Credit Risk Management: Implications on Bank Performance and Lending Growth

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Abstract: This study is an empirical investigation into the quantitative effect of credit risk management on the performance of Nigeria's Deposit Money Banks (DMBs) and Bank lending growth over the period of 17 years (1998-2014). Secondary data for empirical analysis was obtained from CBN Statistical bulletin 2014 and World Bank (WDI) 2015. The study employed multiple linear regression model to analyze the time series data. The result showed that sound credit management strategies can boost investors and savers confidence in banks and lead to a growth in funds for loans and advances which leads to increased bank profitability.. The findings revealed that credit risk management has an insignificant impact on the growth of total loans and advances by Nigerian Deposit money banks. The study therefore recommends that DMBs in Nigeria should strictly adhere to their credit appraisal policies which ensures that only credit worthy borrowers have access to loanable funds. Banks are to ensure that funds are allocated to borrowers with decent to high credit ratings.
Keywords: Credit risk, Non-performing loans, Deposit money banks, Bank profitability

INTRODUCTION

The financial services provided by banks is essential to economic and financial development. Their role as financial intermediaries facilitates rapid economic growth. Financial stability is vital for any nation so therefore the financial institutions need to be properly managed. The velocity of loan creation in an economy significantly influences the productive activities in a nation [1]. The main motive of a bank is to redirect funds from the surplus sector to the deficit sector in a profitable and sustainable manner. Interest on loans and advances are the main sources of income for a commercial bank, by given out loans, banks are exposed to different forms of risks e.g. liquidity risk, credit risk, etc. (Kargi, 2011). Our main focus is the credit risk a bank incurs by virtue of loan creation. The Basel Committee on Banking Supervision (BCBS) defined credit risk as the probability that a bank borrower will fail to meet its obligations in accordance with agreed terms or the possibility of losing the outstanding loan partially or totally due to credit events (Iwedi, & Onuegbu, (2014). Poor credit administration reduces bank profitability and leads to bank distress and/or failure (Osuka, & Amako, (2015). The aim of credit risk management is to maximize a bank's risk-adjusted rate of return. This can be achieved by maintaining credit risk exposure within acceptable parameters. Efficient loan portfolio diversification can ensure that credit risk is minimized but it is imperative for banks to be wary of credit risk in administering each individual loans.

In order to tackle the issues of credit risk management in the country, the Central Bank of Nigeria (CBN) entered into an agreement in 1987 known as Basel I and Basel II accords. Both accords emphasized the importance of capital adequacy for mitigating credit risks, which cushions the effects of sudden financial losses on banks (Iwedi, & Onuegbu, (2014). Nawaz *et al* [2], postulated that the magnitude of non-performing loans in the banking system eroded investors' confidence and alarmed stakeholders in the banking industry. Osuka, & Amako, (2015) posits that between 1999 and 2009, non-performing loans was critically high at and peaked at 35% in 2009 in deposit money banks in Nigeria**.** This excessively high level of NPL in the banks were caused by poor corporate governance practices, lax credit administration processes and the absence or non- adherence to credit risk management practices. High levels of NPL has a tendency to reduce the lending ability of deposit money banks and possibly put them out of business. Iwedi, & Onuegbu, (2014) reported that the banking industry had been hit by low quality loan assets as a result of poor economic and financial conditions in the country following the Great financial recession of 2008 and the negative oil price shock. Low debt recovery hindered banks from extending further credit into the economy which adversely affected productivity. Asset Management

Corporation of Nigeria (AMCON) was then established in 2010 as a monetary policy response to solve the aching problem of non-performing loans troubling the commercial banks. Now in 2016, Nigeria faces another economic crisis in the form of falling oil prices, poorly performing financial market and worrisome exchange rate volatility, issues of credit defaults and non-performing loans have once again come to the forefront of economic discourse. It is against this background that this study seeks to examine the relationship between credit risk management on deposit money bank performance and lending growth. The study covers the period between 1998 – 2014 which encompasses the periods of financial liberation in the economy, adoption of the Basel accords, rapid growth in the Nigerian economy and several bank recapitalizations. The objective of the study is to investigate the impact of non-performing loans on bank performance and lending growth.

LITERATURE REVIEW
Conceptual Review
Risk is the possibility that the actual return of an investment will differ from the expected return. Risk can also be defined as the realistic possibility of losing the principal invested and the amount of interests accrued on it either partially or completely. Credit risk is the risk that a borrower defaults and does not honor its obligation to service debt. It occurs when the borrower is unable to pay his debts as agreed or fails to make timely payment on his debt servicing. The default of a small number of customers may result in a very large loss for the bank (Boland (2012). Credit risk has been identified by Basel Committee as a main source of risk in the early stage of Basel Accord. Effective management of credit risk is inseparably linked to the development of banking technology which enables high speed loan decision making and simultaneously reduce the cost of controlling credit risk. This requires a complete base of partners and contractors (Das, & Ghosh, (2007). 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 (Iwedi, & Onuegbu, (2014).

Theoretical Review
Commercial Loan Theory
The oldest theory of banking is the commercial loan theory, also called the real bills doctrine. The commercial loan theory holds that banks should lend only on short term, self-liquidating, commercial paper. According to Hosna & Manzura, (2009), the commercial loan theory is geared to influence persuasively both the bank lending and the general economic activities. Strict adoption of this theory will reveal that it is expected to serve as a monetary supply to changes in aggregate economic activity. The popularity of this doctrine among Deposit-Money Banks (DMBs) in Nigeria is evident. Nigerian bankers believe that since their resources were repayable at short notice, such depositors' monies should be employed accordingly in short-term loans. Kargi, (2011) posited that the strong tie to this conception is rather orthodox if consideration is given to the fact that at the time of the supremacy of the theory, there were little or no secondary reserve assets, which could have served as a liquidity buffer for the bank. Moreso, this theory fails to consider the credit needs of Nigeria's developing economy. It has not encouraged banks to fund the purchases of plants, equipment, land, and home-ownership. For a theory to maintain that all loans should be liquidated in the normal course of business shows its failure to recognize the relative stability of bank deposits. Whereas, demand deposits are on demand, all depositors are not likely to demand payment at the same time. Thus, stability of deposits enables a bank to extend funds for a reasonable long period without danger of illiquidity. Though, with its flaws, the commercial loan theory, or real bills doctrine has been a persistent theory of banking. Vestiges of it still remain in the structure of bank regulatory agencies, bank examination procedures and the thinking of many bankers. One cannot understand contemporary banking without an understanding of our banking history, and cannot understand banking history without an understanding of the commercial loan theory.

The Shiftability Theory
This theory assumes that assets need not be tied on only self-liquidating bills, but also held in other shiftable open-market assets, such as government securities (Moti, Masinde, & Mugenda, (2012). It must be noted that the shiftability theory did not replace the commercial loan theory or made it to be invalid. Instead, the shiftability theory took a more general view of the banking business by broadening the list of assets deemed legitimate for bank ownership. The shiftability theory does not say that commercial loan are inappropriate bank assets, it does say that commercial loans are not the only appropriate asset. The thrust of the shiftability theory holds that the liquidity of a bank depends on its ability to shift its assets to someone else at a predictable price. Thus, for example, it would be quite acceptable for a bank to hold short-term open market investments in its portfolio of assets. According to Hosna & Manzura, (2009)), the shiftability theory had a profound effect on banking practices can hardly be denied. What it did, basically was to redirect the attention of bankers and the banking authorities from loans to investments as a source of bank liquidity. Indeed, proponents of the theory argued that the liquidity of short-term, commercial loans was largely fictional in any case. According to Kargi, (2011), as with the commercial loan theory, however, the shiftability theory contained a serious flaw. (Actually, this flaw did not lie so much in the theory itself-it was well understood by the various writers on the subject as

it did in the bank management practices to which the theory led). The defect of the theory was simply this: Although one bank could obtain needed liquidity by shifting its assets, the same thing was not true of all banks taken together.

The Anticipated Income Theory

Out of a comprehensive study in 1949, Prochnow formulated a new loan theory which he called "the Anticipated Income Theory". According to Afriyie & Akotey, (2011), they found in thier study that: In every instance, regardless of the nature and character of the borrower's business, the bank planned liquidation of term loans from anticipated earnings of the borrower. Liquidation is not by sales of assets of the borrower as in commercial or traditional theory of liquidity or by shifting the term loan to some other lenders as in the shiftability theory of liquidity but by anticipating income of the borrower. In effect, this theory assumes that banks should make loans on the basis of the anticipated income of the borrower and not on his present value. In the words of Kolapo, Ayeni, & Oke, (2012), one striking thing with this theory is its "future-oriented approach" to bank loans and advances. It is also generally known as "cash flow approach" to lending. Properly understood, this theory was a rival only to the commercial loan theory, not the shift ability theory. It does not question the shiftability view that a bank's most fundamental source of liquidity is its secondary reserves. Rather, it again focused attention on the types of loans appropriate for a bank to make but came to quite a different conclusion than that reached by the advocates of the commercial loan theory (Moti, Masinde, & Mugenda, (2012).

The Credit Risk Theory

Credit risk according to Anderson and Salas, & Saurina, (2002) refers to the risk that a borrower will default on any type of debt by failing to make required payments. The risk is primarily that of the lender and includes lost principal and interest, disrupt loss may be complete or partial and can arise in a number of circumstances, such as an insolvent bank unable to return funds to a depositor. To reduce the lenders risk, the lender may perform a credit check on the prospective borrower, may require the borrower to take appropriate insurance, such as mortgage insurance or seek security or guarantees of third parties. In general, the higher the risk, the higher will be the interest rate that the debtors will be asked to pay on the debt. (Owojori, Akintoye & Adidu, (2011).

The Liability Management Theory

This theory holds that it is unnecessary to observe traditional standards since reserve money can be borrowed or obtained in the money market using short term debt instruments whenever a bank experiences reserve deficiency. According to Shafiq & Nasr, (2010), it does not mean that the bank manages only its liabilities and passive with respect to its assets.

Rather, the theory continues to recognize that the asset structure of the bank has a prominent role to play in providing the bank with liquidity. But the theory takes a one dimensional approach to liquidity and argues that the bank can also use its liabilities for liquidity purposes. A bank wants liquidity for deposit withdrawal purposes and also to meet the reasonable loan requests of its customers. Not only are bank loans profitable but a bank that won't or can't make loans to its depositors when they need funds is not likely to keep those depositors for very long.

Empirical Review

The issue of credit risk management and performance of financial institutions in ensuring that banks are able to achieve their set objectives has been well researched upon by numerous academics. There is an overwhelming belief that credit risk management has a strong influence on bank profitability. Shafiq & Nasr, (2010) examined the key determinants of credit risk of commercial banks on emerging economies banking systems compared with the developed economies. They found that regulation is important for banking systems that offer multi-products and services, management quality is critical in the cases of loan-dominant banks in emerging economies. Boland (2012) studied the influence of bank regulations, concentration, financial and institutional development on commercial banks' margin and profitability in Middle East and North Africa (MENA) countries from 1989-2005 and found that bank capitalization and credit risk have positive and significant impact on banks' net interest margin, cost efficiency and profitability. Kargi, (2011) by using Return on Equity as a measure of bank's performance and a ratio of non-performing loans to total asset as proxy for credit risk management. They found that Non-performing loans (NPL) had a larger effect on profitability as measured by (ROE) than capital adequacy ratio (CAR) and the effect of credit risk management on profitability varied among Ghanaian banks included in their study. Kithinji [3] examined the impact of credit risk management on the profitability of commercial banks in Kenya between 2004 and 2008. Using regression analysis, he found that the larger part of the banks' profits was influenced by other variables other than credit and nonperforming loans. Das, & Ghosh, (2007) revealed that credit risk management has a strong bearing on bank profitability in Kenya. Iwedi, & Onuegbu, (2014)) posit that credit risk management plays a key role in bank's financial performance. Owojori, Akintoye & Adidu, (2011) observed if a link existed between capital regulation and performance of Nigerian banks. Their findings revealed that consolidation of banks has increased the potential of banks to compete effectively at all levels. Kargi (2011) studied some Nigerian banks between 2004 and 2008 and found that there exists a significant relationship between banks performance and credit risk management. Shafiq & Nasr, (2010) found that the credit risk management had a significant influence on

bank profitability. Moti, Masinde, & Mugenda, (2012) investigated the impact of bank's specific risk characteristics, and the overall banking environment on the performance of 43 commercial banks operating in 6 of the Gulf Co-operation Council (GCC) countries over the period 1998-2008. Using regression analysis, he observed that bad debts or credit risks, liquidity risk and capital risk are the major factors that affect bank performance when profitability is measured by return on assets while the only risk that affects profitability when measured by return on equity is liquidity risk. Hosna & Manzura, (2009) investigated the effects of credit risk and other risk components on the banks' financial performance. They found a strong relationship between risk components and the banks' financial performance. Harvey & Merkowsky (2008) examined the relationship between credit risk and banks' profitability. They found a linear relationship between credit risk and bank profitability. Afriyie & Akotey, (2011) investigated the effect of credit risk management techniques on the banks' performance of unsecured loans. They concluded that financial risk in a banking organization might result in imposition of constraints on bank's ability to meet its business objectives. Kolapo, Ayeni and Oke [1] showed that the effect of credit risk on bank performance measured by ROA was cross-sectional invariant, though the degree to which individual banks were affected was not captured by the method of analysis employed in the study. Osuka & Amako, (2015) using time series data from 2001 – 2011 appraised the impact of the credit risk management in bank's financial performance in Nepal. The result of the study indicates that credit risk management is an important predictor of banks' profitability and financial performance. Harvey & Merkowsky (2008) used descriptive, correlation and regression techniques to study whether credit risk affects banks' performance in Nigeria from 2004 – 2008. They also found out that credit risk management has a significant impact on profitability of Nigerian banks. Boland (2012) in their work examined bank performance in the presence of risk for Costa-Rican banking industry during 1998-2007 using regression analysis. The result of their study showed that performance improvements follow regulatory changes and that risk explains differences in banks and non-performing loans negatively affect efficiency and return on assets (ROA) while the capital adequacy ratio has a positive impact on the net interest margin. Furthermore, Chen and Pan (2012) in their work examined the credit risk efficiency of 34 Taiwanese Commercial banks over the period 2005-2008. Their study used financial ratios to assess the credit risk and was analyzed using Data Envelopment Analysis (DEA). The result of their study indicated that only one bank is efficient in all types of efficiencies over the evaluated periods. Kargi, (2011) concluded that liquidity and bank size affected strongly on

effectiveness of credit risk management. Boland (2012) discovered that effective risk management was critical to any bank for achieving financial soundness. Shafiq & Nasr, (2010) concluded that bank's financial performance had been affected by sound credit risk management and capital adequacy. Iwedi, & Onuegbu, (2014) examined the role of capital requirement on bank competition and stability in Kenya using data estimation on time series data between 2000 and 2011. The result of study indicates that regulatory efficiency improves competition in the banking sector. Osuka & Amako, (2015) found that the indicator of Nonperforming loans had positive impact on banks profitability as measured by return on equity (ROE) and return on assets (ROA). Alshatti, (2015) revealed that the variables of credit risk management influenced banks' profitability.

This research improves on some of the existing studies, in that it investigates the sub-total and overall effect of credit risk management and its indicators on the lending ability of Nigerian deposit money banks by combining certain credit risk management indicators and other financial indicators to determine which variables influence bank profitability and loan creation in broader scope.

METHODOLOGY
Data Collection Method/Techniques of Data Analysis

Secondary data for empirical analysis was obtained from CBN Statistical bulletin 2014 and World Bank Index (WDI) 2015. The study employed multiple linear regression model to analyze the time series data. It also used Ordinary Least Square (OLS) multiple regressions to determine the effect of the independent variables on the dependent variable. The statistical test of Parameter estimates will be conducted using their Adjusted R^2, Fcal, Standard Error, T-cal and at 5% level of significance.

Model Specification

To examine the relationship between non-performing loans and bank lending growth, a function in which bank lending growth depends on non-performing loans, interest rate spread, actual liquidity ratio, loans to deposit ratio and money supply is formally stated as:

Taking the implicit model as:
$$TLA = f(NPL, IRS, ALR, LTDR, M2) \qquad \dots 1$$

Taking the explicit model as:
$$TLA = \beta_0 + \beta_1 NPL + \beta_2 IRS + \beta_3 ALR + \beta_4 LTDR + \beta_5 M2 + U \qquad \dots 2$$

Where:

Table 1: Relationship between non-performing loans and bank lending growth

S/N	VARIABLE	EXPLANATION	REASON FOR INCLUSION
1.	Non-Performing Loan (NPL)	This shows the ability of the DMBs to manage credit risk. A lower NPL is an evidence of a good credit risk management strategy.	Indicator for sound credit risk management
2.	Interest Rate Spread (IRS)	This shows the difference between the cost of borrowing and return on saving (investment) by bank customers.	Cost benefit analysis
3	Actual Liquidity Ratio (ALR)	Represents the ratio of available funds a deposit money bank sets aside to protect itself from liquidity risk.	Liquidity Risk Analysis
4	Loan to Deposit Ratio (LTDR)	Loans to deposit ratio is the ratio of loans derived from deposits. Deposits are not the only source of loanable funds for a bank. The higher the loans the higher the value of bank assets.	Analysis of depositors Contribution to total loan
5.	Money Supply (M2)	Money supply is the amount of loanable funds available to the banks and the entire economy.	Loanable fund contribution to the bank & economy
6.	Error Term (U)	Represent disturbances in the sample population. This represents variables not adequately captured by the estimation technique.	
7.	β_0; β_1; β_2; β_3; β_4; β_5 = coefficients	These symbols represents coefficient of the independent variables	

Table 2: Estimation of Results and Interpretation

Variables	Coefficient	t-stat	P>|t|	Standard error	[95% conf. Interval]
NPL	25.31138	1.25	0.239	20.30868	[-19.38771 70.01048]
IRS	-166.7504	-1.68	0.121	99.32799	[-385.3699 51.86899]
ALR	51.37493	1.17	0.266	43.80236	[-45.03343 147.7833]
LTDR	66.82347	2.72	0.020	24.52808	[12.83752 120.8094]
M2	.8180784	11.66	0.000	.0701551	[.6636681 .9724887]
_cons	-6424.894	-1.42	0.184	4530.648	[-16396.78 3546.996]
R^2	0.9891				
Adju. R^2	0.9842				
F-stat	F(5, 11) = 200.30				
Prob > F	Prob > F = 0.0000				
ROOT M.S.E	516.49				

Source: Authors compilation computed using STATA 10.

The Adjusted R^2 is 0.98 which means that 98% of the variations in the dependent variable are explained by the independent variables. The F-stat result is significantly high at 200.30, showing that the independent variables jointly explain the variations in the model. Using the t-stat values, we found that just two independent variables are statistically significant at 5% level of significance. Money supply is statistically significant at 5% level of significance. Holding other variables constant, a unit change in the money supply will lead to an 81% change in the total loans and advances. Loans to deposit ratio is statistically significant at 5% level of significance. Holding other variables constant, a percentage change in the loans to deposit ratio will lead to 6,682% change in the dependent variable. Non-performing loans is positively related to the dependent variable but statistically insignificant at 5% level of significance. Interest rate spread is not statistically significant at 5% level of significance and is negatively related to total loans and advances. Actual liquidity ratio has a linear relationship with total loans and advances but the independent variable is not statistically significant at 5% level of significance. The constant is not statistically significant at 5% level of significance. Assuming all the independent variables were zero, total loans and advances will be -6424.

Table 3: Breusch-Pagan / Cook-Weisberg test for heteroskedasticity

chi2(1)	0.79
Prob > chi2	0.3742

Source: Authors compilation computed using STATA 10.

We reject the hypothesis that there is no constant variance in the error term.

Table 4:bDurbin-Watson d-statistic test for autocorrelation

Durbin-Watson d-statistic(6, 17)	2.233126

Source: Authors compilation computed using STATA 10.

There is no presence of autocorrelation in the model as the DW statistic is approximately 2.

Table 5: Pairwise Correlation test for Multicollinearity

	NPL	IRS	ALR	LTDR	M2
NPL	1.0000				
IRS	-0.1185	1.0000			
ALR	0.0166	0.0254	1.0000		
LTDR	0.4619	-0.5541	-0.4139	1.0000	
M2	0.5784	0.1604	-0.6472	-0.2837	1.0000

Source: Authors compilation computed using STATA 10.

There is no presence of perfect multicollinearity in the model.

OV test for omitted variables

Ramsey RESET test using powers of the fitted values of TLA, Ho: model has no omitted variables

Table 6: OV test for omitted variables

$F(3, 8)$	1.18
Prob > F	0.3755

Source: Authors compilation computed using STATA 10.

We accept the hypothesis that the model has no omitted variables.

SUMMARY AND CONCLUSION

The study results showed that sound credit management strategies can boost investors and savers confidence in banks and lead to a growth in funds for loans and advances which leads to increased bank profitability while non-performing loans was also positively related to lending growth. This may be because depositors usually do not evaluate the credit risk management effectiveness of banks prior to placing deposits in the banks. Interest rate spread was also found to be negatively related to total loans and advances as savers are reluctant to deposit cash with the bank when the deposit interest rate is too low and banks encounter difficulty in finding credible borrowers when the lending rate is too high. The study recommends that DMBs in Nigeria should improve and maintain strict adherence to their credit risk strategies, appraisals and analysis. Banks are to ensure that funds are allocated to borrowers with decent to high credit ratings. We conclude that money supply and loan to deposit ratio have the biggest influence on bank lending growth. The effect of credit risk on bank lending measured by the total loans and advances is statistically insignificant. That is other factors like money supply and loans to deposit ratio have a stronger bearing on the lending ability of deposit money banks and increase profitability. It is necessary to state that effective credit risk management allows the banks to source for capital internally from its profits instead of depending heavily on external borrowings and liabilities. The findings reveal that bank loans and advances may not be handicapped by their non-performing loans suggesting that savers and the Central Bank might have continued to increase the amount of money available for lending regardless of the size of the non-performing loans portfolio.

RECOMMENDATIONS

From the findings of the study, the following recommendations are made:-

I. Banks should ensure proper credit evaluation of potential borrowers and lending funds should be allocated to prime borrowers.

II. Banks must comply with relevant provisions of the Banks and Other Financial Institutions Act (1999) as amended and the Prudential Guidelines.

III. Banks should gather all necessary and accurate information from both internal and external sources in order to access the multiplicity of credit risks in loan proposals.

IV. Banks should operate in alliance with top quality credit rating firms who will ensure that loan seekers are correctly rated and the potential risk of a loan proposal is brought to light.

V. Banks should be well capitalized according to the size of their loan portfolio and regulatory requirement in order to cushion the loan loss from non-performing loans.

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