International Journal of
Advanced Studies in Economics and Public Sector Management
ISSN Print: 2354-421X ISSN Online: 2354-4228

January, 2016
Vol. 4, No. 1

Determinants of Net Interest Margin of Listed Deposit Money Banks in Nigeria

[1]Rehanet Isa
[2]Raudat L. Mohammed,
[3]Zainab Isah,
[4]Risikat Folashade Salau
& [5]Fatima Isah
[1,2&3]Department of Business Education
Federal College of Education, Zaria, Kaduna State, Nigeria
[4]Department of Economics
Federal College of Education, Zaria, Kaduna State, Nigeria
[5]Bursary Department Federal College of Education, Zaria Kaduna State, Nigeria

Keywords: Interests Margin, Deposit Money Banks

Abstract

Consolidation of banks that took place in Nigeria in recent years has sparked up public debates on the influence and importance of net interest margin as a performance index in the banking industry. This study examines the determinants of net interest margin of listed deposit money banks in Nigeria. The study formulates four hypotheses and applies longitudinal panel data regression to analyse the relationship between the dependent variable, net interest margin and the independent variables, bank credit risk, bank operating cost, bank liquidity risk and bank size of the sampled banks. Furthermore, the study utilises secondary data extracted from the financial statements of the banks over the period 2007 through to 2014. The result of the GLS random regression provides evidence that bank liquidity risk, bank operating cost and bank size has a significant impact on net interest margin of listed sampled deposit money banks in Nigeria. It also shows that bank credit risk has no significant impact on net interest margin of listed sampled deposit money banks in Nigeria. Based on the findings, the study recommends among others that the apex bank should provide incentive to ensure a competitive banking environment that will motivate banks to manage their liquidity risk, because it is liquidity risk that drives the net interest margin of listed deposit money banks in Nigeria. Also, deposit money banks should emphasize on the policy of manageable reduction in the bank operating cost in order not to affect the efficient and effective banking environment.

Background to the Study

Deposit Money Banks (DMBS) are one of the main financial institutions in an economy that usually engage in trading activities in the form of financial services rendered to their customers who constitute individuals, companies and countries. These trading or banking services rendered by DMBs are usually in the form of acceptance of deposits (both fixed, savings and current) and the issuance of various credit or loan facilities to their customers. As a reward for cash deposits, DMBs usually pay out interest to their customers and in turn the lending customers subsequently pay interest to the bank (in terms of loans financing). Hence, the difference between the interest income generated by DMBs through loans financing and the amount of interest paid out to their customers for deposits, in relation to the amount of the DMBs interest earning asset can be termed as net interest margin (NIM) of a banking unit. NIM is an index usually used in the banking and non-banking financial institutions to measure financial performance (Agarwal, 2013).

According to Yakup (2014) NIM and Net interest spread (NIS) may be similar in terms of their implications on the efficiency of financial intermediation, but their calculations slightly differ. NIM refers to a wide notion; generally defined as net interest income divided by total assets or interest-earning assets. Spread on the other hand, has a narrower definition and calculated by subtracting the average implicit interest rate paid on deposits from the implicit average interest rate charged on loans. Since banks in general do not report their explicit lending and borrowing rates, net interest spreads are estimated from banks' financial statements as well. Similarly, Bitner (1992) views NIM and NIS as quite similar but distinct. He posits that NIM of a banking unit in terms of net interest yielded on an interest earning asset is however, quite similar but distinct from NIS. While NIM accounts for the invested or earning asset, NIS does not account for the invested or earning asset.

NIM differs from bank to bank depending on the volume of the bank's lending and deposit activities. However, DMBs are always keenly interested in their NIM because they engage in the banking activities of lending out money at one interest rate and paying their customers i.e. depositors at another interest rate. Technically, banks are always at a trade off with a specific aim of gaining an investment strategy that pays more and cost less. DMBs in the industry are not the only stakeholders interested in their NIM as a great deal of regulatory, industry, media and academic attention has focused on bank performance and the bank's ability in generating NIM in an operating environment. The attention given to this issue of NIM is understandable, since NIM broadly makes up a large segment of DMBs overall performance and subsequent reductions in NIM decreases the funds available to cover for loan loss and dividend payout to shareholders. Banks play a crucial role in modern economies due to their ability to transform liquid deposits from the liability side of their balance sheets into loans as illiquid assets on the asset side. In turn, this kind of transformation services provided by banks is a source of risk to them. Banks are usually exposed to various risks in pursuit of their business objective, such risk range from credit, market, liquidity, and operational risks among others. The inability of DMBs to adequately manage these risks exposes banks not only to losses, but may also threaten their continued existence as business entities, thereby

endangering the stability of the financial system. On the contrary, proper management of such risk yield high profitability and aids in the stability of the financial systems.

Based on the above backdrop, bank specific attributes such as bank operating cost, bank liquidity risk, Bank credit risk as well as bank size are equally important to NIM. Banks are exposed to risk in the course of their financial services. In the course of their operations, banks are invariably faced with different types of risks that may have potentially negative effect on their business. Risk must not be viewed and assessed in isolation, not only because a single transaction might have a number of risks but also one type of risk can trigger other risk. Such bank risks include Credit risk which relates to the risk associated with the quality of a bank earning assets, namely its loan. Asset quality is also the second component of a bank's CAMEL rating. Moreover, Decline in asset quality can lead to write off and reduced earnings from the loan portfolio, (Brewer and Lee, 1986). Kargi (2011) posited that Credit risks are found in all activities in which the success depends counterparties, issuer or borrower performance. Credit risk has traditionally been considered to be the most important risk for a commercial banks and poor quality asset has probably been the cause of more bank failures than any exposures to be discussed.

Liquidity risk on the other hand is also considered as a major risk for banks. It arises when a bank is unable to purchase or otherwise obtain the necessary funds to meet its obligations as they fall due. Liquidity difficulties may arise when, in order to meet sudden or unusually large withdrawal of funds, a bank is forced to rely on less stable, purchase deposits for a greater than normal proportion of its funding requirement. This may injure the willingness of the market to supply fund at competitive rates and may wrongly convey a signal that the bank is facing serious problems (brewer and lee, 1986). Liquidity risk is reduced if a bank holds greater levels of current assets. Banks that have greater holding of short term liabilities are potentially exposed to liquidity problems. Bennett (1986) identifies liquidity risk as another element that may contribute to the riskiness of the banking system in terms of its net interest margin. Nevertheless, the bank is exposed to liquidity risk due to these activities particularly loan commitments. Banks that hold more liquid assets such as cash, government bonds and securities are expected to receive less interest income than banks with less liquid assets such as loans.

Bank size equally plays a crucial role in the net interest margin. Larger banks in terms of total assets are more likely to have greater growth opportunity than smaller banks. It is expected that large banks would have more prospects to diversify their banking businesses, employ high skilled and well trained employees, and take the benefit in proving higher quality services. Larger banks may also have well developed and wide spread networks with access to large and sophisticated clients which will more likely increase the bank's net interest margin. Furthermore, when a bank expands in scale, the cost per unit of output should decrease as fixed costs spread over more units of output. Thus, if there is room for economies of scale, size of a bank should be negatively correlated with net interest margins. Hence, greater market confidence is normally directed at large banks causing less failure possibility (Elian, 2012).On the other hand, increase in size also

indicates an increase in bank operating cost. These costs may outrun the benefits of scale economies. If the bank has enough pricing power, it may choose to reflect these costs on its customers in the form of higher net interest margins. *Bank* operating cost captures the variation in non-interest expenses such as payroll and other administrative costs among banks. As shown by many other authors, banks that incur high levels of operating cost are likely to reflect these costs on their customers in the form of higher margins.

Statement of the Problem

On the study of the determinants by way of empirical literature, several studies of determinants of NIM are available, though they are mainly limited to developed banking market in the US, Europe, Asia and some economies in Africa. In Africa, the phenomenon is not quite extensive; hence limited evidence is forthcoming for the emerging market. Generally, studies on the determinants of NIM seem to have received little attention in Nigeria at the moment, especially studies on the ex-post consolidation phase. Though, a handful studies on the determinants of NIM of ex-ante consolidation of DMBs in Nigeria were conducted by Aremu, Ekpo and Mustapha (2013), Ani., Ugwunta and Imo (2012), Ani, Ugwunta, Ezeudu, and Ugwuanyi (2012), Echekoba, Ezu and Egbunike (2011). There however existed only 2 studies that covered exclusively the ex-post consolidation era; {Peterson (2015) and Soyemi, Akinpelu and Ogunleye (2013)}. These 2 studies failed to adequately sample a considerably number of banks in the Nigerian banking sector. While Peterson (2015) sampled only 6 banks, Soyemi, Akinpelu and Ogunleye (2013) sampled 10 banks. Also, both studies exclude DMBs liquidity risk in their analysis. Liquidity risk is considered as a major risk for banks. The implication is that for banks, loans and deposits are the largest source of income and most obviously constitute a vital source of banks' liquidity risk. These limitations clearly indicate a gap within the literature that needs to be filled. This study therefore will fill these gaps by extending its analysis to introduce DMBs liquidity risk. In addition, it will also adopt a wider sampling size to cover 13 of the DMB's listed in the Nigerian stock exchange (NSE) as at 2014. Finally, it will furthermore increase its time frame. In view of the aforementioned importance and relevance of NIM on DMBs in Nigeria, this study is therefore posed to examine the determinants of net interest margin of listed deposit money banks in Nigeria. The study shall be ventured towards seeking an answer to the question: what are the determinants of net interest margin of listed deposit money banks in Nigeria?

Objectives of the Study

The main objective of this study is to examine empirically the determinants of net interest margin of listed DMBs in Nigeria. However, other specific objectives are to:

1. Examine the extent to which bank credit risk impacts on net interest margin of DMBs in Nigeria.
2. Examine the extent to which bank operating cost impacts on net interest margin of DMBs in Nigeria.
3. Examine the extent to which bank liquidity risk impacts on net interest margin of DMBs in Nigeria.
4. Examine the extent to which bank size impacts on net interest margin of DMBs in Nigeria.

Research Hypotheses

In view of the aforementioned objectives, the study hypothesizes the following:

H_{01}: Bank credit Risk has no significant effect on net interest margin of DMBs in Nigeria.

H_{02}: Bank operating cost has no significant impact on net interest margin of DMBs in Nigeria.

H_{03}: Bank Liquidity Risk has no significant effect on net interest margin of DMBs in Nigeria.

H_{04}: Bank Size has no significant influence on net interest margin of DMBs in Nigeria.

Literature Review and Theoretical Framework

Bank Credit Risk and Net Interest Margin

Achsania (2013) examined the impact of credit risk on bank's NIM. The study focused on Indonesian Conventional Bank. The results showed that credit risk has negative insignificant effect on NIM. Correspondingly, Almumani (2013) examined the impact of credit risk on NIM. The findings of the study revealed that credit risk did not show any statistical effect on NIM. Conversely, Parmendra and Neelesh (2011) analyzed the effect of credit risks on the net interest margins of banks in a Small Island Fiji for 2000–2010 period. The results obtained indicate that the credit risks of banks in Fiji were positively insignificant to NIM.

Osuagwu (2014) examined the impact of credit risk on NIM. Using unbalanced panel data, the findings of the study showed that credit risk proxied by ratio of total loans to total assets in the study showed a significant but negative relationship with NIM while credit risk proxied by ratio of total deposit to total loans in the study revealed a significant positive relationship for net interest margin. Also, Aremu, et al (2013) investigated the impact of credit risk on NIM of first bank of Nigeria plc. The finding of the study revealed that credit risk was negatively related to NIM. In opposition, the impact of credit risk on the NIM of Nigerian banks was undertaken by Kargi (2011). The results revealed that credit risk management impacted significantly on the profitability of Nigerian banks for the study period.

Bank operating Cost and Net Interest Margin

Parmendra and Neelesh (2011) analyzed the effect of operating cost on NIM of banks in a Small Island Fiji for 2000–2010 periods. The results obtained indicated that the operating cost of banks in Fiji were positively significant to NIM. Similarly, Shahidul and Shin-Ichi (2015) studied the impact of operating cost of NIM of banks in four South Asian countries (Bangladesh, India, Nepal and Pakistan) for the period 1997-2012 using panel data of 230 banks. The study found that operating cost to total asset ratios affected NIM positively. *Also,* Osuagwu (2014) who investigated the impact of operating cost on NIM using an unbalanced panel data of selected banks in Nigeria. The empirical results showed that there was a significant positive relationship with NIM.

Conversely, Dabla-Norris and Floerkemeier (2007) examined the consequence of operating cost on NIMin Armenia. The study found that operating cost was positively insignificant to NIM. Likewise, Yakup (2014) employed NIMto explore the impact for

Turkish banks operating cost. The empirical results suggested that bank operating cost in Turkish deposit banks had an insignificant but positive impact on NIM. On the other hand, Soyemi, et al (2013) examined the significance of operating cost to NIM. The study found that operating cost was negatively not significant to NIM and finally Peterson (2015) who empirically investigated the impact of operating cost on NIM. The study revealed that bank operating cost is negatively not significantly influences NIM.

Bank Liquidity Risk and Net Interest Margin

By the same token, Dabla-Norris and Floerkemeier (2007) examined the effect of liquidity risk on NIM. The study found that bank liquidity risk was negatively significant to NIM. Equivalently, Yakup (2014) explored the impact of liquidity risk for Turkish bank's NIM. The empirical results suggested that liquidity risk in Turkish deposit banks had a significant negative impact on NIM. Conversely, Parmendra and Neelesh (2011) analyzed the effect of liquidity risks on NIM of banks in a Small Island Fiji for 2000–2010 period. The results obtained indicate that the liquidity risks of banks in Fiji were positively insignificant to NIM.

Aremu, et al (2013) examined the impact of liquidity risk on NIM of first bank of Nigeria plc. The finding of the study revealed that liquidity risk represented by the variable total loans to total assets ratio was negatively related to NIM while the second proxy of liquidity risk represented by total loans to total bank deposits was positively related to NIM. However, Ani., et al (2012) in their study examined the impact of liquidity risk on NIM in Nigeria. The regression results indicated that liquidity risk when NIM was used as a dependent variable had a negative and insignificant relationship with NIM.

On the other hand, Shahidul and Shin-Ichi (2015) studied the effect of liquidity risk on NIM in four South Asian countries. The study found that liquidity risk affected net interest margins positively. Likewise, Echekoba, et al (2011) determined the effects of liquidity risk of Bank in Nigeria on NIM. The findings based on the analysis elucidated that liquidity risk has a positive significant impact on NIM.

Bank Size and Net Interest Margin

Yakup (2014) explored the consequence of bank size for Turkish bank's NIM. The empirical results suggested that bank size in Turkish deposit banks had a negative significant impact on net interest margins. In the same way, Shahidul and Shin-Ichi (2015) studied the impact of bank size on NIM of four South Asian countries. The study found that bank size affected NIM inversely. Also, Soyemi, et al (2013) examined the significance of bank size to NIM. The study found that bank size was negatively related and highly significant to NIM. Likewise, Ani, et al (2012) examined the impact of bank size in Nigerian banking industry to NIM. The regression findings showed that bank size had a negative but significant relationship with NIM. On the contrary, Aremu, et al (2013) examined the impact of bank size on NIM in first bank of Nigeria plc. The finding of the study revealed that bank size represented by the variable natural log of total assets was positively and insignificantly related to NIM while the second proxy of bank size represented by number of branches was inversely and insignificantly related to NIM.

Congruently, Dabla-Norris and Floerkemeier (2007) examined the effect of bank size on NIM. The study found that bank size was positively significant to NIM .Peterson (2015) empirically investigated the impact of bank size on NIM on Nigeria. The study revealed that bank size positively and significantly influences NIM. Furthermore, Ani, et al (2012) investigated the effect bank size of DMBs in Nigeria on NIM. The findings of the analysis revealed that bank size was positively significant to NIM in Nigeria.

Theoretical Framework

Ho and Saunders' (1981) dealership model is one of the most fundamental models in the literature that aims to identify the components of net interest margins. In this model, a bank is viewed as a risk-averse dealer, which supplies one type of loan and demands one type of deposit. The bank can have control over the exogenous loan requests and demand supplies by changing the fees imposed on them. McShane and Sharpe (1985), Allen (1988) and Angbazo (1997) as cited in Ansari and Goyal (2014), have extended and modified the dealership model to a greater extent. Angbazo (1997) introduced credit and interest rate risk, and interaction between the two, into the theoretical model. while, Maudos and Fernández de Guevara (2004) made an interesting contribution while expanding the theoretical model by considering the importance of operating costs, market power (Lerner index) and providing a detailed description of the link between riskiness and the margin. Their model specifically differentiated between market risk and credit risk. This study however adopted the Dealer Model of Ho and Saunders (1981) and Saunders and Schumacher (2000) one step approach as amended by McShane and Sharpe (1985), Allen (1988), Angbazo (1997) and Maudos and Fernández de Guevara (2004) as the theoretical framework to underpin the study.

Methodology

The research design employed in this study is ex post facto research design in line with historical and descriptive research. The population of the study consists of all the Sixteen (16) listed DMBs on the Nigerian stock exchange (NSE) as at 31st December 2014. The sample size of this study was 13 listed DMBs. correspondingly; banks had to meet the following criteria's to be included in the sample.

First, sample banks must be operating within the Nigerian banking sector and should have its stocks listed on the Nigerian stock exchange. Secondly, sample banks must be classified as deposit money banks, thus, merchant banks, foreign banks, non-public banks, state banks, investment banks were excluded. Thirdly, sample bank financial statement is publicly available and accessible on its website. Finally, sample bank must have being in existence from 2005. Overall, sample banks that met these conditions accounted for 81 per cent of total assets of the banking industry. Another justification for the sample choice is the fact that the sample banks used for this analysis are among the 10 banks declared by the Central bank of Nigeria to be systemically important in the country as at September, 2013. Data for this study was obtained from the archival source. The study used Secondarypanel data extracted from the published annual financial statements of the sampled DMBs over the 8 year (2007 - 2014) period of the study. The study consists of one dependent variable, net interest margin, and four independent

variables: bank credit risk, bank operating cost; Bank liquidity risk and Bank size representing bank specific variables.

The panel Data multiple regressions Model for this study is stated as:
$NIM_{it} = \beta_{it} + \beta_1 CR_{it} + \beta_2 OE_{it} + \beta_3 LR_{it} + \beta_4 SIZE_{it} + \beta_5 LDR_{it} + \beta_6 MPR_{it} + \mu_{it}$

Where:

NIM	Net Interest Margin
CR	Bank Credit Risk
OE	Bank Operating cost
LR	Bank Liquidity Risk
SIZE	Bank Size
LDR	Loan to Deposit Ratio
MPR	Monetary Policy Rate
$\beta_1 - \beta_5$	Coefficient of the independent Variables
μ	Error Term
β_0	the intercept

Table 1: List of Variables and their Measurements

Variables	Definition of Terms	Measurements
Dependent Variable		
NIM	Net Interest Margin	Interest income - interest expense / Average Earnings asset Dabla-Norris and Floerkemeier (2007)
Independent Variables		
OE	Bank Operating Cost	Non-interest Exp / Total Earning Assets. Yakup (2014)
CR	Bank Credit Risk	(net) loans to total assets (Osuagwu 2014)
LR	Bank Liquidity Risk	Ratio Of Total Liquid Assets To Total Assets. Parmendra and Neelesh (2011)
SIZE	Bank Size	Natural log of Total assets Dabla-Norris and Floerkemeier (2007)
Macroeconomic Control Variables		
MPR	Monetary Policy Rate	Obtained as given by Central Bank of Nigeria statistical bulletin
LDR	Bank Loan to Deposit ratio	Obtained as given by Central Bank of Nigeria statistical bulletin

Source: Author Computation (2015)

The panel data regression techniques of the study adopted the Stata 10.x software. Normality test for the residuals was also carried out using Shapiro-Wilk. Based on the result, data transformation was carried out to normalize the data set. Furthermore, regressions were run, controlling for fixed effect (FE) at one time and random effect (RE)

at the other time. The outputs showed considerable difference between FE and RE, thereby casting doubt on the pooled regression results. In order to clear the doubt, Hausman specification test was carried out based on the estimates of the two models. On the basis of the result, the RE model was considered as the best fitted model. However, Diagnostic tests were carried on the RE result. First, Multicolinearity test was conducted. The result revealed that the interacting variables are of harmless colinearity relations. In addition, Breusch-Pagan Lagrange Multiplier (LM) was conducted to determine whether the entities are of the same or different characteristics. The null hypothesis in the LM test is that there is no panel effect across entities.

Data Presentation and Analysis

The summary of the descriptive statistics of variables used for the study is given as follows.

Table 4.1: Summary of Descriptive Statistics

Variables	Mean	Std. Dev.	Minimum	Maximum
NIM	0.5894231	0.2781312	-1.90	0.92
CR	0.0702885	0.925065	0	0.3
OE	0.18375	0.6700647	-3.37	4.18
LR	0.8531731	0.183225	0.40	1.69
SIZE	8.884615	0.3698778	8.11	9.64
MPR	9.665000	2.098396	6.13	12.00
LDR	60.42125	18.86951	38.32	85.7

Source: Output Generated using Data (2015)

Table 4.1 showed the summary of descriptive statistics of the data used for all the variables of the study. From the table, the mean values of NIM, CR, OE, LR, SIZE, MPR and LDR are 0.5894231, 0.0702885, 0.18375, 0.8531731, 8.884615, 9.66500 and 60.42125respectively. The macroeconomic variables MPR and LDR have the largest standard deviation of 2.098396 and 18.869510, suggesting that it has the highest dispersion from the mean of the values relating to the variable. In addition, the level of variables during the period of the study lies between –1.90 and 0.92, -3.34 and 4.18, 0.40 and I.69, 8.11 and 9.64, 38.32 and 85.7,6.13 and 12.00 respectively for NIM, CR, OE, LR, SIZE, LDR and MPR. The implication is that the dataset did not indicate growth anomaly over the years or possible outliers within the observations. To check for normality of the dataset, Shapiro-wilk test for normality was conducted. The summary of the result is given below:

Table 4.2: Summary of Shapiro-wilk Test for Normality

Variables	Probability
NIM	0.00000
CR	0.00000
OE	0.00000
LR	0.00003
SIZE	0.07492
LDR	0.00000
MPR	0.40449

Source: Output Generated using Stata (2015)

Table 4.2 gave the summary of the normality test. The observation is all the variables indicated data non-normality distribution except for MPR. This is clear from the p-values, which are significant at 1% level for all the variables except MPR, which returned a p-value of 0.40. The rule in this test is that significant p-values imply non-normally data distribution.

A person correlation analysis was then performed on the entire Variable to check foe degree of relationship among them. The summary is presented as follows.

Table: 4:3 Correlation Matrix of Dependent and Independent Variable

Variable	NIM	CR	OC	LR	SIZE	LDR	MPR
NIM	1.0000						
CR	-0.0530	1.0000					
OC	0.1930	-0.345	1.0000				
LR	0.2529	0.0835	0.3558	1.0000			
SIZE	0.1555	-0.5321	0.1021	0.0853	1.0000		
LDR	-0.1366	0.4861	-0.0639	0.0111	-0.3909	1-000000	
MPR	0.0014	-0.3575	0.0617	0.0672	0.3383	-0.8058	1.0000

Sources: Output generated using Stata (2015)

Table 4.3 indicated that the dependent variable, NIM, is positively correlated with OC, LR, SIZE and MIP, However, NIM has a negative inverse relationship with CR and LDR. This implies that an increased in OC, LR, SIZE and MPR will lead to a positive increased in NIM, while a decreased in CR will lead to an increased in NIM of the sample DMBs. The table further shows the correlation the independent bank specific variable has between themselves. It reveals that CR has a negative relationship with OC, SIZE and MPR, while it has a positive correlation with LR, SIZE and LDR. Furthermore, OC has a negative correlation with LDR, while it has a positive correlation with LR, SIZE and MPR. In addition, LR has a positive correlation with CR, OC, SIZE and MPR. Accordingly, SIZE also has a negative relationship with LDR and a positive correlation with CR, OC, SIZE

and MPR, furthermore, regression analysis was run. The summary of the GLS random regression is presented in Table 4.4.

Table 4.4: Summary of GLS Random Regression Result

Variables	Coefficient	t-values	Probability
C	-2.44892	-2.36	0.018**
CR	4.700966	0.77	0.443
OE	-0.0342875	-2.25	0.024**
LR	0.4457152	2.82	0.005*
SIZE	0.23912	2.24	0.025**
MPR	-3.941439	-1.91	0.056**
LDR	-0.0031476	-1.31	1.191
R^2		0.2453	
Adj. R^2		0.5968	
F-stat		17.56	
Prob> F		0.0074	

Source: Output generated using Stata (2015)

* represent probability significance at 1%.

** represent probability significance at 5%.

Table 4.4 contains the summary of the GLS random regression output. From the table, the estimated GLS regression relationship for NIMmodel is:

NIM = -2.36 + 0.77CR – 2.25OE + 2.82LR + 2.24SIZE – 1.91MPR – 1.31LDR

The table revealed that the R-squared (R^2) value, which is the appropriate using Stata, is 0.2453. This means that about 25% of the systematic variations in the selected banks' NIM are jointly explained by changes in the credit risk, operating cost, liquidity risk, size, monetary policy rate and finally loan to deposit ratio of the banks. This implies that while the explanatory power of the model used in the study stands at 25%, other factors that have not been captured in the study explain the remaining 75%. The F- stats returned a value of 17.56 that is significant at 1% level. This confirms the overall significance and fitness of the model. It further supports the assumption of a significant linear relationship between the dependent variable and the independent variables of the study.

The result showed negative t-values for OE (-2.25), MPR (-1.91) and LDR (-1.31). This indicates a negative/inverse relationship between these variables and net interest margin of the selected banks. CR, LR and SIZE returned positive values as the values stood at 0.77, 2.82 and 2.24 respectively. In addition, the p-values of LR were also found to be statistically significant at 1% level. While the variables OE, SIZE and MPR were found to be statistically significant at 5% level. On the contrary, the CR and LDR were found not to have a relationship with NIM that is statistically significant at 5% level.

The result provided a basis to reject all the null hypotheses except the one linking net interest margin (NIM) to credit risk (CR) and loan to deposit ratio (LDR). This means that based on the GLS regression result operating cost, liquidity risk, size and monetary policy rate strongly drive the NIM of listed DMBs in Nigeria. It also follows that banks that maintain and properly manage substantial their operating cost, liquidity risk, as well as size stand to record higher NIM. Furthermore, based on the result, bank credit risk in the industry does not really matter as far as the NIM of the players is concerned. The finding of the study, which shows that bank credit risk has no significant impact on NIM of listed DMBs in Nigeria, supports the studies of Achasania (2013) and Almumani (2013). The finding however contradicts the studies of Kargi (2011)and Aremu et al (2013).Additionally, the finding of the study, which shows that bank operating expenses and bank liquidity risk has a significant impact on NIM of listed DMBs in Nigeria, supports the studies of Shahidul and Shin – ichi (2015). The finding however contradicts the studies of Yakup (2014) and Dabla – Norris and Floerkemeier (2007).Furthermore, the findings which shows that bank size has a significant impact on NIM of listed DMBs in Nigeria, is in line with the studies of Dabla – Norris and Floerkemeier (2007) and Peterson (2015). It is however, inconsistent with the finding of Aremu et al (2013), Yakup (2014)and Soyemi et al (2013).

The policy implications of this study are as follows: Firstly, the findings of the research should be able to make the government and DMBs board realize the need for a policy shift and reviewing its strategy on bank credit risk in Nigeria. Secondly, the result of this study further affirmed the notion that mere reduction in the bank operating expenses will mean an automatic improvement in their performance in terms of their net interest margin. Thirdly, given that banks are an important source of financing to both individuals and corporate organisations, the result of this study could be used as a basis for formulating policies that will make banks to raise and manage their liquidity risk in view of the positive relationship that exist between liquidity risk and net interest margin of banks. It is obvious that policymakers are of the strong consensus that banks need high manageable liquidity risk in order to foster a more stable financial system and to help avoid the occurrence of financial crisis. Finally, the study also has implication for decision on size of banks. Banks should struggle based on the findings of this study to maintain an appreciable level of increase in terms of their size in order to achieve economies of scale because this will translate to higher net interest margin.

Conclusion

In view of the aforementioned findings, this study concludes that as far as the Nigerian banking industry is concerned, mere reduction in the bank credit risk as suggested by theoretical postulation, does not affect net interest margin of listed deposit money banks during the period of the study. On the contrary, it is the reduction of the banks operating expenses, as well as the increment and proper management of the banks liquidity risk and size, which results in better performance that affects net interest margin of listed deposit money banks in Nigeria.

Recommendations

Based on the conclusions, the study recommends that Deposit money Banks should emphasis on policies of manageable reduction in the bank credit risk that is efficient and effective and translates into higher margins in the banking environment. Also, Deposit money banks should emphasis on the policy of manageable reduction in the bank operating cost in order not to affect the efficient and effective banking environment. Furthermore, the apex bank should provide incentive to ensure a competitive banking environment that will motivate banks to increase and properly manage their liquidity risk. In addition, Banks' management should continue to put in place policies and strategies that will ensure effective management of the activities for increased size and overall performance because, increasing the size of the bank have been empirically proven to have a significant positive effect on the bank's financial performance in terms of its net interest margin after the consolidation phase.

References

Achsania, R. (2013). The Impact of Credit and Liquidity Risk on Bank Financial Performance: the case of Indonesian Conventional Bank with total asset above 10 Trillion". *International Journal of Economic Policy in Emerging Economies.* 6(2): 93 - 106.

Agarwal, B. (2013). What are net Interest Margins? Good returns Classroom. Goodreturns.com www.Good returns.in.

Almumani, M. A. (2013). Impact of Managerial Factors on Commercial Bank Profitability: Empirical evidence from Jordan. *International Journal of Academic Research in Accounting, Finance and Management Sciences.*3(3):298–310

Ani, W. U., Ugwunta D. O., Ezeudu I. J. & Ugwuanyi G. O. (2012). Empirical Assessment of the Determinants of Bank Profitability in Nigeria: Bank Characteristics panel Evidence. *Journal of Accounting and Taxation.* 4(3):38-43.

Ani, W. U., Ugwunta, O. D. & Imo, .G. I. (2012). Determinants of Banking Industry Profitability in Nigeria: a Bank-specific and Macroeconomic Characteristics Analysis. *Elixir Finance.* 45(2012): 7714-7719.

Ansari, J. & Goyal A. (2014). *Banks Competition, Managerial Efficiency and the Interest rate pass-through in India.* Indira Gandhi Institute of Development Research, Mumbai.WP2014-007.

Aremu, M. A., Ekpo I. C. & Mustapha, A. M. (2013). Determinants of Banks' Profitability in a Developing Economy: Evidence from Nigerian Banking industry. *Interdisciplinary Journal of Contemporary Research in Business.* 4(9): 155-181.

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

Bitne,r W.J & Goddard A.R (1992). *Successful Bank Assets/ liability Management: a Guide to the Future beyond gap*. 185.

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

Dabla-Norris, E., & Floerkemeier, H. (2007). *Bank Efficiency and Market Structure: what Determines Banking spreads in Armenia?*. IMF Working Papers, 1-28.

Echekoba, F.N., Ezu, G. K., & Egbunike, C. F. (2011). *Determinants of Bank Profitability in Nigeria: using Camel Rating Model* (2001 – 2010). 1-12.

Elian, M. (2012). Determinants of off-balance sheet Business in the case of GCCC Banking Sector. *International Journal of Banking and Finance*. 9(3): 46-63.

Kargi, H.S. (2011). *Credit Risk and the Performance of Nigerian Banks*. Ahmadu Bello University, Zaria.

Osuagwu, E. (2014), "Determinants of Bank Profitability in Nigeria". *International Journal of Economics and Finance*. 6(12): 46-63.

Parmendra, S. & Neelesh, G. (2011). *Determinants of Bank net Interest Margins in a small Island Developing Economy: panel evidence from Fiji*. Working paper for the Department of Accounting, Finance and Economics, Griffith University, Nathan Campus, Australia.

Peterson, K O. (2015). Determinants of Bank Profitability and Basel Capital Regulation: Empirical evidence from Nigeria. *Research Journal of Finance and Accounting*. 6(2):124-131.

Shahidul, I. & Shin-Ichi, N. (2015). *Determinants of Bank net Interest Margins: A panel evidence from South Asian Countries*. Center for Data Science and Service Research Graduate School of Economic and Management Tohoku University, Japan Discussion Paper. 32(1): 1-39.

Soyemi, K. A., Akinpelu, L. & Ogunleye, J. O. (2013). The Determinants of Profitability among Deposit Money Banks in Nigeria Post Consolidation. *Global Advanced Research Journal of Economics, Accounting and Finance. 2*(5): 93-103.

Yakup, K. (2014). *Factors Explaining net Interest Margins and Spreads in Turkish Banking sector: evidence from 2002 – 2013*. Msc. Finance Thesis, School of Economics and Management, Department of Finance.

Appendix

Table 3.4.1: List of Sampled Deposit Money Banks

S/NO	SAMPLED LISTED DEPOSIT MONEY BANKS
1.	ACCEES BANK PLC
2.	DIAMOND BANK
3.	FIDELITY BANK PLC
4.	FIRST BANK HOLDING PLC
5.	FIRST CITY MONUMENTAL BANK
6.	GUARANTY TRUST BANK PLC
7.	STANBIC IBTC HOLDING PLC
8.	STERLING BANK PLC
9.	UNION BANK PLC
10.	UNITED BANK FOR AFRICA
11.	UNITY BANK PLC
12.	WEMA BANK PLC
13.	ZENITH BANK PLC