financial crisis were misplaced. However, the factors that led to the creation of an extremely fragile financial system that was tipped into crisis by the global financial meltdown include macroeconomic instability caused by large and sudden capital outflows, major failures in banks' corporate governance, lack of investor and consumer sophistication, inadequate disclosures and transparency about the financial position of banks, critical gaps in prudential guidelines and uneven supervision and enforcement (Aburime and Uche, 2008).

To address these challenges, CBN introduced a Four (4) Pillar Reform Program in 2010 -- enhancing the quality of banks, establishing financial stability, enabling healthy financial sector evolution and ensuring that the financial sector contributes to the real economy (Ezike and Oke, 2013; Pasiouras and Kosmidou, 2007). As a part of its initiative to enhance the quality of banks, CBN also undertook a review of the prudential guidelines in accordance with the Basel Accord Framework. The revised prudential guidelines aim to address various aspects of banks' operations such as risk management, corporate governance and anti-money laundering/counter-financing of terrorism and loan loss provisioning. The guidelines also aim to address the peculiarities of different loan types and financing to different sectors.

Further, the regulators of capital requirements seek to guarantee that the risk exposures of financial institutions and banks are supported by an adequate amount of capital which can bear unexpected losses arising in the future. This ensures that banks will further promote their cushion of assets that can be utilized for liquidation claims. The Basel Committee introduced capital adequacy regulations in 1988. The regulations required globally active banks to maintain a minimum capital of 8 per cent of their risk adjusted assets, with capital consisting of Tier I capital (equity capital and disclosed reserves) and Tier II capital (long

term debt, undisclosed reserves and hybrid instruments). This has been adopted by more than 100 countries (Jacobson et al., 2002). Financial institutions and banks must maintain a capital adequacy at a specific minimum level in order to avoid risks and bankruptcy. Regulators have augmented bank supervision through maintaining an adequate and sufficient level of capital adequacy. This study investigates the impact of capital adequacy on the profitability of banks in Nigeria using the Basel Accord Framework.

The rest of this study is organized as follows. After the introduction it gives a literature review on capital adequacy and banks' performance in Section 2. Section 3 deals with the research methodology while the data is presented and analyzed in Section 4. Section 5 gives the conclusion and some policy recommendations.

## 2. Literature Review

### 2.1 The Concept of Capital Adequacy

The concept of capital adequacy is a result of the idea of rearranging banks' existing capital structures in order to restructure the banking industry against widespread distress. Adequate capital creates an opportunity for better standards in any business establishment. It spurs business exertion and a better performance. According to Olalekan and Adeyinka (2013), the minimum ratio of capital to total risk-weighted assets should remain at 10 per cent as prescribed in circular BSD/11/2003 issued on 4 August 2003. Further, at least 50 per cent of a bank's capital should comprise of paid-up capital and reserves, while every bank should maintain a ratio of not less than 1:10 between its adjusted capital funds and total credit net of provisions.

Consequently, deposit money banks in Nigeria are encouraged to maintain a higher level of capital which is commensurate with their risk profiles. The existing definition of the constituents of capital, deductions from total qualifying capital and restrictions within and between primary (Tier 1) and supplementary (Tier 2) capital are generally consistent with the Basel Accord. Tier 2 capital is limited to 100 per cent of Tier 1 capital. The general provision was part of Tier 2 capital where a bank's specific provision for bad and doubtful debts was made to CBN's satisfaction.

However, such a general provision was restricted to a maximum of 1.25 per cent of the risk-weighted assets. Deferred tax assets are considered as intangible assets for capital adequacy purposes and should be deducted from total capital and reserves in arriving at total Tier 1 capital. Based on the Basel Accord's level of capital adequacy ratio as an acceptable limit, a deposit money bank may be classified into under-capitalized; significantly under-capitalized; critically under-capitalized; and insolvent (Olalekan and Adeyinka, 2013).

CBN also mandated that all banks should have themselves credit rated by a credit rating agency and the credit rating must be done on a regular basis, that is, the credit rating should be updated on a continuous basis from year to year, within six months from the date of close of each financial year and the rating report complete in all respects must be submitted to CBN. Further, banks should also disclose their credit ratings prominently in their published annual reports (CBN, 2010).

The effect of capital adequacy on banks' performance cannot be under-estimated since adequate capital directly and automatically influences the amount of funds available for loans, which invariably affects the level and degree of risk absorption. Gardner (1981 in Hassan and Bashir, 2004) stresses that despite its many roles and diverse functions, it is clear that bank capital is acting as a protective cushion against losses precipitated by certain kind of uncertainties. This view looks at capital as a constraint in avoiding defaults; capital also acts as a cushion for protecting depositors and other creditors against losses at the operating and liquidation stages. If deposits are going to grow, capital must grow alongside. Gardner affirms that the management discipline has an effect on capital. In his view capital constraints help avoid over-trading and curbing malpractices by the managements. He further says that prudent guidelines of the capital adequacy system have an important effect on bank capital, profitability and costs.

The importance of capital adequacy lies in the fact that it helps in spreading the cost of prudent business conduct and deters the criminally minded. Umoh (1991) explains that a bank requires capital adequacy for the same reasons that other businesses require capital since banks deal with other people's money. Nwankwo (1991) emphasizes that the key element of capital is the only element common to all countries' banking systems. It is wholly visible in published accounts as it is the basis for making market judgments about capital and it has a crucial bearing on profit margins and banks' ability to compete. Oluyemi (1996) states that capital plays a significant role in the banking sector in an economy. The need for capital adequacy for banks is a pressing problem not only in Nigeria but also to a very large extent in other countries globally.

### 2.2 Bank Performance

One principal objective of banks is earning more profits. This is essential for the purposes of paying corporation tax like any other company, paying interest to depositors, wages to staff members, dividends to shareholders and meeting other expenses (Ezike and Oke, 2013). So, unless banks earn profits they cannot perform their roles effectively. Profitability is essential for a bank to maintain its on-going activities and for its investors to obtain fair returns; but it is also crucial for supervisors as it guarantees more resilient solvency ratios even in the context of a riskier business environment. Profitability is a bank's first line of defense against unexpected losses as it strengthens its capital position and improves future profitability through investments of retained earnings.

An institution that persistently makes losses will ultimately deplete its capital base which in turn will put equity and debt holders at risk. Moreover, since the ultimate purpose of any profit-seeking organization is to preserve and create wealth for its owners, a bank's return on equity (ROE) needs to be greater than its cost of equity in order to create shareholder value.

## 2.3 Basel Accord

The Basel Committee on Banking Supervision (BCBS) is an institution created by the Central Bank Governors of the Group of 10 nations (G10) -- Belgium, Canada, France, Italy, Japan, the Netherlands, the United Kingdom, the United States, Germany and Sweden. The Basel Committee formulates broad supervisory standards and guidelines and recommends statements of best practices in banking supervision (Basel II Accord, for example) in the expectation that member authorities and other nations' authorities will take steps to implement these through their own national systems. The purpose of the committee is to encourage convergence towards common approaches and standards. Basel II is the second of the Basel Accords or recommendations on banking laws and regulations issued by BCBS.

The purpose of Basel II, initially published in June 2004, is to create an international standard that banking regulators can use when creating regulations about how much capital banks need to put aside to guard against the types of financial and operational risks that they face. Basel II set up rigorous risk and capital management requirements designed to ensure that a bank holds capital reserves appropriate to the risk that it exposes itself to through its lending and investment practices (BIS, 2004).

Basel II uses a three-pillar concept of minimum capital requirements (addressing risk), supervisory review and market discipline to promote greater stability in the financial system. The first pillar deals with maintaining a regulatory capital calculated for three major components of risks that a bank faces: credit risk, operational risk and market risk. Other risks are not considered fully quantifiable at this stage. The second pillar deals with a regulatory response to the first pillar. It also provides a framework for dealing with all the other risks that a bank may face such as systemic risks, pension risks, concentration risks, strategic risks, reputation risks, liquidity risks and legal risks which the accord combines under the title of 'residual risks.' It gives banks the power to review their risk management systems (Olalekan and Adeyinka, 2013; Van Greuning and Bratanovic, 2009).

As a response to the deficiencies in financial regulations as revealed by the financial crisis affecting the world since 2008, the Basel Group developed a new Basel Accord, Basel III. This is a global regulatory standard on bank capital adequacy, stress testing and market liquidity risk agreed upon by BCBS members in 2010-11. Basel III strengthens bank capital requirements and introduces new regulatory requirements on bank liquidity and bank leverage. Some of the measures introduced in the Basel III Framework require banks to hold 4.5 per cent common equity (up from 2 per cent in Basel II) and 6 per cent of Tier I capital (up from 4 per cent in Basel II) of risk-weighted assets (RWA).

Basel III also introduces additional capital buffers, a mandatory capital conservation buffer of 2.5 per cent and a discretionary counter-cyclical buffer which allows national regulators to require up to another 2.5 per cent of capital during periods of high credit growth. These measures aim to improve the banking sector's ability to absorb shocks arising from financial and economic stress whatever the source, improving risk management and governance and strengthening banks' transparency and disclosures (BIS, 2010).

## 2.4 Theoretical Framework

Capital adequacy is a fairly new area in deposit money banks' risk management especially in developing countries. In this study, the anticipated income theory explains the theoretical underpinning as it relates to banks' performance. The theory depends on the loan portfolio as a liquidity source. In essence, banks' liquidity can be planned if scheduled loan payments are based on future incomes of borrowers at a point in time. Thus, the theory recognizes the influence of the maturity structure of the loan and investment portfolio on the liquidity position of a bank.

Like other similar theories, the anticipated income theory's major flaw is in installment loan repayments. Since installment loan repayments provide a regular stream of liquidity, they may not be adequate for meeting unstructured emergencies in terms of cash requirements in the banking system. Bosede et al. (2013) opine that banks' managements need to maintain some capital as cushion to absorb uncertainties in the business environment. The 2008-09 financial crisis popularized this theory and as the environment becomes more complex the need to understand the rudiments of this theory is apt; the present study is built on this belief.

## 2.5 Empirical Evidence

Goddard et al.'s (2004) study on capital adequacy as a determinant of profitability of banks revealed that a high capital adequacy ratio should signify that a bank is operating over-cautiously and ignoring potentially profitable trading opportunities implying a negative relationship between the equity to asset ratio and a bank's performance.

On the other hand, Pasiouras and Kosmidou (2007) show that banks with higher equity to asset ratios will normally have lower needs for external funding and therefore higher profitability. According to them the performance of domestic and foreign commercial banks in 15 EU countries during 1995-2001 were affected by bank specific characteristics. Their findings suggest that capital adequacy, credit risk, bank size and liquidity risk have a significant relationship with a bank's profitability, although their impact and relations are not always uniform for domestic and foreign banks. These mixed and conflicting results are not limited only to this research.

George and Dimitrios (2004) applied the non-parametric analytical technique (data envelopment analysis, DEA) for measuring the performances of the Greek banking sector with respect to capital adequacy. They prove that the data envelopment analysis can be used as either an alternative or as a complement to a ratio analysis for the evaluation of an organization's performance with attention to macroeconomic indicators.

Various studies suggest that banks with higher levels of capital perform better than their under-capitalized peers. Staikouras and Wood (2004) claim that there exists a positive link between greater equity and profitability among EU banks. Abreu and Mendes (2001) also trace a positive impact of the equity level on profitability. Goddard et al., (2004) support a prior finding of a positive relationship between the capital/asset ratio and a bank's earnings. However, the direction of the relationship between bank capital and bank profitability cannot be unanimously predicted in advance.

In Nigeria, however, there is scanty literature available on capital adequacy with heavy emphasis on CBN's prudential guidelines. Olalekan and Adeyinka (2013) attempted to investigate the impact of capital adequacy on Nigerian banks' performance. They examined the effect of capital adequacy on profitability of deposit taking banks in Nigeria by assessing the effect of capital adequacy of both foreign and domestic banks in the country and their profitability. They collected primary data by a questionnaire involving a sample size of 518. The questionnaire was distributed to staff members of banks with a response rate of 76 per cent. Their findings revealed a non-significant relationship between capital adequacy and a bank's profitability. This implies that for deposit taking banks in Nigeria, capital adequacy did not play a key role in determining profitability.

Although it is generally agreed that CBN's prudential guidelines were influenced greatly by the Basel Accord, so far only Ezike and Oke (2013) have investigated the impact of the adoption of capital adequacy standards on the performance of Nigerian banks. Their study involved the use of the ordinary least squares (OLS) estimation technique for examining and determining the effect of independent variables – loans and advances (LA), shareholders' funds, total assets and customer deposits – on dependent variables – earnings per share (EPS) and profit after tax (PAT). The results of their analysis showed that capital adequacy standards exerted a major influence on a bank's performance. In addition, the impact of the Nigerian monetary authority on new capital requirements was complemented by the adoption of the Basel Accord Framework. The study concluded with the recommendation that CBN should not rely solely on the capitalization of banks as a determinant of banks' performance but should also concentrate on efficient and effective bank supervision and risk management.

Our study builds on these studies by examining the impact of capital adequacy on Nigerian banks' performance. Further, Basel Accord III and secondary data were used to smooth out the methodological constraints of the studies mentioned earlier.

## 3. Research Method

This study adopted a cross panel data methodology for gathering data from published accounts, reports and websites of the banks under study. Thus, the study solely relied on secondary data sources to eliminate some sampling biases introduced by previous researchers. The sample for this study was all the 11 deposit money banks listed on the Nigerian Stock Exchange (NSE) as at 31 December 2015. However, using the purposive sampling method, the sample size was nine Nigerian banks having significant international operations during the period under review. This method was adopted because the Basel Accord applies majorly to international deposit money banks. Therefore, only these banks' financial statements covering the time period 2009 to 2015 were collated (the banks' names are given in Appendix I).

This study also used secondary data that was collected from the companies' annual reports and financial statements (see Appendix II). The Basel Capital Accord is an international standard for calculating the capital adequacy ratio. In its analysis in 1999 the accord incorporated various variables that affect a bank's soundness and safety in its framework.

These variables include owners' capital, asset quality, total deposits, loans and advances, ratio of capital to total assets, credit exposures, returns, market discipline and effective supervision.

Due to the nature of our study, this framework was modified and is expressed in a functional relationship as:

(1) $PAT = F(OC, LA, TA, CD)$

(2) $Y_{PAT} = \beta_0 + \beta_1 OC + \beta_2 LA + \beta_3 TA + \beta_4 CD + \varepsilon$

where PAT = profit after tax (proxy for bank performance; dependent variable); OC=owners capital; LA = loans and advances; TA = total assets; and CD = customer deposits (proxy for bank capital adequacy), $\beta_0$- $\beta_3$= coefficients of the variables and $\varepsilon$ = stochastic error not accounted for by the model. According to the Capital Adequacy Standard set by Bank for International Settlements (BIS), banks must have a primary capital base equal to at least 8 per cent of their assets. However, due to differences in banks' specific characteristics, the Central Bank of Nigeria set ₦25 billion capital as adequate after considering all the variables. Since all the banks met the minimum capital requirements, the a-priori expectation is that $\beta_0 = \beta_1 = \beta_2 = \beta_3 = \beta_4 > 0$.

The OLS technique of multiple regressions was adopted to examine and determine the independent variable's effects on the dependent variables. OLS was adopted because it has been used in a wide range of economic relationships with fairly satisfactory results.

## 4. Empirical Results

### 4.1 A Descriptive Analysis of the Study

This section gives information about the nine international banks quoted on the Nigeria Stock Exchange which were sampled. They are also analyzed using a description statistics of charts to visualize the implications of profit after tax, size (total assets), loans and advances, shareholders' funds and customers' deposits in the Nigeria banking industry's survival amid the financial crisis since 2008.

Figures 1a and 1b show profit after tax for the nine international banks in Nigeria. Zenith Bank Plc. (ZB) had the highest profits over the study period 2009-15. It profits grew steadily year on year apart from 2011 when an economic downturn was witnessed in the economy. This was followed by Guarantee Trust Bank Plc. (GTB) and First Bank of Nigeria Plc. (FBN). On the other hand, the Union Bank of Nigeria Plc. (UBN) reported the lowest profits for the years under review followed by Access Bank Plc. and Diamond Bank Plc. However, all the banks reported lower returns in 2011 due to the economic recession in the country.

In a nutshell, the banking industry progressively reported huge profits for the years under review making it the most profitable sector of the Nigerian economy. Without profits no firm can survive and attract outside capital to meet its investment targets in a competitive environment. Thus, profitability plays a key role in persuading depositors to supply funds as bank deposits on advantageous terms.

Insert Figures 1a and 1b about here

Figures 2a and 2b show the sizes of the nine banks with foreign operations in Nigeria for the period 2009-15. The combined graphs show that Eco Bank Transnational (ECO) was the biggest bank in Nigeria in the study period. This was followed by First Bank of Nigeria Plc. (FBN) and Zenith Bank Plc. (ZB). Further, the figures depict a steady increase in the sizes of these banks over the years to meet the provisions of the revised CBN prudential guidelines and other international standards such as the Basel Accord.

Union Bank had the lowest assets of ₦689 billion compared to ECO Bank's ₦4662 billion asset base. This was followed by Skye Bank Plc. (SB) and Access Bank Plc. (AB). However, for all the years under review all the banks maintained adequate asset bases through mergers and acquisitions and had enough buffers for external shocks and some unforeseeable circumstances. While United Bank for Africa Plc. (UBA) and Guarantee Trust Bank Plc. (GTB) had lower asset bases as compared to their profits, the figures show that these two banks were more efficient in the use of their assets as compared to all the other banks. Pasiouras and Kosmidou (2007) suggest that a bank's size has a significant relationship with its profitability although the impacts and relations are not always uniform for domestic and foreign banks.

Insert Figures 2a and 2b about here

Figures 3a and 3b give the loans and advances extended by the nine international banks in Nigeria to their various corporate and non-corporate customers. The figures show that ECO disbursed the highest loans over the years. This was followed by FBN and ZB which progressively advanced more loans than the other banks.

Conversely, lower loans were extended by UBN followed by DB. In fact, UBN managed to extend just ₦366 billion in 2015 as loans and advances which was far below the highest loaner ECO which advanced loans as much as seven times that by UBN. However, in 2013 GTB offered all-time low loans in the industry before picking up in the following years. Overall, the banks extended reasonable amounts of their funds in loans to their customers.

Insert Figures 3a and 3b about here

Figures 4a and 4b give the amount of money in millions of naira deposited by the customers of these banks over 2009-15. ECO had the highest customers' deposits followed by FBN and ZB. But the slope of EB's deposits is in the form of a scoop showing a contraction in its customer base in earlier years before recovering in later years. ZB attracted more customers proportionately over the study period.

Union Bank of Nigeria Plc. had the lowest customer base. This was followed by Access Bank, UBA and GTB. The results show that banks with more branches and foreign operations attracted more customers as seen in the case of ECO which operates in almost all the 16 West African countries. With the exception of UBN, all the banks attracted more customers over the years showing the supremacy of customers in banks' operations in general.

Insert Figures 4a and 4b about here

Figures 5a and 5b show the portion of assets attributable to the owners of the banks over 2009-15. Owners' capital was defined as the amount of assets attributable to owners after settling all liabilities and thus included share capital and all reserves whether revenue or capital (owners capital=total equity). Zenith Bank Plc. had a far larger capital base than any of the other banks. This was followed by FBN and ECO. DB had the lowest capital base as compared to the other banks. However, the ₦25 billion minimum capital requirement stipulated in CBN's prudential guidelines was met by all the banks.

Figures 5a and 5b also show that the banks increasingly capitalized on their reserves to meet aggressive marketing strategies followed by their competitors in the banking industry. Skye Bank acquired Mainstream Bank last year despite reporting a loss in the same period. Generally, all the banks were far more stable to withstand any economic downturns and to diversify in related businesses, if they so decided; this is also the practice in other nations like Germany and Japan.

Insert Figures 5a and 5b about here

The relative relationship between profit after tax and loans and advances during 2009-15 of the nine international banks in Nigeria is shown in Figure 6.While the figure shows a vast gap between PAT and LA, it also shows that a direct relationship exists between them. As loans and advances extended by the banks increase, their profitability also improves alongside and vice versa. This is because a bulk of a bank's revenue comes from interest income charged on loans given to customers.

The only exception was ECO which earned lower profits in relation to the loans advanced. This shows that banks can actually earn extra revenues from other activities apart from their core banking operations. Conversely, on average UBN and SB extended lower loans and in turn earned lower profits. Hence, banks with a high capacity to extend loans to their customers tended to earn more profits than banks with lower loan advancement profiles.

Insert Figure 6 about here

Figure 7 gives the relative relationship between PAT and customers' deposits in the nine international banks operating in Nigeria during 2009-15. ECO had the highest customer base, followed by FBN and ZB. This was due to their presence in more countries as compared to Diamond Bank, for instance, that operates only in three countries. Further, these banks were also the largest in terms of both size and owners' capital. With such a strength, customers would have more confidence in them as pan-African banks than they would in smaller banks which can be acquired and/or merged overnight as was the case recently with Intercontinental Bank and Oceanic Bank.

Figure 7 also shows no correlation between profits and deposits by customers as ECO reported a far lower profit in proportion to its customer deposits. Thus, in the final analysis it can be inferred that banks' profits are not directly related to their customer base.

Insert Figure7 about here

Figure 8 shows an intriguing relationship between customer deposits and loans and advances extended by the banks. It shows that there was a positive association between customers'

deposits and loans and advances. For all the banks an increase in deposits led to an increase in loans advanced to their corporate and non-corporate customers and vice versa. This relationship is based on the liquidity theory that says that banks must always reserve a part of their deposits to meet customers' liquidity demands while extending the remaining as loans. However, theorists and researchers do not agree on the percentage of deposits to be loaned out.

Insert Figure 8 about here

Figure 8 specifically shows that ECO, FBN and ZB decreasingly had more deposits and thus extended more loans as compared to the other banks. At the other extreme, UBN, SB and DB gave out the lowest loans since they held the lowest deposits. Hence, considering the overall performance of banks, it can de deduced that ZB, UBA and GTB were more effective and efficient in the use of available resources. For instance, GTB's asset turnover rate was 3.5 per cent more than ECO's -- the biggest bank in term of assets, loans and advances, owners' capital and customers. This view is supported by Pasiouras and Kosmidou (2008) and Ezike and Oke (2013) who observed that due to the need for maintaining adequate cash to provide for losses arising from customers' defaults and exposures, many banks limited their lending capacity which was their key business.

### 4.2 Empirical Results of the Hypothesis

One of the basic assumptions of any parametric test is the rule of normality. From the normality graph in Appendix III, the data perfectly slopes upwards and has a line of best fit depicting that the data is normally distributed. Also, the regressed model serves as a good predictor of the variables it sought to measure.

Since the above-normal probability plot reflects normal distribution behavior of the data, the summary of the regression results for the banks is presented in Appendix III.

From the results, the following econometric model was derived:

(3) $Y_{PAT} = -22.5626 + 0.041TA + 0.016LA + 0.037CD + 0.174OC$

Eqn. 3 shows that a unit change in total assets led to 4.1 per cent change in PAT; a unit change in loans and advances led to a 1.6 per cent change in PAT; a unit change in customers' deposits led to a 3.7 per cent change in PAT and finally a unit change in owners' capital led to a 1.7 per cent change in PAT. However, a 22.6 per cent change in PAT occurred outside the measured variables and as expected the relationship was negative.

In other words, LAs in Nigerian banks revealed a strong and positive relationship with the dependent variable (PAT). The variable (LA) is appropriately signed in that it has a positive relationship due to the high credit ratings of the loans and advances given to customers by the banks. Also, the total assets show a positive relationship with PAT. This is appropriately signed as expected. One of the reasons for this appropriate sign may be the composition of the total assets used in the study. Customer deposits had a positive relationship with PAT and owners' capital which is the most significant independent variable in this study had a positive relationship with the dependent variable.

Consequently, the $R^2$ of 0.76 shows that a 76 per cent variation in the dependent variable (PAT) is explained by the independent variables and the F-statistic shows it is very significant. The adjusted $R^2$ of 0.63 which is about 63 per cent shows that $R^2$ indicates the true behavior of the dependent variable (PAT) according to changes in the independent variables. In this case the observed T-value of 2.93614 is greater than the T-value at 5 per cent which is 1.350, that is, 2.93614 > 1.350. This is corroborated by the F-statistic of 185.329 which shows that the independent variables explain the changes in the dependent variable.

Individually, all the independent variables showed a significant relationship with the dependent variable at the 5 per cent level of significance as all the p-values were less than the 0.005 level of significance. Thus, all the null hypotheses were rejected in favor of the alternative. This study shows that loans and advances, customer deposits, total assets and owners' funds had a significant impact on the profitability of banks in Nigeria.

However, the study also shows that a bank's size impacted more on its profitability than its customer deposits, loans and advances and shareholders' funds. Thus, this result reinforces the main objective of Basel Accord II which seeks to strengthen bank capital requirements and introduces new regulatory requirements on bank liquidity and bank leverage. This also shows that the CBN's increasing capital requirements for banks from ₦2 billion to ₦25 billion in 2005 and the amendment to the prudential guidelines are in line with the Basel Accord.

This study shows that a positive relationship exists between capital adequacy and profitability. This is in line with the findings of Kosmidou and Pasiouras (2007) and Olalekan and Adeyinka (2013). However, it contradicts Gull et al.'s, (2011) work that shows that no significant relationship exists between bank profitability and capital adequacy, especially for foreign banks.

## 5. Conclusion and Recommendations

The banks reported profits over the years under review despite the Nigerian economy being in recession since 2011.The size of the banks significantly influenced their performance internationally. The growth of the banks was largely due to their having more than 6 per cent risk-weighted assets in reserves to meet any unforeseen economic uncertainties in accordance with Basel Accord III. During the study period all the banks were far more stable and diversified than domestic banks in Nigeria. This is informed by the large deposits and high customer confidence. There existed a positive and significant correlation between profit after tax and loans and advances. By implication, therefore, banks with foreign operations had higher customer deposits and thus extended more loans and earned more profits than their domestic counterparts.

There was a need to maintain adequate cash to provide for losses arising in case of customer defaults for maintaining good credit ratings and as required by the supervisory agencies of all international banks conducted within the ambit of the Fitch triple credit rating standards. Loans and advances, total assets, total equity and customers' deposits had a positive impact

on banks' profitability but bank size had a more significant effect on performance. This means that the banks' Tier 1 and Tier 2 capital requirements were adequately met and the banks not only met the local ₦25 billion capital requirements but also Basel Accord III's requirements which are internationally recognized and adopted. Loans and advances, for example, can determine the level of growth in banks. If the quality of loans and advances in terms of repayments and performance is high, banks' performance will improve, but if the quality is poor, banks' risks will increase and this will hinder growth.

Apart from this, the quality of a bank's assets portfolio has a great influence on its performance. Investments in poor and risky assets retard growth while a well-diversified and high quality asset enhances performance. Thus, adequate capital functions in various ways such as providing a cushion against losses not covered by current earnings and it also serves as a confidence booster for depositors, the public and the regulatory authority of Nigeria. Hence, capital adequacy has a significant impact on international banks' performance in Nigeria.

Based on the findings of this research the following recommendations are made:

- Empirically, the results indicate a positive impact of capital adequacy on a bank's profitability. This is in line with theoretical expectations and also in line with the findings of other authors. However, some authors believe that this could lead banks to trading over-cautiously in order to at least prevent sanctions from supervisory agencies. This was likely the case of ECO Bank, which advanced lower loans in proportion to its size. Thus, the Central Bank of Nigeria and other agencies should critically look at the provisions of the prudential guidelines.
- The results show that a bank's size has more of an impact on its profitability. But Pasiouras and Kosmidou (2007) maintain that the performance of domestic and foreign commercial banks is affected by bank specific characteristics. Hence, the Basel Accord needs to consider not only a bank's internal characteristics but also the economic climate in which it operates when amending the Basel III Accord.
- Based on the analyses and findings in this study, it is suggested that the regulatory bodies (CBN and NDIC) should not rely solely on the ₦25 billion capitalization as a determinant of a bank's good performance but should also concentrate on efficient and effective bank management supervision.
- Finally, this study recommends that the regulatory authority should ensure that the gains of the banking reforms processes are sustained. Further, CBN should take more decisive measures aimed at tightening the risk management framework of the Nigerian banking sector as this will have a positive effect on the profitability and survival of banks. Apart from capital adequacy stressed by banks' regulatory bodies in Nigeria, the other two components of capital management -- supervisory review and market discipline -- should also be monitored for effective implementation.

**References**


Abreu, M. and V. Mendes (2001). "*Commercial Bank interest margins and profitability: Evidence from E.U countries",* Porto, Working paper series, Available at: *http://www.iefs.org.uk/Papers/Abreu.pdf.*

Aburime, T. and C.U. Uche (2008). "Impact of share capitalization on bank profitability in Nigeria", *European Journal of Scientific Research*, 19(3), 438–452.

Ariccia, D. G. and R. Marquez (2004). "Information and Bank Credit Allocation", *Journal of Financial Economics*, 72(1), 185-214.

Bank of International Settlements (2004). *Implementation of Basel II: Practical Consideration. Basel Committee on Bank Supervision.* BIS Publication.

Bank of International Settlements (2010). "*Basel Committee Reaches Agreement on new capital Issue*", Business releases 10.

Bosede, A.F., O. Olowe, and O. Uwuigbe (2013). "Returns on Investment of Deposit Money Banks (DMBs) in Nigeria", *Journal of Applied Finance & Banking*, 3(3), 195-206.

Central Bank of Nigeria (2010). *Measurement of capital adequacy along international standard.* Lagos: CBN Publications.

Ezike, J. E. and M. O. Oke (2013). "Capital Adequacy Standards, Basel Accord and Bank Performance: The Nigerian Experience (A Case Study of Selected Banks in Nigeria)", *Asian Economic and Financial Review*, 3(2), 146-159.

George, E. H. and S. S. Dimitrios (2004). "Efficiency measurement of the Greek commercial banks with the use of financial ratios: A data envelope analysis approach", *Management Accounting Research*, 15(2), 201-224.

Goddard, J., P. Molyneux, and J. Wilson (2004). "The profitability of European Banks: A Cross-sectional and dynamic panel analysis", *The Manchester School,* 72(3), 363-381.

Gull, S., F. Irshad, and K. Zaman (2011). "Factors Affecting Bank Profitability in Pakistan", *Romanian Economics Journal,* 14(39), 61-87.

Hassan, M. K. and A. H. Bashir (2004). "Determinants of Islamic Banking Profitability", Paper presented at International Seminar on Islamic Wealth Creation on 7-9 July 2003, organized by IRTI-Islamic Development Bank and Centre for Middle Eastern and Islamic Studies, University of Durham, United Kingdom.

Jacobson, T., J. Linde, and K. Roszbach (2002). "The IRB Approach in the Basel Committee's Proposal for new Capital Adequacy Rules: Some Simulation-based illustrations", *Economics Review*, 4, 35-72.

Nwankwo, G.O. (1991). *Bank Management, Principles and Practice.* Lagos: Malthouse Press Ltd.

Olalekan, A. and S. Adeyinka (2013). "Capital Adequacy and Banks' Profitability: An Empirical Evidence from Nigeria", *American International Journal of Contemporary Research*, 87-93.

Oluyemi, S.A. (1996). "The implications for banks' profitability on implementing the risk-based capital requirements", Lagos: NDIC Quarterly.

Pasiouras, F. and K. Kosmidou (2007). "Factors influencing the profitability of domestic and foreign commercial banks in the European Union", *Research in International Business and Finance*, 21(2), 222-237.

Staikouras, C. K. and G.E. Wood (2004). "The determinants of European bank profitability", *International Business and Economics Research Journal*, 3(6), 57-68.

Umoh, P.N. (1991). "Capital and Bank Deposit Insurance Scheme", Lagos: NDIC Quarterly.

Van Greuning, H. and S. Bratanovic (2009). *Analyzing banking risk: A framework for assessing corporate governance and risk management (3rd edition).* Washington DC: The World Bank.

## APPENDICES

**APPENDIX I : Sample showing International Banks in Nigeria**

| S/N | International Banks |
|---|---|
| 1 | United Bank for Africa Plc. |
| 2 | Guaranty Trust Bank Plc. |
| 3 | Eco Bank Transnational Incorporated |
| 4 | First Bank of Nigeria Plc. |
| 5 | Access Bank of Nigeria Plc. |
| 6 | Skye Bank Plc. |
| 7 | Zenith Bank Plc |
| 8 | Diamond Bank Plc. |
| 9 | Union Bank of Nigeria Plc. |

**APPENDIX II**

| **United Bank for Africa Plc.** | **Variables** | | | | |
|---|---|---|---|---|---|
| | Profit After Tax (N Million) | Total Assets (N Million) | Loans and Advances (N Million) | Customer Deposits (N Million) | Owners Capital (N Million) |
| **2009** | 2,375 | 1,548,281 | 606,616 | 1,245,650 | 186,829 |
| **2010** | -1,944 | 1,599,185 | 590,797 | 1,270,409 | 153,025 |
| **2011** | -6,801 | 1,920,435 | 605,627 | 1,445,822 | 150,940 |
| **2012** | 54,766 | 2,272,923 | 658,922 | 1,720,008 | 192,467 |
| **2013** | 46,601 | 2,642,296 | 937,620 | 2,161,182 | 235,036 |
| **2014** | 47,907 | 2,762,573 | 1,071,859 | 2,169,663 | 265,406 |
| **2015** | 59,654 | 2,752,622 | 1,036,637 | 2,081,704 | 332,621 |
| **Guarantee Trust Bank Plc.** | | | | | |
| **2009** | 61,605 | 1,862,399 | 793,739 | 991,315 | 212,476 |
| **2010** | 69,776 | 1,868,526 | 842,009 | 1,014,282 | 222,476 |
| **2011** | 51,741 | 1,608,652 | 706,893 | 1,026,119 | 230,393 |
| **2012** | 77,025 | 1,734,877 | 779,050 | 1,148,197 | 281,826 |
| **2013** | 90,023 | 2,102,846 | 100,237 | 1,427,493 | 326,995 |
| **2014** | 94,434 | 2,355,876 | 1,275,681 | 1,618,208 | 364,714 |
| **2015** | 99,436 | 2,524,593 | 1,371,925 | 1,610,349 | 413,561 |

| | | | | | |
|---|---|---|---|---|---|
| **ECO Bank Incorporated** | | | | | |
| **2009** | 29,982 | 2,519,822 | 1,340,952 | 3,016,902 | 309,345 |
| **2010** | 32,396 | 2,748,133 | 1,465,037 | 2,247,200 | 309,345 |
| **2011** | 33,733 | 2,921,394 | 1,647,016 | 1,989,114 | 309,345 |
| **2012** | 45,486 | 3,114,132 | 1,474,486 | 2,283,426 | 309,345 |
| **2013** | 23,570 | 3,599,559 | 1,824,601 | 2,634,262 | 309,345 |
| **2014** | 65,681 | 4,501,787 | 2,286,148 | 3,237,870 | 455,093 |
| **2015** | 73,041 | 4,662,298 | 2,420,654 | 3,609,218 | 455,093 |
| **First Bank of Nigeria Plc.** | | | | | |
| **2009** | 23,298 | 2,278,893 | 1,296,303 | 1,423,673 | 420,129 |
| **2010** | 29,177 | 2,354,831 | 1,160,293 | 1,447,600 | 391,093 |
| **2011** | 18,636 | 2,863,868 | 1,252,153 | 1,951,011 | 401,209 |
| **2012** | 75,097 | 3,130,341 | 1,562,695 | 2,405,035 | 377,257 |
| **2013** | 66,451 | 3,747,375 | 1,797,935 | 2,942,782 | 381,261 |
| **2014** | 84,842 | 4,131,635 | 2,193,563 | 2,989,735 | 383,148 |
| **2015** | 93,302 | 4,198,684 | 2,250,577 | 3,009,592 | 463,017 |
| **Access Bank of Nigeria Plc.** | | | | | |
| **2009** | 9,933 | 728,231 | 409,152 | 428,720 | 146,160 |
| **2010** | 11,068 | 804,823 | 429,782 | 486,925 | 174,671 |
| **2011** | 16,708 | 1,634,746 | 552,401 | 1,102,328 | 173,987 |
| **2012** | 24,515 | 1,792,394 | 616,852 | 1,300,858 | 185,836 |
| **2013** | 36,297 | 1,835,466 | 786,169 | 1,331,418 | 242,713 |
| **2014** | 42,976 | 2,104,360 | 1,110,464 | 1,454,419 | 273,879 |
| **2015** | 41,287 | 2,309,211 | 1,173,400 | 1,639,360 | 298,970 |
| **Skye Bank Plc.** | | | | | |
| **2009** | 7,190 | 689,813 | 352,106 | 421,308 | 163,232 |
| **2010** | 10,296 | 705,859 | 385,584 | 475,119 | 108,796 |
| **2011** | 5,222 | 927,102 | 490,737 | 642,342 | 108,725 |
| **2012** | 6,574 | 1,191,074 | 511,164 | 722,675 | 122,296 |
| **2013** | 5,513 | 1,382,164 | 628,217 | 889,906 | 126,250 |
| **2014** | 5,813 | 1,421,112 | 651,261 | 952,303 | 131,492 |
| **2015** | 8,828 | 1,284,823 | 657,159 | 837,680 | 140,547 |
| **Zenith Bank Plc.** | | | | | |
| **2009** | 72,871 | 1,917,080 | 798,387 | 1,501,918 | 356,038 |
| **2010** | 50,223 | 2,011,110 | 813,415 | 1,622,039 | 320,172 |
| **2011** | 41,301 | 2,169,073 | 827,035 | 1,577,290 | 372,017 |
| **2012** | 95,803 | 2,436,886 | 895,354 | 1,802,008 | 438,003 |
| **2013** | 83,414 | 2,878,693 | 1,126,559 | 2,079,862 | 472,622 |
| **2014** | 99,455 | 3,755,264 | 1,729,507 | 2,537,311 | 512,707 |
| **2015** | 105,663 | 4,006,842 | 1,989,313 | 2,557,884 | 593,760 |
| **Diamond Bank Plc.** | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| **2009** | 12,658 | 624,442 | 325,488 | 497,323 | 79,117 |
| **2010** | 6,774 | 632,618 | 411,054 | 510,442 | 82,600 |
| **2011** | -13,940 | 714,063 | 388,136 | 545,161 | 84,136 |
| **2012** | 22,108 | 1,059,137 | 585,200 | 823,090 | 107,316 |
| **2013** | 28,544 | 1,354,930 | 689,168 | 1,093,784 | 138,303 |
| **2014** | 25,485 | 1,933,123 | 791,094 | 1,493,081 | 208,806 |
| **2015** | 5,656 | 1,753,232 | 763,634 | 1,233,591 | 214,344 |
| **Union Bank of Nigeria Plc.** | | | | | |
| **2009** | 9,878 | 996,465 | 164,716 | 528,795 | 217,286 |
| **2010** | 2,707 | 1,004,950 | 171,001 | 429,804 | 223,678 |
| **2011** | -82,551 | 1,047,269 | 166,172 | 500,973 | 201,578 |
| **2012** | 3,951 | 1,014,806 | 156,375 | 522,443 | 219,790 |
| **2013** | 6,262 | 1,002,756 | 229,542 | 482,706 | 207,928 |
| **2014** | 26,827 | 1,008,451 | 312,797 | 527,617 | 221,528 |
| **2015** | 13,987 | 1,046,892 | 366,721 | 570,639 | 243,921 |

**APPENDIX III: Summary Output of Regression Results**

| | | | |
|---|---|---|---|
| Multiple R | 0.849 | D.W statistic | 2.2939 |
| R-Square | 0.761 | Akaike info criterion | 6.225 |
| Adjusted R-Square | 0.630 | Schwarz criterion | 5.711 |
| Standard Error | 24356.780 | Log likelihood | 76.3039 |
| Mean dependent var | 12.217 | Observations | 63.000 |
| F-statistic | 185.329 | | |

ANOVA

| | *df* | *SS* | *MS* | *F* | *Significance F* |
|---|---|---|---|---|---|
| Regression | 4 | 4.4E+10 | 111.1E+10 | 185.329 | 7.37E-10 |
| Residual | 58 | 3.44E+10 | 5.93E+08 | | |
| Total | 62 | 7.84E+10 | | | |

| | *Coefficients* | *Standard Error* | *t Stat* | *P-value* | *Significant* | *Hypothesis* |
|---|---|---|---|---|---|---|
| Intercept | -22.5626 | 76.8445 | -2.9361 | 0.0047 | YES | Reject |
| Total Assets | 0.0411 | 0.0095 | 0.4372 | 0.0035 | YES | Reject |
| Loans and Advances | 0.0156 | 0.0143 | 0.1082 | 0.0141 | YES | Reject |
| Customer Deposits | 0.0372 | 0.0121 | 0.3117 | 0.0563 | YES | Reject |
| Owners Capital | 0.1741 | 0.0438 | 3.9690 | 0.0002 | YES | Reject |

**Normal Probability Plot**

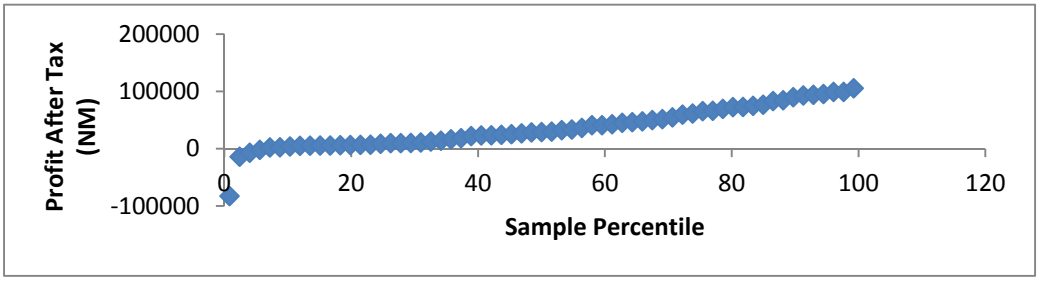

**Figure 1a: Profit after Tax of the five International banks in Nigeria for the period 2009-2015**

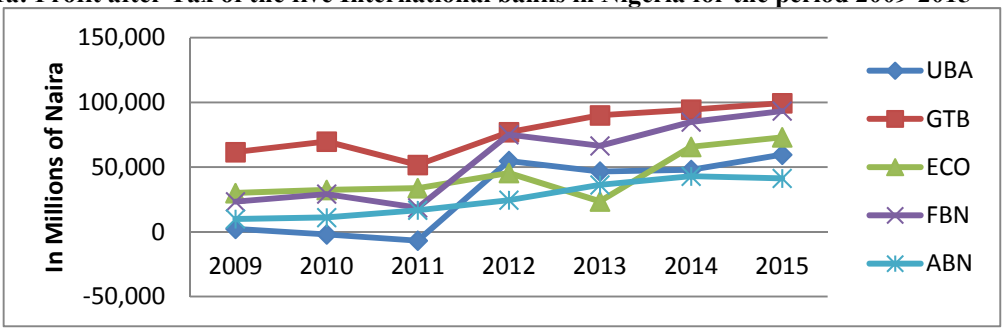


**Figure 1b: Profit after Tax of the four International banks in Nigeria for the period 2009-2015**

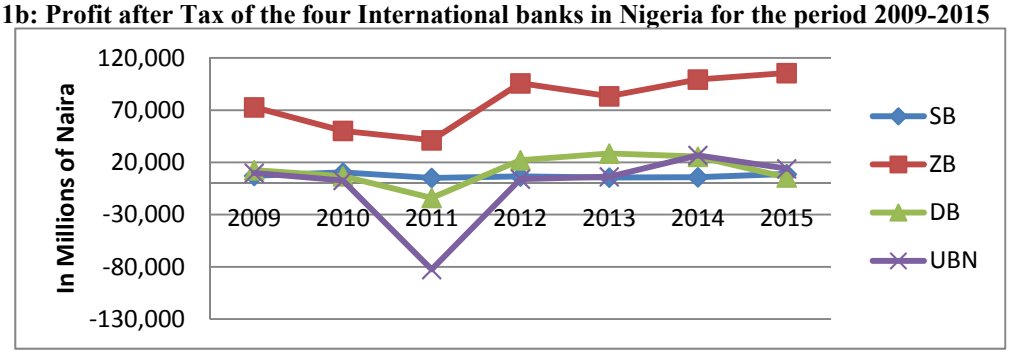


**Figure 2a: Total Assets (Size) of the five International banks in Nigeria for the period 2009-2015**

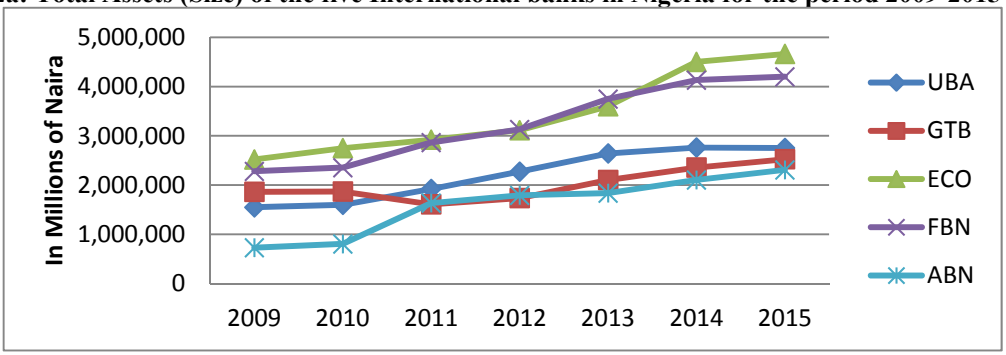


**Figure 2b: Total Assets (Size) of the four International banks in Nigeria for the period 2009-2015**

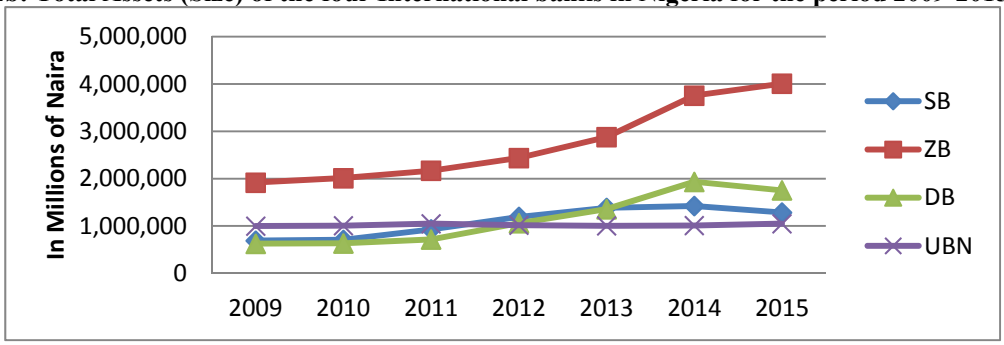

**Figure 3a: Loans and Advances of the five International banks in Nigeria for the period 2009-2015**

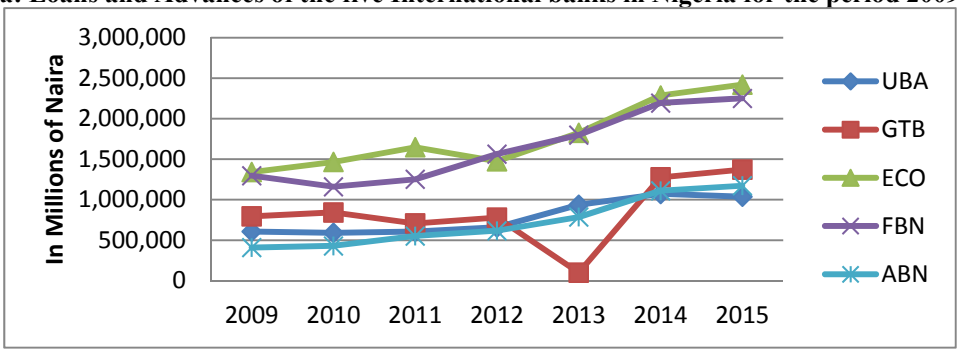


**Figure 3b: Loans and Advances of the four International banks in Nigeria for the period 2009-2015**

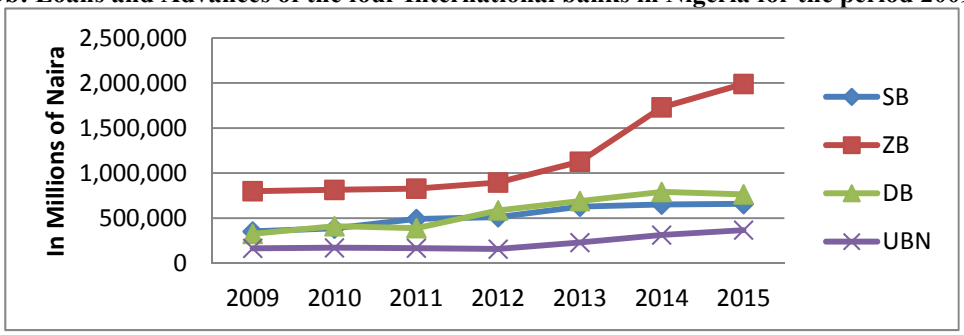


**Figure 4a: Customers Deposit of the five International banks in Nigeria for the period 2009-2015**

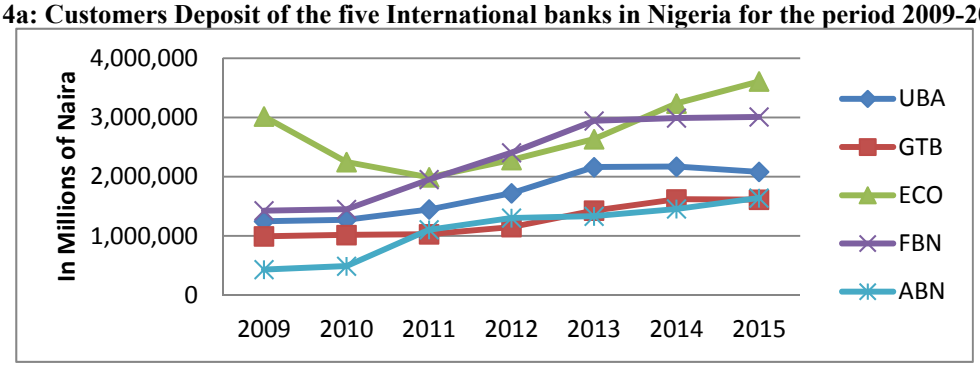


**Figure 4b: Customers Deposit of the four International banks in Nigeria for the period 2009-2015**

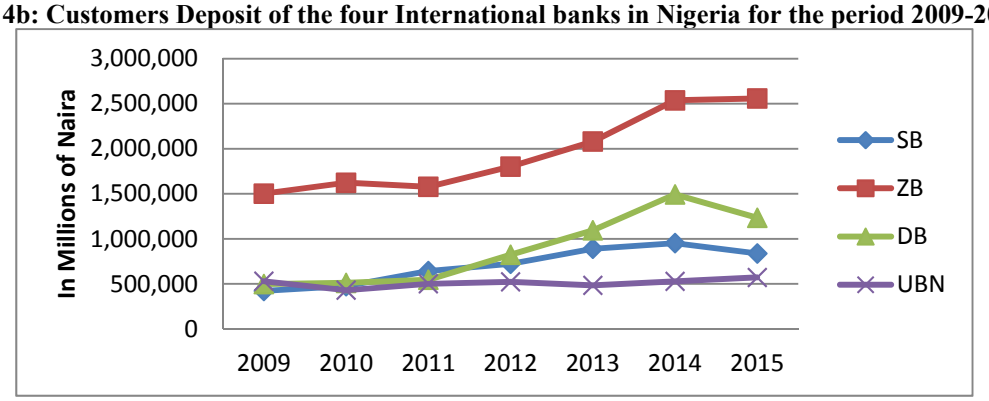

**Figure 5a: Owners' Capital of the five International banks in Nigeria for the period 2009-2015**

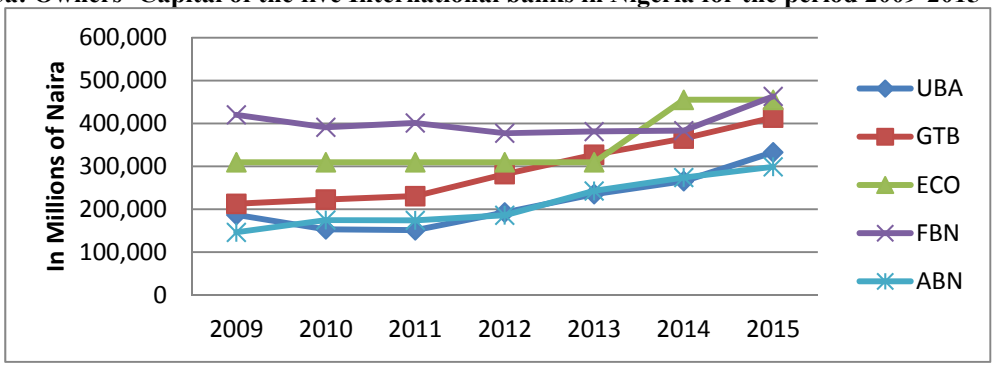


**Figure 5b: Owners' Capital of the four International banks in Nigeria for the period 2009-2015**

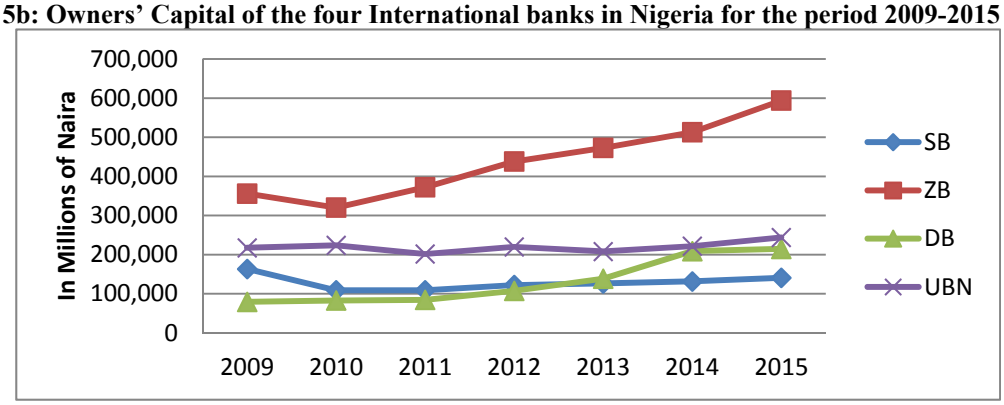

**Figure 6: Relationship between Profit after Tax and Loans and Advances of the nine International banks in Nigeria for the period 2009-2015**

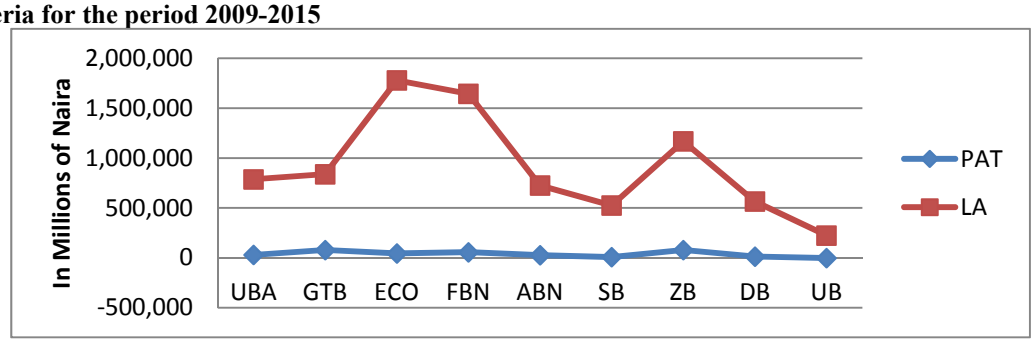


**Figure 7: Relationship between Profit after Tax and Customers Deposit of the nine International banks in Nigeria for the period 2009-2015**

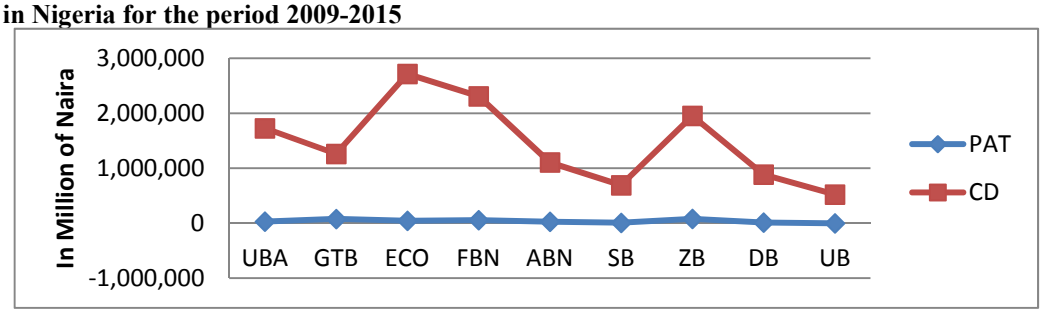


**Figure 8: Relationship between Loans and Advances and Customers Deposit of the nine International banks in Nigeria for the period 2009-2015**