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Impact of merger on bank characteristics: An empirical assessment of the lending behaviour of deposit money banks in Nigeria

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Abstract
The study empirically examined the impact of Merger on Bank Characteristics with specific interest on the Lending Behaviour of Deposit Money Banks in Nigeria. The study covered a period of 2006 to 2018 where a panel data was generated from the financial statements of the census banks over the study period. Multiple regression method was used in the form of Pooled Ordinary Least Square (OLS), Fixed Effect Model (FEM) and Random Effect Model (REM) to analyse the data with the aid of Stata statistical package. Diagnostic tests in the form of Hausman and Breusch Pagan Lagrange Multiplier Tests were conducted to select the best models. It was concluded that lending rate does not have significant impact on the lending behaviour of Deposit Money Banks (DMBs) in Nigeria. Similarly, Investment Portfolio was evidenced to have a significant impact on the lending activities of DMBs. Drawing from the findings of the paper, it was therefore recommended that Lending rate should not be too high because it makes the cost of borrowing more expensive for the borrower and it should not be too low because it will discourage banks from borrowing. In addition, Deposit Money Banks; as a growth strategy; should pay much attention to investible funds to enable them lend to the deficit economic units.

Keywords: merger, lending rate, investment portfolio, DMBS

Introduction

The crucial and indispensable role played by commercial banks in mobilizing resources from surplus to deficit economic units remains one of the most productive economic activities which is geared towards availing financial resources to meet the credit needs of the economy (Mogboyin, Asaolu & Ajilore, 2012) [30]. This critical role of determining and distributing financial resources in the economy which is expected to have a multiplier effect on the economy in terms of investment, employment generation, increased income, business expansion, just to mention a few (Sadat & Namakka, 2019). The most effective method of making financial resources available is via lending activities as observed by Muhammad and Muhammad, (2012) [31]. It remains a basic preoccupation of banks to maintain adequate portfolio to be able to meet up with their financial obligations on one hand, as well as the credit needs of the economy which is considered as a sole determinant of profit making. Duangkamol (2009) maintained that changes in bank lending behaviour has a market impact on the economic activities in particular and by extension the economic development in general

Owolabi and Ogunlalu (2013) [44] argued that the banking sector reforms in Nigeria were propelled by the need to deepen the financial sector and reposition it for growth to become integrated into the global financial architecture; and evolve a banking sector that is consistent with regional integration requirements and international best practices there by strengthening the banking system, embracing globalization, improving healthy competition, exploiting economies of scale, adopting advanced technologies, raising efficiency and improving profitability. Lemo (2005) [28], Ajayi (2005) [4], Enyi (2007) and Elumilade (2010) [16] posited that financial reform brought about changes in the perception, philosophy as well as the funding of Deposit Money Banks (DMBs) that are expected to manage the large inflow and outflow of the financial resources.

The question of whether or not merger as a banking reform has the ability to influence the lending behaviour of DMBs has generated a lot of intellectual submissions from the academia (See Hancock, Laing and Wilcox,1995; Furfine, 2000; Kishan and Opiela,2000; Vanden and Heuvel, 2001; Omowunmi, 2011; Leonardo and Paola,2013; Okpala, 2013; and Tomola,2013; Sadat and Namakka,2019) [19, 17, 27, 52, 43, 36, 47]. A consensus exists amongst scholars with respect to the positive link between merger and the lending behaviour of DMBs in Nigeria (See Sadat and Namakka,2019). However, Illoh (2014) maintained that the relationship between merger and lending activities of banks could vary especially when small banks transform into bigger banks as a result of the merging activities, they tend to lose their existing lending relationship with their smaller customers; there by having a stronger preference for high profile investments with higher returns Judit (2008) corroborates with Illoh (2014) by adding that small business may find it harder to obtain finance from larger and more complex financial institutions.

From the forgoing, it remains contentious that Merger in Nigeria has changed the lending behavior of banks and debate on the aspect (positive or negative) is inconclusive.

But the belief is that study of how the banking reform affects bank characteristics especially the lending behavior is ardently needed. In spite of the relevance of the study, there are little studies from the best of the researcher's knowledge that have reported the effects of Merger on lending behaviour in Nigeria, hence the need for the study.

Several studies have been conducted in Nigeria and other parts of the world attempting to explain the impact of Merger on bank characteristics. Most of the studies as mentioned earlier, concentrate on the ability of Merger to enhance performance of Deposit Money Banks (DMBs). Studies such as Walter and Uche, (2005) [53], Akpan (2007) [5], Uchendu (2005) [48], Kama (2007) [25], Kwan (2002), Amel *et al* (2004) [7], Nadia (2015) [32], Oghojafor and Sunday (2012) [35], Omah, Okolie and Durowoju (2013) [42] Yauri, Joshua and Nasiru, (2012) [54], Nwanko (2013), Adesegun and Nelson, (2013) [2], Elumilade (2010) [16], Owolabi and Ogunlalu (2013) [44], Olagunju and Obademi (2012) [38], Oluwaremi (2014) [41]; appraised the effects of bank reforms and consolidation programme using various measures of organizational performance in the banking sector. Therefore, this study is conducted to assess the impact Merger has on Bank characteristics with particular interest on the lending behaviour of Deposit Money Banks in Nigeria.

To achieve the aforementioned objective, the paper is structured into five sections. After this introduction comes the literature review. The literature review is followed by research methodology. Presentation of results and discussions come immediately after methodology, while the last section is conclusion as well as recommendations.

Literature Review

A Merger according to Anthony (2008) [8] is the combination of two or more organizations into one large organization which is mostly voluntary and often results in a new organizational name. Umar (2009) [50] maintains that Merger is a transaction which involves two or more companies in which shares are exchanged but only one company survives. Similarly, Okpanachi (2011) [37] sees Merger as a global strategy in achieving business growth and survival which has to do with the coming together of two or more firms to become one. In fact, Merger affects Deposit Money Banks (DMBs) in Nigeria. This category of banks according to Organization for Economic Cooperation and Development (2011) are resident depository corporations and quasi-corporations which have any liabilities in the form of deposits payable on demand, transferable by cheques or otherwise usable for making payments. Similarly, CBN (2018) maintains that DMBs are financial institutions licensed by the regulatory authority to mobilize deposits from the surplus unit and channel the funds through loans to the deficit unit and performs other financial services activities.

A number of submissions were made with regards to the reason behind Mergers. While some scholars argue from the institutional and technical point of view, some view it from the need to improve financial intermediation in the banking industry. This section therefore examines different submissions with respect to significance of Merger.

Soludo (2004) [46] maintains that the major goals of the consolidation exercise in Nigeria were to create a sound and secured banking system where depositors could trust, build domestic banks that depositors could rely up to finance investment, improve banks efficiency and encourage competition which will eventually drive down interest rate and enhance affordable credits to the economy. In a related opinion, Ajayi (2005) [4] argues that banking sector reforms are driven by the need to deepen the financial sector and to reposition the Nigerian economy for growth, become integrated into the global financial structural design and evolve a banking sector that is consistent with regional integration requirements and international best practices. A strong capital-based bank has the ability to absolve loses arising from non-performing liabilities (Adegbaju & Olokoyo, 2008) [1].

Similarly, Lemo (2005) [28] posits that Merger is designed to enable the required resilience to support the economic development of the nation by efficiently performing its functions as the fulcrum of financial intermediation. This according to the work of Owolabi and Ogunlalu (2013) [44] will ensure the safety of depositors' money and placing the banks on position to play developmental roles in the Nigerian economy. In the words of Ajayi (2005) [4], banks' recapitalization through consolidation is motivated by four key economic factors: economies of scale; economies of scope; potentials for risk diversification and banks' management's personal incentives. Osho (2005) and Uchendu (2005) [48] believe that those benefits from banking reforms cannot just come without incurring some costs, such as job losses; lowering of the Gross Domestic Product and high recapitalization costs as a reasonable component of the Gross Domestic Product. They drew the examples from Malaysia, Korea, Indonesia, and Thailand and concluded that in spite of the huge sums spent on the banking sector reforms, the benefits always far outweigh the cost in the medium term to long-term.

Lending rate remained a subject for critical assessment with adverse implications for savings mobilization and investment promotion (Ogunbiyi, Samuel & Peter, 2014). Lending rates are rental payments for the use of credit by borrowers and return for parting with liquidity by lenders (CBN, 1997). Charles, George and Ben (2000) argued that bank lending rate is a significant factor for banks' lending. They believed lending rates impact on bank loans. In a related study, Gambacorta and Iannoti (2005) showed that the bank lending rate brings immediate changes in bank portfolios in the short-run. They argued that bank lending and deposits show greater variability in time of monetary tightening and ease, which implies that lending rate is a strong repressor of lending behaviour.

In a study conducted by Okoye and Eze (2013), the impact of bank lending rate on the performance of Deposit Money Banks (DMBs) between 2000-2010 was analyzed. The objective is to determine the effect of lending rate and monetary policy rate on the performance of DMBs. The study concluded that lending rate has a significant impact on the performance of DMBs. In a similar study which examined the impact of lending rate on the net asset of banks in Nigeria from 1995-2010 conducted by Akabom-Ita (2012), the result showed that an increase in lending rate leads to a reduction in the net assets. This implies a negative relationship between the rate and net asset of these banks.

Enyioko (2012) examined the performance of banks in Nigeria vis-à-vis interest rate policies of banks. Data was collected from published audited accounts of 20 banks and regression technique was used to analyse the relationship between interest rate and bank performance. The study

concluded from the findings that interest rate policies have not improved the overall performance of banks significantly. Similarly, Aburime (2008) used a sample of banks with 1255 individual observation on unbalanced panel data over the period 1980-2006 to investigate the macroeconomic determinants of banks profitability in Nigeria. The study found out that interest rate, inflation, monetary policy and foreign exchange regime are positively associated with banks Return on Assets (ROA). Ogunlewe (2001) examined the determinants of bank profitability and concluded that reserve ratio, credit growth and exchange rate determined profit. The study also found that total deposits, treasury bills rates and lending rates are significant determinants of profits of banks in Nigeria. In a related study carried out by Uchendu (2005a) which sought to investigate the effect of monetary policies on the performance of Nigerian Commercial Banks. Interest rates, Exchange rates, bank reserves, banking structure and unit labour costs were found to influence bank profitability.

Studies conducted in other countries have been able to link interest rate with banking activities. Raiz and Mehar (2013) investigated the import of bank specific variables such as credit risk, asset size, total deposits to total assets ratio and macroeconomic indicators which is the interest rate on profitability measurement such as Return on Equity (ROE) and Return on Asset (ROA) of Commercial Banks in Pakistan during the period of 2006-2010. The result found out that both bank specific variables and the macroeconomic indicator which is the interest rate have significant impact on the profitability measurement. Similarly, studies conducted in other countries which argue in the same direction with Raiz and Mehar (2013) include Kanwal and Nadeem (2013), Sufian (2011), Alper and Anbar (2011), Khwarish (2011), Damena (2011), Staikouras and Wood (2004), Molyneux and Thorton (1992).

The nexus between merger and bank equity investment stems from the supposed positive relationship between consolidation and profitability of banks. The literature argued that in the event that consolidation impacts positively on banks profitability, the resultant effect of such a relationship could be strong through the banks additional investment into some sectors of the economy. In Nigeria, a positive relationship between capital size of banks and their profit after tax would translate into additional equity investment of banks (Ahmad, 2011). Research findings have shown mixed result. A positive relationship between capital size and level of bank investment has been established by Houston *et al* (2001).The result showed that as much as a policy is in place to increase profitability in banks, then conclusion should be made that such a policy would also impact positively on investment portfolio. Berger *et al* (1999) had documented evidence on the link between bank health and investment in Japan. Bank profitability, commonly measured by Return On Assets (ROA) or Return On Equity (ROE), is normally given as a function of internal and external determinants.

According to Athanasoglou *et al*(2006), internal determinants of bank profitability are factors that are largely influenced by a bank's management decisions and policy objectives, such as liquidity level, capital adequacy, provisioning policy, expenses management and bank size, while the external profitability determinants are variables that reflect the economic and legal environment where the bank operates. Liquidity risk either due to bank's possible inability to absorb decreases in liabilities or to finance increases on the assets side of the balance sheet, is considered an important determinant of bank profitability. The loans market, especially small lending, is risky and has a greater expected return than other bank assets, such as government securities.

Bourke (1989) therefore, expected a positive relationship between liquidity and profitability and in the case of which the fewer the funds are tied up in liquid investments, the higher the expected profit. Changes in credit risk may reflect changes in the health of a bank's loan portfolio, and consequently affect its performance. This idea found support in the work of Athanasoglou *et al* (2006) among others. The study posited that variations in the profitability of banks are largely due to credit risk variations, since an increase in credit risk exposure is normally associated with decrease in profitability, which means that the more banks are exposed to high-risk loans, the higher the accumulation of unpaid loans and the lower the profitability. Leverage, that is, overall capitalization, has been demonstrated to be a key factor in explaining the performance of banks, but its impact on profitability is ambiguous (Berger, 1995), even though, higher levels of equity could decrease the cost of capital and consequently impact positively on profitability (Molyneux, 1993). This position is consistent with the study of Bourke (1989), which used capital ratios as an independent variable of bank profitability and finds a positive relationship.

Athanasoglou, Brissimis and Delis (2005) indicated that capital is better characterized as a determinant of bank profitability that is independent of external cause, as higher profits may lead to an increase in capital. Prior studies argued that reduction in expenses tends to improve banks efficiency and thereby raise its profitability, thus suggesting a negative relationship between an operating expenses ratio and profitability (Bourke, 1989). Berger *et al*, (1999) on the contrary, posited that a positive relationship exists between the two variables, which imply that banks profits may be taken care of in the form of higher payroll expenditures paid to more productive human capital.

Little cost savings can be attained by increasing the size of a bank, especially as markets develop (Athanasoglou *et al*, 2006; Sufian &Parman, 2009). Sufian and Parman (2009) observed that the effect of increasing bank's size on profitability may be positive up to a certain point, beyond which it could be negative due to administrative and other reasons. Thus, the size profitability relationship may be expected to be nonlinear.

Empirical studies document the effects of bank consolidation on profitability though with mixed results. Using a panel data set of 63banks from 13 countries, Sufian and Parman(2009) assessed the impact of consolidation on the profitability of banks, and found some evidences in support of the effects of consolidation on profitability.

In a panel study using a flexible variable profit function and incorporating time-varying technical efficiency, Sufian and Parman (2009) studied whether the deregulation of Spanish savings banks that generated increased competition, affects their profitability from 1986 to 1995 and found high rates of technical progress and raising growth trend in productivity. Contrary to their finding, Berger (1995), and Bhattacharyya *et al* (1997) in similar studies found a decline in average cost of production immediately after deregulation. Liberalization of the banking industry in terms of number

and interest rates have been observed to raise bank profitability in Norway (Berger *et al*, 2007),though, Berger and Humphrey (1997) pointed out that the effects of deregulation on the activities of banks largely depend on the conditions of the industry before the reforms and on the type of policies that are implemented.

In their study, Jeon and Miller (2002) examined the relationship between banking consolidation on a state-by-state basis and average bank profitability within a state and found support for the view that there exists a positive relationship between consolidation and profitability. Koeva (2003) on his own part found that profitability declines with consolidation in India, though there is little empirical evidence that this relationship may remain consistently positive over time in general as supported by Smirlock (1985) or that causality may only be in one direction as in Berger (1995).

Fiona (2006) analysed the effects of consolidation on profitability in the U.S. banking sector from 1994-2005, using bank-level panel data. The finding indicated that consolidation may raise both interest and non-interest revenues, and reduce both interest and non-interest costs. In Nigeria, researches in this area are inconclusive. Using the audited account of 20 banks, Somoye (2008) examined the impact of government promoted consolidation on the profitability of banks. He found that the policy has not significantly improved the overall profitability of banks in Nigeria.

By and large, the evidence in the existing literature on the relationship between consolidation and profitability on the one hand, and between profitability and investment on the other hand, for both developed and developing economies is still mixed. While most research findings favoured the consolidation-profitability paradox, a few other researches revealed a contrary view of the nexus. The different outcomes may be as a result of differences in the macroeconomic conditions of and the banking habits in the countries.

The theoretical foundation for this study is the theory of efficiency which posits that Mergers provide a mechanism by which capital can be used with more efficiency and the productivity of the firm can be increased. The theory equally argues that firms engage in Mergers in order to reduce production cost, increase output, improve product quality, obtain new technologies, and generate synergies between both parties. The theory further postulates that Merger will only occur when the firms are expected to generate enough realizable synergies to make the deal beneficial to both parties as argued by Oloye and Osuma, (2015) [39]. The theory is also known as the value increasing theory (Hitt, Harrison & Ireland, 2001) [21] due to the fact that Merger generates synergies between the acquirer and the target which is expected to increase the value of the firm. Bwala (2003) [12] cited in Oloye and Osuma (2015) [39] maintained that efficiency is the ratio of a system's effective or useful output. It is the degree to which actual output deviates from the optimum given a unit of measure of the input. Economically advantageous value is created through mergers when the combined present value of the merging firms is greater than the sum of their individual present values as separate entities (Udoidem & Ikechukwu, 2012) [49]. Helen (2009) posited that when referring to value creation, it is the extent to which the return of an investment over a period of time exceeds the cost of capital for that investment. Merge banks can obtain efficiency gains and pass these benefits to their customers in the form of lower lending rates.

Research Methodology

This study uses ex-post facto and longitudinal research designs to assess the impact of merger on bank characteristics in Nigeria from 2006-2018. Ex-post facto is adopted because the study is entirely on secondary data which is seen as appropriate for achieving the intent of the study which is to analyze the impact of the proxies of the predictor variables (Lending rates and Investment Portfolios) on the proxy of the response variable (Loans and advances). Bank size is a control variable which has been widely reported in literature as a factor that can enhance banking activities. Longitudinal research design is appropriate because observation is done at several points in time. This design has the advantage of keeping track of changes over time. Similar researches such as Leonardo and Paola (2003) [29], Tomola (2013) [47], Okpala (2013) [36], Namakka (2014) [33], Ahmadu (2016) and Sadat and Namakka (2019) also used this research design. Data is extracted from the financial statements of the selected DMBs in Nigeria for the period under review. The period under review is chosen due to the fact that 2005 witnessed major consolidation exercise. Therefore, the impact is expected to be seen thereafter. The number of merged banks in Nigeria is the population of the study which equally constitutes the sample size. Therefore, the data generated from the financial statements are structured in panel form indicating financial values against number of firms across the years. The statistical technique is the panel multiple regression. However, the study uses descriptive statistics for the summary of the data and also inferential statistics for hypotheses testing.

Based on the broad objective of the study, a panel regression model has been used to empirically address the specific objectives of the study. The general regression equation is presented below:

$$Y_{it} = \beta_0 + \beta_1 X_{it} + \beta_2 X_{it} + \ldots \beta_n X_{it} + e_{it} \quad \text{eq.1}$$

Where:

Y_{it}= Dependent Variable

β_0 = intercept

$\beta_1, \beta_2, .. \beta_n$= Regression coefficients

$X_1, X_2, .. X_n$= Independent variables

e_{it}= error term.

The models of each of the specific objectives of the study are specified as follows:

Model 1: To assess the impact of Lending Rate on the lending behaviour of Deposit Money Banks in Nigeria. This is analyzed by the following panel regression model:

$$LB_{it} = \beta_0 + \beta_1 LRB_{it} + \beta_2 BS_{it} + e_{it} \quad \text{eq.2}$$

Where:

LB=Lending behavior measured by loans and advances

β_0 =intercept

β_1, β_2 =Regression coefficients

RBL_{it} =Bank lending rate

BS_{it} =Bank size proxied by total asset

e_{it}=error term.

Model 2: To examine the impact of Investment Portfolios on the lending behaviour of Deposit Money Banks in Nigeria. This is analyzed by the following panel regression model:

$$LB_{it} = \beta_0 + \beta_1 IP_{it} + \beta_2 BS_{it} + e_{it} \quad \text{eq.3}$$

Where:

LB=Lending behavior measured by loans and advances

β_0 =intercept

β_1, β_2 =Regression coefficients

IP_{it} =Investment Portfolio

BS_{it} =Bank size proxied by total asset

e_{it}=error term.

The use of regression test with Fixed and Random effects models became expedient due to the panel data utilized in the study. The equation for the Fixed Effect Model (FEM) is presented as:

$$Y_{it} = \beta_1 X_{it} + a_i + U_{it} \quad \text{eq.4}$$

Where:

a_i (I = 1…..n) is the unknown intercept for each entity (n entity-specific intercept)

Y_{it} Represents the dependent variable, where i = entity and t = time

X_{it} Represents one independent variable

β_1 is the coefficient of the independent variable

U_{it} is the error term

The equation for Random Effect Model (REM) is presented as:

$$Y_{it} = \beta_1 X_{it} + a_i + U_{it} + \varepsilon_{it} \quad \text{eq.5}$$

Where:

a_i the intercept

Y_{it} is the dependent variable, where i = entity and t = time

X_{it} represents one independent variable

β_1 is the coefficient of the independent variable

ε_{it} is the error term

The equation for Hausman Test is presented as:

$$H = (B_c - B_e)(V_c - V_e)(B_c - B_e) \quad \text{eq.6}$$

Where:

B_c is the coefficient vector from the constant estimator

$B_e$is the coefficient vector from the efficient estimator

V_c is the covariance matrix of the consistent estimator

V_e is the covariance matrix of the efficient estimator

Data Presentation and Analysis

The information obtained on Lending Rate, Investment Portfolio, loans and advances as well as that of the proxies for bank size which have to do with the total asset were obtained from the financial statements, CBN Statistical Bullions and Nigeria Stock Exchange (SEC) daily official lists of the quoted Deposit Money Banks for the period 2006- 2018.

The descriptive results give account of the data used for this study together with its interpretation. The discussion is based on the eight (8) banks analysed.

Table 4.1 presents the mean, standard deviation, minimum and maximum values of selected banks.

Table 1: Descriptive Result of Banks

Variable	Mean	STD.Dev	Minimum	Maximum
Loans and Advances	26.39802	0.9830333	23.67142	28.39095
Lending Rate	3.1205	0.138	2.910	3.307
Investment Portfolio	22.778	2.434	16.528	26.211
Total Asset	27.2456	0.9036567	25.39246	29.08585

***Source*:** Author's Computation, 2019.

Table 4.1 reveals that the mean value of loans and advances of the banks stood at 26.398 billion and a standard deviation of 0.9830. The Table also shows that the minimum loans and advances given by the banks is 23.67 billion, while the maximum stood at 28.391 billion. Similarly, the mean and standard deviation of lending rate stood at 3.121 and 0.138 respectively, while the minimum rate is 2.910 and the maximum remained 3.307. It could also be seen that investment portfolios within the period of review has witnessed a mean value of 22.778 billion and a standard deviation of 2.434. The minimum and maximum values stood at 16.528 and 26.211 billion respectively. The presented mean values as seen in Table 4.1 show that the mean values are higher and above the Standard Deviations which indicate absence of skewness in the data.

However, inferential analysis is further employed to validate the descriptive results. Inferential analysis in the form of multiple regression is used to analyze the data. Model one was formulated to test the hypothesis on the impact of the lending rate on bank characteristics which is proxy by loans and advances extended by DMBs to firms and customers. In the same vein, three different equations were estimated to ascertain the impact between the two variables while controlling for total assets of banks. The objective is achieved through the Pooled Ordinary Least Square Regression, the Fixed Effect Model (FEM), as well as the Random Effect Model (REM). The results are shown in Table 4.2.

Table 2: Regression Results Showing Impact of Bank Lending Rate and Loans and advances

Variable	OLS			Fixed effect			Random effect		
	Coeff.	Std.Err	P>/t/	Coeff.	Std.Err	P>/t/	Coeff.	Std.Err	P>/t/
Log LR	2.1790	0.3917	0.000***	2.1801	0.3220	0.000***	2.1798	0.3219	0.000***
Log TA	0.2610	0.0179	0.000***	0.9725	0.0154	0.000***	0.9706	0.0153	0.000***

CONS	-6.5767	1.3168	0.000	-6.8441	1.0899	0.333	-6.8443	1.0939	0.000
R^2	0.9707			0.9714			0.9714		
F-Stat	1441.88		0.0000***	1989.26		0.0000	1995.99		0.0000
Hausman	0.98(0.612)								
Pesaran	-0.147814(0.8825) 0.004171(0.9967) -0.017816(0.9858)								
BP LM	43.05(0.000)								
Normality	368.9078(0.0000) 50.11628(0.13450) 382.0827(0.09857)								

***Source*:** Author's Computation Using STATA 14, 2019.
Note: *** denotes 1% significance level.

The pooled regression in Table 4.4 shows positive and significant impact between lending rate and loanable funds of commercial banks; the finding is in line with simple law of supply. Banks are willing to lend more at higher rate because of profit margin. As shown in Table 4.4, a percentage raise in lending rate will increase loanable funds by 2.17 point average. Lending rate constitutes larger variation in loans as shown by R- square value of 97.0%. Overall adequacy of the model as explained by F-statistics (1441.88) with corresponding probability value of (0.000) shows that the model is adequate and fits well at 1% level of significance. The results of fixed and random effects regression do not show much difference because they both indicate positive and significant impact of lending rate on loans and advances, although major concern lies on the model to choose out of the three to actually explain the nexus.

However, Hausman test of specification as shown in Table 4.2 leads to rejection of null hypothesis meaning that Random Effect Model is the chosen model. For more robustness, Breusch and Pagan test was further estimated to choose in between pooled regression and Random Effect Model. At 1% level of significance, hypothesis of pooled regression was rejected and final conclusion was drawn to sustain Random Effect Model for the analysis.

Two post estimation diagnostic tests were equally reported in Table 4.2, residual normality test and Pesaran cross sectional dependence test. With exception of pooled model regression, all others showed that residuals of the regressions are normally distributed because the probability values are greater than 5% as such the null hypothesis cannot be rejected. Evidence of cross sectional dependence was not observed as shown by the Pesaran statistics and its corresponding probability values across the three estimated models.

Similarly, data for the merged banks were pooled for Ordinary Least Square regression, Fixed and Random Effects were estimated to determine the impact of investment portfolios on loanable funds of DMBs in Nigeria. The results are shown in Table 4.3.

Table 3: Regression Results Showing Impact of Investment Portfolios on Loans and advances

Variable	OLS			Fixed Effect			Random Effect		
	Coeff.	Std.Err	P>/t/	Coeff.	Std.Err	P>/t/	Coeff.	Std.Err	P>/t/
Log LR	0.1084	0.0237	0.000***	0.2356	0.0421	0.000***	0.1759	0.0342	0.000***
Log TA	0.9793	0.9793	0.000***	0.9753	0.0165	0.000***	0.9773	0.0167	0.000***
CONS	-2.7401	-2.7401	0.000	-5.5312	1.0708	0.333	-4.2265	0.9396	0.000
R^2	0.9679			0.9574			0.9655		
F-Stat	1312.83		0.0000***	1751.76		0.0000***	1780.28		0.0000***
Hausman	5.92(0.0519)								
Pesaran	6.646263(0.34510) 1.719609(0.08550) 3.954074(0.87071)								
BP LM	19.54(0.000)								
Normality	302.4751(0.12602) 36.01685(0.09230) 85.69268(0.54620)								

***Source*:** Author's Computation Using STATA 14, 2019.
Note: *** denotes 1% significance level.

The OLS results show that investment portfolios positively impacts on loans and advances and statistically significant at 1% level of significance. A percentage raise in investment portfolios will increase loans by 0.108. The robustness of the model is examined using the popular R-square and F-statistics. R-square value of 96.8% indicates that large variations in loans and advances are explained by investment portfolios in this particular model. Overall robustness of the model using F-value shows that the model is adequate in capturing the impact at 1% level of significance.

The results of both fixed and random effect models are equally presented in Table 4.3 where in both cases; positive and significant impacts were observed between investment portfolios and loanable funds. A percentage raise in investment portfolios will increase loanable funds by 0.2356 in the case of fixed effect, while 0.1759 for random effect. Both models tend to be robust in terms of coefficient of determination and F-statistics as observed from Table 4.3.

Having estimated the three models, it is imperative to choose a model that is appropriate for analysis and decision. Hausman statistics as shown in the table has 5.92 with corresponding probability of 0.0519 which led to rejection of the null hypothesis at 5% level of significant. To choose between random and pooled regression, Breusch Pagan LM test of random effect was estimated and it stood at 19.54 with corresponding probability value of 0.000. At 1% level of significance, the null hypothesis of pooled regression was rejected, hence, the result of random effect is appropriate to explain the relationship between loanable funds and investment portfolios. It can be concluded that the investment portfolios have a random effect across panel of banks under investigation.

To avoid interpretation of the spurious regression for decision making, post estimation test was carried out. Firstly, the residual of each model was tested for normality, as indicated by the probability value in the parenthesis. The null hypothesis cannot be rejected at 5% level of

significance and this implies that the residuals of each model estimated are normally distributed across the observations. The result of Pesaran cross sectional dependence test indicates that there is no cross sectional dependence across the entities under investigation. This further illustrates the level of independence among banks from the perspective of the loans and advances and other variables.

Test of Hypotheses and Discussion of Findings

Test of hypothesis one was done using regression results generated in Table 4.2. The hypothesis is stated below:

Ho_1: There is no significant impact between Lending Rate and lending behaviour of Deposit Money Banks in Nigeria.

The results of Pooled OLS, Fixed Effect and Random Effect in Table 4.2 revealed that there is a significant positive impact between lending behaviour and lending rate at 1% level of significance. Test of hypothesis one was done using Random Effect Model because the results of Breusch Pagan Lagrangian Multiplier test favoured it against Pooled OLS at 1% level of significance. Therefore, the study rejects the null hypothesis one and concludes that the Lending rate has significant effect on lending behaviour of merged Deposit Money Banks in Nigeria. By implication, the higher the lending rate, the more the banks will issue out loans. This finding is in agreement with the study of Charles, George and Ben (2000) who concluded that bank lending rate is a significant factor for bank lending.

It has also been argued by Duangkamal (2009) [15] that one of the determinants of loan lending rate is the structure of the banking market. The impact of the market structure on the loan lending rate is generally summarized by two opposing hypotheses; Structure-Conduct-Performance and the Efficiency –Structure –Performance. The former suggested that banks will collude and use their market power to extract rents, while the later opined that concentration will increase the overall efficiency of the banking sector. This is also in line with the concentration theory of merger which equally postulated that the higher the concentrations of the banking market, the higher the prices are for financial services and the higher the banks' profits. This is because banks in less competitive environment charge higher interest rates (Aburime, 2006). Aspinwall (1970) investigated the relationship between market structure and bank lending rate in the US banking market in 1965 and concluded that lending rate tends to be lower when the number of institutions increases, while higher as the market concentration increases. This was supported by Hanna (1991) who confirmed the relationship between loan rate and market concentration as predicted by Structure-Conduct –Performance paradigm.

Similarly, test of hypothesis two was done using regression results generated in Table 4.3. The stated hypothesis is shown below:

Ho_2: Investment Portfolio does not have significant impact on lending behaviour of Deposit Money Banks in Nigeria.

Table 4.3 shows that all the three (3) models i.e. Pooled OLS, Fixed Effect and Random Effect estimates are significant at 1% level of significance. Test of hypothesis two was done using Random Effect Model because the results of Lagrangian Multiplier favoured it. The p-value (i.e. 0.000) of investment portfolio is positive and significant, implying that investment portfolio has a significant positive impact on lending behaviour proxy by Loans and advances. Therefore, the study rejects the null hypothesis and concludes that Investment Portfolio has significant effect on lending behaviour of merged banks in Nigeria.

This argument as seen in the analysis has been supported by other studies such as Gianetti and Simonov (2010), Jimenev, Ongena and Peydro (2010) [23], Albertazzi and Marchetti (2010) [6] and that of Santos and Winton (2010). However, studies such as Ahmad (2011), Fiona (2006), Somoye (2008) disagreed that investment portfolio does not impact on loans and advances of Deposit Money Banks in Nigeria. The literature has it that investment of banks is a function of the profit realized by these banks. By implication, it means that when enough profit is not realized, it affects the amount available for investment purposes. This shows that investable funds will now have significant impact on the quantum of loans and advances.

Conclusions and Recommendations

The following conclusions are drawn based on the findings of the study:

In conclusion, the lending rate and investment portfolio were found to be regressors of lending activities. It was discovered that the lending rate of banks remains instrumental, hence their ability to make more profits. Similarly, investment portfolio also influences loans and advances in Nigerian banks.

Consequent upon the major conclusions of this study, the following recommendations are given for consideration by relevant stakeholders:

Regulatory authorities should be more sensitive to lending rate. This can be done by taking into account the banks and borrowers. Lending rate should not be too high because it makes the cost of borrowing more expensive for the borrower and it should not be too low because it will discourage banks from borrowing. This is because banks can only borrow to customers if the interest rate of depositing is less than the lending rate. However, priority can be given to critical sectors of the economy in order to stimulate growth through the lending rate.

The study also recommends that Deposit Money Banks as a growth strategy should pay much attention to investible funds to enable ability to lend to the deficit economic units.

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