
Effect of Credit Management on Profitability of Deposit Money Banks in Nigeria

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Abstract

The study examined the nexus between credit management and profitability (ROA) of Deposit Money Banks (DMBs) in Nigeria context for the period of 2006 to 2015. Secondary data were sourced from Central Bank of Nigeria Statistical Bulletins and the Annual Reports of all the existing DMBs studied. The study employed multiple regression technique in analyzing the data that gathered, the analysis was done using ordinary least square with E-View 9 Econometric tool. The study found that loans and advances and loan loss provision have positive and insignificant effect on profitability, while non-performing loan has a negative and insignificant effect on profitability. The overall estimates of the two regressions have good fit and are adequate statistically. The R^2 squared which measures the overall goodness of fit of the entire regression shows the value of 84% and 79% in models one and two respectively. While the Durbin Waston statistic with value of 2.808450 and 2.499545 shows that there is no auto correlation among the considered variables and the overall regression is statistically significant. Thus, the study concluded that sound credit management heightens profitability and holds the financial strength of the DMBs. It was recommended that DMBs should put in place sound credit management policies and practice. Issue recoverable loan and advances and provide for loan losses for desired credit risk exposure and increased profitability.

Keywords: Credit Management, Loan Losses, Profitability, Deposit Money Banks.

Introduction

1.1 Background of the Study

Banks today are the largest financial institutions around the world, with branches and subsidiaries throughout the world. These banks offer different products and services to public, and because of their high liquidity, these intermediary operations are quite risky. Therefore the banks are faced with diverse risks in the course of carrying out their operations. In view of the risks inherent in bank lending and the need to minimize or contain the risk (since they cannot be avoided entirely), and in view of the need for liquidity and profitability consistence with safety and regulatory constraints, the central issue in managing the lending portfolio is balancing the potential risk with returns. This involves credit management and credit analysis. The borrower's ability to repay the loan has to be determined, the borrower capacity and capital have to be assessed (Nwankwo, 1991).

Credit creation is the main income generating activity of banks (Kargi, 2011) Due to the increasing spate of non-performing loans; the Basel II Accord emphasized credit risk management practices. Compliance with the Accord means a sound approach to tackling credit risk has been taken and this ultimately improves bank performance.

Deposit money banks are exposed to a variety of risks among them; interest rate risk, foreign exchange risk, political risk, market risk, liquidity risk, operational risk and credit risk; and what banks does is to manage these challenges especially the credit aspect. In some instances, deposit money banks and other financial institutions have approved decisions that are not vetted; there have been cases of loan defaults and non-performing loans, massive extension of credit and directed lending. Policies to minimize on the negative effects have focused on mergers in banks, better banking practices but stringent lending, review of laws to be in line with the global standards, well capitalized banks which are expected to be profitable, liquid banks that are able to meet the demands of their depositors, and maintenance of required cash levels with the central bank which means less cash is available for lending. This has led to reduced interest income for the commercial banks and other financial institutions and by extension reduction in profits. Credit risk is the possibility that the actual return on an investment or loan extended will deviate from that, which was expected. Agu, & Ogbuagu,. (2015). defines credit risk as losses from the refusal or inability of credit customers to pay what is owed in full and on time. The main sources of credit risk include, limited institutional capacity, inappropriate credit policies, volatile interest rates, poor management, inappropriate laws, low capital and liquidity levels, directed lending, massive licensing of banks, poor loan underwriting, reckless lending, poor credit assessment, laxity in credit assessment, poor lending practices, government interference and inadequate supervision by the central bank. To minimize these risks, it is necessary for the financial system to have; well-capitalized banks, exposure within acceptable limit in order to provide a framework of the understanding the impact of credit risk management on banks profitability.

One of the regulations is the minimum capital commercial banks must keep absorbing loss if unexpected things happen. This kind of capital requirement is, in particular, conducted by Basel Committee which aims to enhance the key supervisory issue and improve the quality of banking supervision. The Basel Accord (Basel I) mainly focused on credit risk and called for a minimum capital ratio of capital to risk-weighted assets of 8% to be implemented by the end of 1992 (Bis.org, 2014). In January 1996, an amendment of Basel 1 was issued with incorporation of a capital 2 requirement for the market risks. Later in time, Basel committee was still endeavoring to make the Basel Accord more completed and up-to-date (Bis.org, 2014). So they released a new capital adequacy framework called Basel II in June 2004. This framework contained three pillars which we would like to discuss in later section. However, the 2007 financial crisis made the Basel committee realized that Basel II seems not enough in the complicated financial markets. A major overhaul of Basel II was necessary. The banking sector had entered the crisis with too much leverage and inadequate liquidity buffers (Bis.org, 2014). These defects were accompanied by poor governance and risk management, as well as inappropriate incentive structures. The combination of these factors was manifest in the mispricing of credit and liquidity risk, and excess credit growth (Bis.org, 2014). Therefore, a new standard Basel III was published in December 2010 and will be fully effective by the end of 2019. It strengthened the Basel II framework and made some innovations, including tightened definition of capital, requirements for leverage ratio and a countercyclical buffer, the capital for liquidity risk and counterparty credit risk as the derivatives had gained their population in 20th century.

Credit risk is one of significant risks of banks by the nature of their activities. Through effective management of credit risk exposure banks not only support the viability and profitability of their own business but also contribute to systemic stability and to an efficient allocation of capital in the economy (Psillaki, Tsolas, & Margaritis, 2010).

The regulations have been evolutionarily developed; the three Basel Accords all have placed explicitly the onus on banks to adopt sound internal credit risk management practices to assess their capital adequacy requirement. The strength of the banking industry is an important prerequisite to ensure the stability and growth of economy (Halling & Hayden, 2006). The safety of banking system is depending on the profitability and capital adequacy of banks. Profitability is a parameter which shows management approach and competitive position of bank in market-based banking. This parameter helps the banks to tolerate some level of risk and support them against short-term problems. It is of great interest to see how the profitability is affected by the risks faced by deposit money banks. Ara, Bakaeva & Sun (2009) have found the positive relationship between credit risk management and profitability of commercial banks in Sweden. Saeed & Zahid (2016) showed that credit risk indicators had a positive association with profitability of the banks. Ogboi & Unuafe (2013) found that sound credit risk management and capital adequacy impacted positively on the banks financial performance with the expectation of loan and advances which was found to have a negative impact on bank's profitability in Nigeria. Taiwo & Abayomi (2013) found that credit risk management has a significant impact on the profitability of Nigerian banks. Agu & Basil (2013) confirmed that increasing existence in the amount of bad doubtful debts in Nigeria commercial banks. And inefficient credit management which results in high bad debts portfolio, which is the principal cause of bank collapse. Kolapo, Ayeni & Oke (2012) showed that credit risk management is positively related to profitability of banks in Nigeria. Agu & Ogbuagu (2015) shows that increase in interest rate are a strong and statistical important factor that causes bad debt in Nigeria commercial banks. Kithinji (2010) assessed the effect of credit risk management on the profitability of commercial banks in Kenya and found that banks' profitability is not affected by credit risk management. When it comes to both credit risk and liquidity risk, Ruziqa (2013) has tested the impact of credit risk and liquidity risk on the financial performance of conventional banks in Indonesia. The results illustrated that credit risk was negatively related to profitability while liquidity risk demonstrated a positive effect. Olalere & Ahmad (2015) have empirically tested the effects of credit risk on profitability of commercial banks in Nigeria. The result revealed that there is a negative and significant relationship between Non-performing loan ratio and profitability; negative and significant relationship between debts to equity ratio and profitability of banks during the period of study. These kinds of researches show that no exact final conclusion could be drawn until now and thus make this area worth studying.

1.2 Statement of the Problem

Deposit money banks (DMBs) create loans from deposits from customers and these loans are major income generating source for majority of the banks. However this intermediation function of DMBs is associated with enormous risks to both the banks and the deficit units. Banks are now working so hard to attract the massive number of people who are not banking with them. This has led to an increase in banks' surplus units and deficit units as well. With the aim of increasing revenue and gaining a large portion of the market share, many banks have given out loans and advances which could not be recovered leading to a massive growth in Non-Performing Loans (NPLs) in their accounts. This has become a worrisome situation for banks and other stakeholders. In 2015, Credit Management and Bank Performance of Listed Banks in Nigeria revealed that ratio of non-performing loans and bad debt do not have a significant negative effect on the performance of banks in Nigeria. While secured and unsecured loan ratio and bank's performance was not significant (Uwalomwa, Uwuigbe & Oyewo, 2015). The Effect of Credit Risk on the Banking Profitability: A case on Bangladesh, 2015 finds a robust negative and significant effect of Non-Performing Loan to Gross Loan (NPLGL), Loan Loss Reserve to Gross Loan (LLRGL) on all profitability indicators. The

analysis also finds a negative and significant effect of Capital Adequacy Ratio (CAR) on Return on Average Equity (ROAE). It also reveals that the effect of the implementation of Basel II is significantly positive on Net Interest Margin (NIM) but significantly negative on ROAE (Abu, Sajeda & Mustafa, 2015). With respect to the issues raised, it can be said that the effect credit management has on a bank's financial strength (profitability) cannot be undermined.

However, the study carried out by Ogboi et al. (2013) on the topic "Impact of Credit Risk Management and Capital Adequacy of the Financial Performance of Commercial Banks in Nigeria" showed that sound credit risk management and capital adequacy impacted positively on the banks financial performance with the expectation of loan and advances which was found to have a negative impact on bank's profitability. In the study "Loan Management and the Performance of Nigeria banks" there is no significant relationship between effective loan management and the performance of banks (Lawrence, 2013). This implies that, banks in Nigeria experience high profit irrespective of the huge credit risk exposure, conflicting with views shared by other researchers. The Prime concern of this study is to determine whether credit management has an effect on the profitability of Nigerian banks using data from 2006 to 2015 knowing fully well that fall within the period of global economic depression.

1.3 Objectives of the Study

The general objective for this study is to establish the effect of credit management on the profitability of deposit money banks in Nigeria. The specific objective of the study includes:

1. To examine the effect of loans and advances on the profitability of deposit money banks in Nigeria.
2. To determine the effect of nonperforming loans on the profitability of deposit money banks in Nigeria.
3. To ascertain the effect of loan loss provisions on the profitability of deposit money banks in Nigeria

1.4 Research Questions

In order to achieve the above study objectives, the researcher aims at addressing the following questions in relation to the selected banks.

1. To what extent does loan and advances affect the profitability of deposit money banks in Nigeria?
2. What is the effect of non-performing loans on the profitability of deposit money banks in Nigeria?
3. To what extent dose loan loss provisions affect profitability of deposit money banks in Nigeria?

1.5 Statement of Hypotheses

Hypotheses to be tested in this study are stated below in their null forms:

H₀ 1: There is no significant positive effect of loans and advances on the profitability of banks in Nigeria.

H₀ 2: There is no significant positive effect of non-performing loan on profitability of banks in Nigeria.

H₀ 3: There is no significant positive effect of loan loss provisions on profitability of banks in Nigeria.

1.6 Significance of the Study

Credit management supports or underpins the profitability of banks and therefore proper

credit management reduces the default rate of customers and assists banks to be on top in the loan generating market. Credit risk which is as a result of ineffective management is one of the foremost catalysts of banks collapse, the study will help bank management to boost the bank's profitability. In addition, the degree to which credit is controlled has a bearing on the progress and sustainability of deposit money banks and the economy at large. The purpose of this research is to discover effect of credit management on the profitability of banks in Nigeria. The customers and investors need to know whether their deposits are managed or utilized efficiently, so it is an eye-opener. The research would serve as an incarnation of knowledge to individuals, management and practitioners in the banking and non-bank financial industry. The result would also be useful in academic field.

1.7 Scope and Limitations of Study

This study is limited to the effect Credit Management has on the profitability of only the deposit money banks in Nigeria from 2006 to 2015 and therefore the findings, analyses and recommendations cannot be linked to the whole banking industry in the Nigeria. Perhaps researching into other banks will yield dissimilar outcome. Cross border study can bring a different dimension as a result of difference in structures and supervisory guidelines. Our study intends to focus on all the existing Deposit Money Banks in Nigeria. Thus, the Micro-finance banks and other banks will not be included in our study.

The major limitation of the study is authenticity of the data employed, because the data is from secondary source. The researcher still doubt the validity of the data used.

2.1 Conceptual Review

2.1.1 Concept of Credit

Deposit money banks exists not only to accept deposits but also to grant credit facilities, therefore inevitably exposed to risk of credit management. Credit is the faith lender has in a borrower so that resources can be transferred to the borrower without immediate payment (Greuning & Bratanovic, 2003). This means the lender gives a borrower an asset with the intention of getting an equal asset in value on the day of payment in a later date. Credit risk is by far the most significant risk faced by banks and the success of their business depends on accurate measurement and efficient management of this risk to a greater extent than any other risks. In the financial parlance, Credit also refers to the giving out of loans and the making of debt Gieseche (2004). According to Tetteh (2012), sound credit-giving is one of the most essential principles which strengthen financial institutions in their financial standing. This researcher stressed that, sound credit giving establishes credit limits as well as develop credit granting process for approving new credits. Credit plays a very vital part in the economic growth and development of a country. These roles credit plays can be categorized into two: it enables the transfer of funds to where it will be most effectively and efficiently used and secondly, credit economizes the use of currency or coin money as granting of credit has a multiplier effect on the volume of currency or coin in circulation.

2.1.2 Credit Risk

Financial institutions through their role as a financial intermediary help circulate funds deposited by the various surplus units to the deficit units. In the course of performing this role, they are confronted with risk which remains one of the topical issues of current financial studies that had attracted special attention from both scholars and professionals. One key factor that determines the success of any banking institution is sound credit management.

According to Mohammad & Garba (2014) credit risk is the possibility of losing the outstanding loan partially or totally, due to credit events (default risk). Credit events usually

include events such as bankruptcy, failure to pay a due obligation, repudiation/moratorium or credit rating change and restructure.

Lending involves a number of risks. Among these risks, credit risk plays the major role since by far the largest asset item for banks is loans, which generally account for half to almost three-quarters of the total value of all bank assets. Credit risk comes up from uncertainty in a given counterparty to meet up with the obligation of honouring the terms and conditions of the credit arrangement (Fatemi & Foolad, 2006). In essence, credit risk arises from uncertainty in counterparty's ability or willingness to meet his/her contractual obligations. In the same vein, Naomi (2011) argued that credit risk represents the potential variation in the net income from non-payment or delayed payment of credit facility granted to customers. According to Basel committee on Banking Supervision, 1999, credit risk is most simply defined as the potential that a bank borrower or counterparty will fail to meet its obligations in accordance with agreed terms. From the above definitions and meanings given by these researchers, they bore down to the fact that, credit risk is a cancer which causes serious financial problems when it is not properly managed.

2.1.3 Credit Risk Management Strategies

The credit risk management strategies are procedures banks adopted in the mitigation or reducing the negative effect of credit risk. A comprehensive credit risk management structure is vital because it helps increase the revenue and survival. The main ideologies in credit risk management strategies take the following form. They include formation of a clear structure, delegation of powers, discipline, and communication at all level and holding people accountable. (Kolapo et al., 2012)

The credit risk management strategies are measures employed by banks to avoid or minimize the adverse effect of credit risk. A sound credit risk management framework as stated above is crucial for banks so as to enhance profitability guarantee survival. The key principles in credit risk management process are sequenced as follows:

a. Selection

According to Gestel et al. (2009), a sound credit risk management begins with a proper choosing of borrowers and the products that suit them. For this to be possible, a competent loan officers and Operative models of estimating risk should be in place. This is a very crucial stage because decisions are taken by the entire committee member. Here, borrowers that are likely to default are either denied or asked to secure the loan with more collateral to limit the effect of default.

b. Limitation

Gestel et al. (2009) stated that this method aids the bank by reducing the amount of loss suffered from a borrower. It prevents the event where the failure of counterparty to meet his or her obligation will heavily affect the financial performance of the bank. The number of riskier transactions is brought to the bearer minimal.

c. Diversification

Here, banks should deal with different counterparties ranging from individuals, industries. This helps to spread the risk across various borrowers so that banks can reduce the impact of loss; it is much workable for large and international banks. That is, managing credit risk through risk diversification or spread. (Gestle et al., 2009)

d. Credit Enhancement

According to (Gestel et al., 2009) when a bank realizes it is exposed to too much risk when dealing with a particular kind of borrower; it solves this by acquiring an insurance policy to cover for the any future losses. Through this, the quality of the loan facility is improved. It is called credit risk mitigation.

e. Compliance to Basel Accord

Basel committee on Banking Supervision enlarges the procedures through which a bank can manage its exposure to credit risk. One of the principles is constantly changing and reviewing their credit risk policies to suit the prevailing economic trend in the country. This can be done by the introduction of new products and services. Secondly, banks should investigate their borrowers properly. This will lead to a better understanding of the customer they are dealing with (Basel Committee on Banking Supervision, 1999). These strategies do not prevent credit risk totally; however they can reduce the level of credit risk the banks are exposure to. And this will increase the profitability performance of the banks.

The Basel II is built on three pillars:

1. Minimum Capital requirement
2. Supervisory Review
3. Market Discipline

Pillar 1 addresses the minimum capital requirement, that is, the rule which a bank calculates its regulatory capital. The minimum required capital ratio (8%) remained unchanged under Basel II while the way to calculate the risk-weighted-assets has been changed. As to the Pillar 2 of Basel II, it concerns with the supervisory review process and has been a supplement to the minimum capital requirement. Therefore, it requires a regular interaction between banks and supervisors in the assessment and planning of capital adequacy (Lind, 2005). The last pillar seeks to complement these activities through a stronger market discipline by disclosure of bank's key information of risk assessment procedures and capital adequacy (Ferguson, 2003). This, to some extent, could enable market participants to assess the bank's risk profile and level of capitalization.

2.1.4 Credit Evaluation

Credit evaluation is a loan function that is basic to minimizing loan loss. Through credit evaluation and/or analysis, the bank attempts to determine the ability of the borrower to repay the legitimate loans extended to him. By refusing the credit to a potential borrower whose analysis reveals insufficient financial strength, the bank hopes to improve on its chances to avoid unnecessary losses in its loan portfolio (Nwankwo, 1991).

This is a very sensitive stage because it helps ensure loan quality. In simple terms, the giving of credit rest on the sureness the lender has in the borrower's ability to pay (credit worthiness). Credit worthiness is the ability and the readiness of a borrower to settle his or her debt. This is one of numerous issues which determine what should go into the credit policies of a lender. A lot of financial models come into play when assessing the credit worthiness of the deficit units. The most commonly used is the five financial analysis tools which include character, capital, capacity, condition and collateral. These tools are generally known as the 5c's of credit (Machiraju, 2004).

2.1.5 Non- Performing Loans

It is the major determinant of credit risk in deposit money banks. It is the ratio of non-performing loans to total loans which reveals the quality of a bank's loan portfolio. That the

percentage of the total loans and advances that is on the verge of going bad. A higher ratio sends a signal that the management was not efficient when evaluating loan applications. Again it shows that there is a higher probability the most of the loans might not be recovered. Non-Performing credit facilities should be classified into three categories namely, sub-standard, doubtful or lost on the basis of criteria specified by the Banking laws in a country.

2.1.6 Loan Loss Provision

The guideline further states that licensed banks are required to make adequate provisions for perceived losses based on the credit portfolio classification system prescribed above in order to reflect their true financial condition. Two types of provisions (that is specified and general) are considered adequate to achieve this objective. Specific provisions are made on the basis of perceived risk of default on specific credit facilities while general provisions are made in recognition of the fact that even performing credit facility harbours some risk of loss no matter how small. Consequently, all licensed banks shall be required to make specific provisions for non-performing credits as directed by the regulatory authorities

2.1.7 Profitability of Deposit Money Banks

Banking Profitability may also show managers attitude toward risk. Banks that make huge profits are not scared when venturing into risky activities. In a similar fashion, banks that are not effective in their management encounter higher bad debt. Profitability measure is important to the investors. The level of profitability is very significant for shareholders of a bank because it shows how effective management has utilized their investments (Devinaga, 2010). In determining the financial strength of a deposit money bank, the level of profitability is predominant. ROA and ROE are used as main profitability measures in most of the organizations including banks and financial institutions. The ROA demonstrates the level of net income produced by the bank and also determines how the assets utilized by banks generate profit over the years. On the other hand, the return on equity (ROE) is the ratio of net income to total equity indicating returns to shareholders on the book value of their investment. It measures the rate of return for ownership interest (shareholders)' equity of common stock owner, it tells how efficient a firm/bank is at generating profits from each unit of shareholder equity, also known as *net assets or assets minus liabilities*. The ranking of banks is usually based upon the higher ROA ratio and total assets. As a general view, particularly in banking sector, ROA is known as good profitability multiplier for the reason that equity multiplier does not influence it (Saeed et al., 2016). Profitability can be measured in a number of ways. They include return on assets (ROA), return on equity (ROE). Over the year, most researchers prefer using return on asset (ROA) and Return on Equity (ROE) as indicators of profitability or performance. Researchers often use both ROA and ROE as measures for profitability. In their defense, these researchers selected ROA and ROE over others because it is free of financial leverage and the risks associated with it (Flamini et al., 2009). Additionally, it is possible to compare companies in the same industry or diverse industry when ROA and ROE is employed as a proxy for profitability. This makes ROA and ROE strong measures for profitability (Devinaga, 2010).

Return on Assets (ROA) is the ratio of net income to total assets, measure how profitable and efficient a bank' management is, based on the total assets. How bank manage its assets to generate profit within a period. ROA can be disintegrated into the following elements.

ROA= Net Income / Total Assets.

Return on Equity (ROE) is the net profit divided by shareholders' equity. It measures the bank's profitability by calculating how much profit is generated with the money invested by

shareholders. ROE is the best and most common measure of profitability, it does not consider factors such as timing of cash flows or turnovers (Angela D., 2016).

Profitability is an indicator of banks' capacity to carry risk and/or increase their capital. It indicates banks' competitiveness and measures the quality of management (Adinde, 2014). Profitability is one of the key concepts in our research. This is due to the topic of this research is about the relationship between the profitability and credit management. Clear explanation to the profitability of deposit money banks is crucial for readers to understand the research procedure and meaning.

The determinants of commercial banks' profitability can be concluded into two categories, namely those that are management controllable (internal determinants) and those are beyond the control of management (external determinants) Guru, Staunton, and Balashanmugam, 1999). The internal determinants reflect upon banks' management policy and decision concerning sources and uses of funds management, capital and liquidity management and expenses management. This kind of profitability factors can be examined by financial statements of commercial banks (Guru et al., 1999). The external factors are environment factors and firm-specific ones (Guru et al., 1999). This research mainly focuses on the analysis of internal determinants because our purpose is to test the effect of credit management to deposit bank's profitability. The determinants reflected upon credit management should be included into internal policy and decisions which can be examined by financial statements. On the other hand, bank's decisions are also affected by external regulation, thus this research also involves the consideration of external factors.

2.2 Theoretical Review

This research work was anchored on the following theories:

Anticipated Income Theory: Under this theory, bank's management can plan its liquidity based on the expected income of the borrower and this enables the bank to grant a medium and long-term loans, in addition to short-term loans as long as the repayment of these loans are linked by the borrowers expected income to be paid in the periodic and regular premiums, and that will enable the bank to provide high liquidity, when the cash inflows are regular and can be expected. Deposit money banks can manage its liquidity through appropriate credit management that is directing of granted loans, and ensuring that these loans are collected as at when due in a timely manner and minimize the possibility of delays in repayment at the maturity date (Okoh, Nkechukwu & Ezu, 2016).

Shiftability Theory: Shiftability is the approach to keep the banks liquid by supporting the shifting of assets. When a bank is short of ready money, it is able to sell its assets to a more liquid bank. The approach allows the banking system run more efficiently: with fewer reserves or investing in long-term assets. Under shiftability, the banking system tries to avoid liquidity crises by enabling banks to always sell or repo at good prices (Okoh, Nkechukwu, and Ezu 2016)

2.3 Empirical Review

(Taiwo and Abayomi 2013) evaluates the impact of credit risk management on bank profitability of some selected DMBs in Nigeria. The result from Panel Least Square (PLS) estimate found that credit risk management has a significant impact on the profitability of Nigerian banks. Poudel (2012) studied the factors affecting commercial banks performance in Nepal for the period of 2001-2012 and used a linear regression analysis technique. The study

revealed a significant inverse relationship between commercial bank performance measured by ROA and credit risk measured by default rate and capital adequacy ratio. In this study, the a priori assumption is that credit risk (non-performing loans, loan loss provisions, loans and advances) has a negative impact on profitability. Additionally, there are other internal variables such as capital adequacy, bank size and age that could affect the profitability (ROA and ROE) of a bank. The 2015 Credit Management and Bank Performance of Listed Banks in Nigeria revealed that ratio of non-performing loans and bad debt do not have a significant negative effect on the performance of banks in Nigeria. While secured and unsecured loan ratio and bank's performance was not significant (Uwalomwa, Uwuigbe and Oyewo, 2015).. Saeed and Zahid 2016) studied the impact of credit risk on profitability of the commercial banks and the result showed that credit risk indicators had a positive association with profitability of the banks.

Moreover, sound management of credit risk is a significant element of an all-inclusive method to risk management as a whole and vital to the future progress of any financial institution. Banks play a major role in the credit market because they assemble deposits from the various surplus units and make them available to the deficit unit for development activities. This implies that banks give out loan to borrowers from deposits made by the public with the objective of increasing their profitability. Now, since banks make huge profit through their role as financial intermediaries, it beholds on them to find pragmatic ways of managing credit risk and thereby guarding and enhancing their profitability (Muhammad & Garba, 2014).

Alalade, Binuyo & Oguntodu (2014) examines the impact of managing credit risk and profitability of banks in Lagos state. The research hypothesis was tested and analyzed in relation to credit risk and its significant effect on banks' profitability. It was also the aim of this research to evaluate how effective it is for a bank to manage its credit risk effectively to enhance profitability. Data for the study was an obtained through the administering structured questionnaires which were answered by respondents. Correlation coefficient was used to decide whether or not credit risk management has an impact on profitability. The results revealed that credit risk reduces the profit and therefore management of credit risk should be of great importance to management of bank in Lagos state.

More comprehensively, Kolapo et al. (2012) used panel data analysis in studying the effect of credit risk on banks' performance using ROA as a measure for performance. The result was that an increase in nonperforming loans or loan losses provision diminishes profitability (ROA), while an increase in total loan and advances enhance profitability.

2.5 Gap in Literature

Most of researchers have focused on one or several countries and showed different results. However, no researcher has put the research in Nigeria using all the deposit money banks in Nigeria. Therefore, we have found the existence of geographical gap and devote our effort to conduct a research on it. Most research work we explored on credit management and profitability of banks covered up to 2013, so we saw the existence of time gap. The period 2006-2015 of this study also falls within the period of global economic recession and unpleasant credit management consequences for banks; we put effort to cover the gap up to 2015 through our research.

Methodology

3.1 Research Design

It explains the nature of the pattern the research intends to follow. This is the overall plan or strategy for conducting the research. The main purpose of the study was to evaluate the relationship between credit management and the profitability of deposit money banks in Nigeria. The research was conducted through a Historical Research Design. Historical research design is where the researcher explores, explains and understands past phenomenon from already existing data. This helped the researcher to arrive at conclusions about the effect of credit management on the profitability in order to explain the present and predict and control the future. The study adopted quantitative research approach which answered the “How many?” questions in the study, thus allowed the measurement of relationships between variables in a systematic and statistical method.

3.2 Analytical Tool

There are numerous sources through which data can be sourced for a research work. In this study we concern with secondary data sources. We employed document analysis in accessing aggregated data for the research and used this technique to obtain data from the central bank statistical bulletin, annual reports and audited financial accounts of all the existing deposit money banks from 2006 to 2015. The simple regression of OLS estimation is obtained from E-view 9 used for the purpose of the analysis. The stationary of the time series is tested using the Augmented Dickey Fuller (ADF) Unit Root Test, Breusch-Godfrey Serial Correlation LM Test, Heteroskedasticity Test was done and; correlation and covariance.

3.3 Model Specification

The model adopted for this study is underpinned to the model of (Taiwo and Abayomi 2013) in their study “Credit Management Spur Higher Profitability? Evidence from Nigeria Banking Sector” which measured profitability with Return on Asset (ROA) and Return on Equity (ROE) for models 1 and 2 respectively as a function of Loan and Advances to Total deposit and Non-performing Loan to Total loan used as credit management indicators. However, the study improved on the model by incorporating ratio of Loan Loss Provision to classified loan (LLP/CL). ROA and ROE are Dependent Variables while LA, NPL, LLP are Independent Variables.

Therefore, the model functional form becomes;

$$ROA = f(LA/TD, NPL/LA, LLP/CL) \dots \dots \dots (1)$$

$$ROE = f(LA/TD, NPL/LA, LLP/CL) \dots \dots \dots (2)$$

Where; LA=LA/TD, NPL=NPL/LA, LLP=LLP/CL

$$ROA = \alpha_0 + \alpha_1 LA/TD + \alpha_2 NPL/LA + \alpha_3 LLP/CL + \varepsilon \dots \dots \dots (3)$$

$$ROE = \alpha_0 + \alpha_1 LA/TD + \alpha_2 NPL/LA + \alpha_3 LLP/CL + \varepsilon \dots \dots \dots (4)$$

The Model becomes;

$$ROA = \alpha_0 + \alpha_1 LA^* + \alpha_2 NPL^* + \alpha_3 LLP^* + \varepsilon \dots \dots \dots (5)$$

$$ROE = \alpha_0 + \alpha_1 LA^* + \alpha_2 NPL^* + \alpha_3 LLP^* + \varepsilon \dots \dots \dots (6)$$

Where;

ROA: Return on Assets

ROE: Return on Equity

LA: Loan and Advances

NPL: Non-Performing Loan

LLP: Loan loss provision

CL: Classified Loan

TD: Total Deposit

α_0 = Constant ε = Error Term. α_1 – α_3 = Estimation Parameters

3.5 Apriori Expectation

$\alpha_1, \alpha_3, > 0$ judging by the literature underpinning, we expect a direct and positive flow among the employed variables Return on Assets (ROA) and Return on Equity (ROE), and its dependent counterpart that is Loan and Advance (LA), and Loan Loss Provision (LLP). While we expect $\alpha_2 < 0$ that means, a negative effect of Non-Performing Loan (NPL) on the both dependent variables.

4. Data Presentation, Analysis and Discussion of Findings

This section reveals the empirical evidence on the effect of credit management on profitability of deposit money banks in Nigeria over the period 2006-2015. It tested and analyses the aggregated data generated for this work, presents the descriptive statistics of the selected variables, the serial correlation and the result of the regression analysis. The result of the analysis is shown on subsequent pages.

4.1 Data Presentation, Results and Discussions

Table 4.1: Data Presentation of Banks' Credit Management and Profitability Indicators.

Year	ROA	ROE	LA	NPL	LLP
2006	1.85	4.12	2524.3	225.08	160.9
2007	1.6	36.83	4813.5	387.99	280.9
2008	1.8	22.12	7799.4	463.49	272.9
2009	4.29	42.73	8912.1	2922.8	1977.5
2010	-9.28	37.83	7706.4	159.7	930.1
2011	3.91	51.83	7312.7	178.45	267.7
2012	-0.04	38.63	8150	182.6	234.8
2013	2.62	39.45	10005.6	165.54	275
2014	2.15	53.78	11475.2	134.87	315.55
2015	2.33	43.46	13222.7	123.56	424.275

Source: CBN Statistical bulletins and DMBs annual reports

This table analyzes the effect of credit management on the profitability of deposit money banks in Nigeria (2006 – 2015).

4.2 Data Analysis

Table 4.2 Regression Results of Model One

Dependent Variable: ROA

Method: Least Squares

Date: 07/08/17 Time: 18:51

Sample: 2006 2015

Included observations: 10

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.312652	1.783331	-0.175319	0.8666
LA	0.000495	0.000213	2.319712	0.0595
NPL	-0.014518	0.002706	-5.365131	0.0017
LLP	0.009800	0.001731	5.662811	0.0013
R-squared	0.845179	Mean dependent var	1.123000	
Adjusted R-squared	0.767769	S.D. dependent var	3.849087	
S.E. of regression	1.854888	Akaike info criterion	4.362700	
Sum squared resid	20.64366	Schwarz criterion	4.483734	
Log likelihood	-17.81350	Hannan-Quinn criter.	4.229926	
F-statistic	10.91818	Durbin-Watson stat	2.808450	
Prob(F-statistic)	0.007631			

Source: Author's computation with E-view 9

Discussions of Findings

- From the result of the analysis presented in Table 4.2, Loan and Advances (LA) has a positive effect on Profitability (ROA). This is shown by a regression coefficient of 0.000495 statistically significant at 5%. This shows that the management of Loan and advance by deposit money banks helps to increase the profitability of DMBs.
- Non-Performing Loan (NPL) has a negative effect on Profitability (ROA) as indicated by a coefficient of -0.014518 statistically significant at 1% level. This implies that increase in Non-Performing Loan is detrimental to DMBs Profitability (ROA).
- Loan Loss Provisions (LLP) has a positive effect on Profitability (ROA). This is indicated by a regression coefficient of 0.009800. The effect is statistically significant at 1%. This means that the increase in Loan Loss Provisions brings about increased profitability. Thus, there is enough provision made against DMBs' loan losses.

Table 4.3 Regression Results of Model Two

Dependent Variable: ROE

Method: Least Squares

Date: 07/08/17 Time: 18:52

Sample: 2006 2015

Included observations: 10

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	9.808819	12.15939	0.806687	0.4506
LA	0.003067	0.001454	2.109800	0.0594
NPL	-0.003103	0.011800	-0.262948	0.0014
LLP	0.007152	0.018450	0.387623	0.7117
R-squared	0.791641	Mean dependent var	37.07800	
Adjusted R-squared	0.237462	S.D. dependent var	14.48327	
S.E. of regression	12.64729	Akaike info criterion	8.201938	
Sum squared resid	959.7241	Schwarz criterion	8.322972	
Log likelihood	-37.00969	Hannan-Quinn criter.	8.069164	
F-statistic	1.934229	Durbin-Watson stat	2.492297	
Prob(F-statistic)	0.225372			

Source: Author's computation with E-view 9**Discussions of Findings**

- From the result of the analysis presented in Table 4.3, Loan and Advances (LA) has a positive effect on Profitability (ROA). This is shown by a regression coefficient of 0.003067 statistical insignificant at 5%. This shows that the management of Loan and advance by deposit money banks helps to increase the profitability of DMBs.
- Non-Performing Loan (NPL) has a negative effect on Profitability (ROA) as indicated by a coefficient of -0.003103 statistically insignificant at 1%. This implies that increase in Non-Performing Loan is highly detrimental to DMBs Profitability (ROA).
- Loan Loss Provisions (LLP) has a positive effect on Profitability (ROA). This is indicated by a regression coefficient of 0.007152. The effect is statistically insignificant at 71%. This means that the increase in Loan Loss Provisions brings about increased profitability. Thus, there is enough provision made against DMBs' loan losses.

Conclusively, Table 4.2 and 4.3 both shows that the relationship existing between the dependent and independent variables are stated thus:

$$ROA = -0.312652 + 0.000495LA - 0.014518NPL + 0.009800LLP$$

$$ROE = 9.808819 + 0.003067LA - 0.003103NPL + 0.007152LLP$$

From the two results, this means that Loan and Advances and Loan Loss Provisions variables conform to a priori expectation. In first and second model, their coefficients of 0.000495; 0.003067; and 0.009800; 0.007152 indicates that DMBs' Profitability (ROA & ROE) will rise by 0.000495; 0.003067 units and 0.009800; 0.007152 units if proper credit management of DMBs increases by 1 unit respectively, ceteris paribus. On the contrary, Non Performing Loan variable of both equation coefficients of -0.014518; -0.003103 indicates that DMBs' Profitability will dwindle by -0.014518; -0.003103 units if DMBs' Non Performing Loan

increases by 1 unit. This finding is in line with the findings of (Kolapo, et al 2012), and (Uwalomwa, et al 2015).

Table 4.4 Summary of Model One Regression result

Variables	Coefficients	P-value	Decision Rule	Conclusion
Loan and Advance	0.000495	0.0595	P-value \leq 0.05	Significant
Non-Performing Loan	-0.014518	0.0017	P-value < 0.05	Significant
Loan Loss Provision	0.009800	0.0013	P-value < 0.05	Significant

Source: Extract from Regression Estimation Result (table 4.2)

Hypotheses Testing for Model One

For proper test, the hypotheses were restated in null form as follows:

Hypothesis 1:

H₀: There is no significant positive effect on loans and advances and the profitability of banks in Nigeria.

Loan and Advances has a positive coefficient of 0.000495 and the p-value is 0.0595, it is statistically significance at 5% level. Thus we reject the null hypothesis and accept the alternative and conclude that, Loan and Advances has a positive and significant effect on ROA of banks in Nigeria.

Hypothesis 2:

H₀: There is no significant positive effect on non-performing loan and profitability of banks in Nigeria.

Non-performing Loan has a negative coefficient of -0.014518 with p-value of 0.0017 which is statistically significant at 1% level. Thus, we accept the null hypothesis and reject the alternative. Therefore, Non-performing Loan has a negative and significant effect on the ROA of banks in Nigeria.

Hypothesis 3:

H₀: There is no significant positive effect on loan loss provisions and profitability of banks in Nigeria.

Loan Loss Provisions has a positive coefficient of 0.009800 and p-value of 0.0013 which is statistically significant at 1% level. We therefore reject the null hypothesis and accept the alternative. Thus, Loan Loss Provisions has a positive and significant effect on ROA of banks in Nigeria.

Table 4.5 Summary of Model Two Regression result

Variables	Coefficients	P-value	Decision Rule	Conclusion
Loan and Advance	0.003067	0.0594	P-value \leq 0.05	Significant
Non-Performing Loan	-0.003103	0.0014	P-value < 0.05	Significant
Loan Loss Provision	0.007152	0.7117	P-value > 0.05	Insignificant

Source: Extract from Regression Estimation Result (table 4.3)

Hypotheses Testing for Model Two

Hypothesis 1:

H₀: There is no significant positive effect on loans and advances and the profitability of banks in Nigeria.

Loan and Advances has a positive coefficient of 0.003067 and the p-value is 0.0594, it is statistically significance at 5% level. Thus we reject the null hypothesis and accept the alternative and conclude that, Loan and Advances has a positive and significant effect on ROE of banks in Nigeria.

Hypothesis 2:

H₀: There is no significant positive effect on non-performing loan and profitability of banks in Nigeria.

Non-performing Loan has a negative coefficient of -0.003103 with p-value of 0.0014 which is statistically significant at 1% level. Thus, we accept the null hypothesis and reject the alternative. Therefore, Non-performing Loan has a negative and significant effect on the ROE of banks in Nigeria.

Hypothesis 3:

H₀: There is no significant positive effect on loan loss provisions and profitability of banks in Nigeria.

Loan Loss Provisions has a positive coefficient of 0.007152 and p-value of 0.7117 which is statistically insignificant at 71% level. We therefore reject the null hypothesis and accept the alternative. Thus, Loan Loss Provisions has a positive and insignificant effect on ROE of banks in Nigeria.

4.3 Discussion of Findings

The result is compared with a priori expectation and with prior research findings, and our personal contribution is stated. The a priori expectation of the coefficient of the model: $\alpha_1, \alpha_3, > 0$ and $\alpha_2 < 0$.

For model one:

- Loan and Advances has a positive coefficient of 0.000495 showing a positive effect on profitability (ROA), which is in conformity with the a priori expectation of loan and advances. The result showed consistency with the earlier findings of Kolapo et al (2012) and Taiwo et al (2013).
- Non-performing Loan has a negative coefficient of -0.014518 indicating a negative relationship with profitability; this is in agreement with the a priori expectation of non-performing loan. The finding concurs with that of Olalere et al (2015) and Uwalomwa et al (2015).
- Loan Loss Provisions has a positive coefficient of 0.009800 showing a positive effect on profitability, which is in agreement with the a priori expectation of loan loss a provision. The finding is in consistence with result of (Ogboi et al 2013) and (Saeed and Zahid 2016).

For model two:

- Loan and Advances has a positive coefficient of 0.003067 showing a positive effect on profitability (ROE), which is in conformity with the a priori expectation of loan and advances. The result also showed consistency with the earlier findings of (Saeed and Zahid 2016).

- Non-performing Loan has a negative coefficient of -0.000450 indicating a negative relationship with profitability; this is in agreement with the a priori expectation of non-performing loan. The finding concurs with that of (Olalere and Ahmed 2015) and Abu et al (2015).
- Loan Loss Provisions has a positive coefficient of 0.001362 showing a positive effect on profitability, which is in agreement with the a priori expectation of loan loss a provision. The finding is in consistence with result of (Poudel 2012) and (Saeed and Zahid 2016).

Implications of Findings:

1. Loan and Advances is positively signed in both model indicating that it positively influences profitability (ROA and ROE). With the higher interest rate charged on the loan facilities, banks can give out more loans without fear because they know that income earned or paid on recovered loan would be enough to cancel that which went bad.
2. Non-Performing Loan is negatively significant in models one and two showing that it dwindles profitability (ROA and ROE) and has not enhanced DMBs' profitability. This may be as a result of poor credit management.
3. The loan loss provision had a positive influence on profitability in both equations because the presence of LLP served as a shield or/and financial backup for the banks to absorb losses. This protects the banks' profit from any unforeseen credit default.

5. Summary, Conclusion and Recommendation

5.1 Summary of Findings

The roles of deposit money banks in financial sector and in Nigeria economy cannot be undermined. They engage in serious financial intermediation where funds are taken from the surplus units and made available to the deficit units. This role exposes them to various types of risks and one of which is credit risk. Sound credit management is requisite for banks to overcome the risk associated with credit management. It is therefore essential to identify the effect of credit management on the profitability of deposit money banks in Nigeria. The purpose of this research work is to identify the prevailing relationship between Credit management and Profitability of deposit money banks in Nigeria.

The measures of profitability are Return on asset (ROA and ROE) which we used as the dependent variables for this study. The explanatory variables employed in the model were the measures for credit management. This included loan and advances, non-performing loan and loan loss provision. The OLS estimation is obtained from E-view 9 used for the purpose of analysis and the data were accessed from the CBN statistical bulletins and the annual reports of all the existing deposit money banks in Nigeria for a period of 10 years (2006-2015). Based on the hypotheses tested in the research the summary of the two results are as follows:

1. Loan and Advances (LA) has a positive effect on Profitability (ROA and ROE) as well as, showing significant effect of Loan and Advances on Profitability.
2. Non-Performing Loan (NPL) has a negative effect on Profitability (ROA and ROE), with significant effect of Non-Performing Loan on Profitability.
3. Loan Loss Provisions (LLP) has a positive effect on Profitability (ROA and ROE) as well as, significant effect of Loan Loss Provisions on Profitability (ROA) but with insignificant effect on Profitability (ROE).

5.2 Conclusion

The estimated result on the effect of credit management on the profitability of deposit money banks in Nigeria with focus on the all the existing DMBs; we found that the regression coefficient of Loan and Advances and Loan Loss Provisions are positively signed indicating that they positively influence profitability, during the period studied. However, Non-Performing Loan of deposit money banks detrimental to the profitability of banking businesses. Based on the findings, the study concluded that credit management of deposit money banks affect and increase their profitability. Although, most DMBs could not grow or perform as expected due to high rate of non-performing loan, strong DMBs still generates loans from the customers' deposits, and with the higher interest rate charged on the loan facilities, banks can give out more loans without fear because they know that income earned or paid on recovered loan would be enough to cancel that which went bad. They also make provisions for loan loss but DMBs should carefully evaluate credit request before granting to customer(s) to circumvent high rate of non-performing loan.

5.3 Recommendation

In line with the findings of the study, the study portrays the urgent need for deposit money banks in Nigeria to intensify their capacity in credit analysis and loan administration while the regulatory authority should pay more attention to banks' compliance to relevant provisions of the Bank and other Financial Institutions Act (1999) as emended and other prudential guidelines.

1. The management of banks especially credit officers must do diligence by adhering to prudential guidelines when given out credit facilities.
2. Banks must put in place sound credit-granting process, strictly hold fast to know your customer (KYC) system, applying effective measures in measuring and monitoring of credit and ensure effective controls over credit risk.
3. The DMBs should ensure guarantee of credits which would serve as a shield against credit loss of customer's fund. Small DMBs which are poorly capitalized should not offer certain categories of credit facilities. Thus, the worth of capital for a bank serves as a shield against loss of depositors' funds. Nigerian deposit money banks should be well capitalized even without the 'regulatory eyes' of the authority.

5.4 Contribution to Knowledge

The essence of the research work is to make contributory impact to knowledge and to extend or validate the wisdom of mankind. Therefore our contributions to knowledge are as follows:

- The study has contributed to the management of credit by Deposit Money Banks. It therefore shows the possible combination of credit management indicators.
- The work provides additional literature for further research in credit management and profitability.
- The study covered knowledge gap by extending the period of studies captured up to 2015 and has put the research in the Nigerian context using all the deposit money banks and covering all geographical gap. The study also extended the knowledge from the findings of Kolapo et al (2012), Mohammad and Garba (2014), Taiwo and Abayomi (2013) and Saeed and Zahid (2016) and also validated the study of Ogboi and Unuafe (2013) and Abu et al (2015).

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APPENDIX 1:**AUGMENTED DICKEY-FULLER TEST**

Null Hypothesis: ROE has a unit root

Exogenous: Constant

Lag Length: 1 (Automatic - based on SIC, maxlag=1)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-1.656833	0.4137
Test critical values: 1% level	-4.582648	
5% level	-3.320969	
10% level	-2.801384	

*MacKinnon (1996) one-sided p-values.

Warning: Probabilities and critical values calculated for 20 observations

and may not be accurate for a sample size of 8

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(ROE)

Method: Least Squares

Date: 07/08/17 Time: 18:59

Sample (adjusted): 2008 2015

Included observations: 8 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ROE(-1)	-0.572897	0.345778	-1.656833	0.1585
D(ROE(-1))	-0.494485	0.200372	-2.467830	0.0567
C	27.04329	13.66008	1.979731	0.1046
R-squared	0.777083	Mean dependent var	0.828750	
Adjusted R-squared	0.687916	S.D. dependent var	13.84834	
S.E. of regression	7.736306	Akaike info criterion	7.209722	
Sum squared resid	299.2522	Schwarz criterion	7.239513	
Log likelihood	-25.83889	Hannan-Quinn criter.	7.008797	
F-statistic	8.714916	Durbin-Watson stat	2.393629	
Prob(F-statistic)	0.023462			

SERIAL CORRELATION

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.691578	Prob. F(2,4)	0.5521
Obs*R-squared	2.569414	Prob. Chi-Square(2)	0.2767

Test Equation:

Dependent Variable: RESID

Method: Least Squares

Date: 07/08/17 Time: 18:56

Sample: 2006 2015

Included observations: 10

Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.288116	13.61925	-0.094580	0.9292
LA	0.000533	0.001797	0.296435	0.7817
NPL	-0.001850	0.014005	-0.132066	0.9013
LLP	-0.003106	0.021853	-0.142127	0.8939
RESID(-1)	-0.612780	0.605050	-1.012775	0.3685
RESID(-2)	0.074943	0.593078	0.126363	0.9055
R-squared	0.256941	Mean dependent var	4.44E-15	
Adjusted R-squared	-0.671882	S.D. dependent var	10.32647	
S.E. of regression	13.35226	Akaike info criterion	8.304957	
Sum squared resid	713.1312	Schwarz criterion	8.486508	
Log likelihood	-35.52479	Hannan-Quinn criter.	8.105796	
F-statistic	0.276631	Durbin-Watson stat	1.527934	
Prob(F-statistic)	0.904370			

HETEROSKEDASTICITY TEST

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	1.057672	Prob. F(3,6)	0.4338
Obs*R-squared	3.459076	Prob. Chi-Square(3)	0.3261
Scaled explained SS	0.710324	Prob. Chi-Square(3)	0.8708

Test Equation:

Dependent Variable: RESID²

Method: Least Squares

Date: 07/08/17 Time: 18:57

Sample: 2006 2015

Included observations: 10

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	235.5131	102.9003	2.288751	0.0621
LA	-0.010959	0.012303	-0.890714	0.4074
NPL	0.051419	0.099860	0.514909	0.6250
LLP	-0.146292	0.156137	-0.936943	0.3850
R-squared	0.345908	Mean dependent var	95.97241	
Adjusted R-squared	0.018861	S.D. dependent var	108.0531	
S.E. of regression	107.0292	Akaike info criterion	12.47326	
Sum squared resid	68731.55	Schwarz criterion	12.59429	
Log likelihood	-58.36628	Hannan-Quinn criter.	12.34048	
F-statistic	1.057672	Durbin-Watson stat	2.457547	

Prob(F-statistic) 0.433754

CORRELATION

	ROE	C	LA	NPL	LLP
ROE	1.000000	NA	0.689172	0.076146	0.211517
C	NA	NA	NA	NA	NA
LA	0.689172	NA	1.000000	0.019278	0.157838
NPL	0.076146	NA	0.019278	1.000000	0.901201
LLP	0.211517	NA	0.157838	0.901201	1.000000

COVARIANCE

	ROE	C	LA	NPL	LLP
ROE	188.7887	0.000000	27541.84	854.2178	1536.548
C	0.000000	0.000000	0.000000	0.000000	0.000000
LA	27541.84	0.000000	8459699.	45778.38	242717.4
NPL	854.2178	0.000000	45778.38	666593.9	389014.1
LLP	1536.548	0.000000	242717.4	389014.1	279528.6