Effect of Interest Rate Deregulation on Loans and Advances of Deposit Money Banks in Nigeria

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Abstract: **The study examined the impact of the lending and deposit rates in the face of deregulation on the loans and advances of deposit money banks in the country covering the period of 1986 to 2019 using annual time series data. Using the Autoregressive Distributed Lag (ARDL) model, findings from the study revealed that the deregulation of interest rate in Nigeria encouraged the disbursement of loans and advances within the economy, but it was however not significant. In addition, the study found that the policy led to an inverse relationship between deposit rate and loans and advances in the country. Higher deposit rates significantly discouraged deposit money banks from granting loans and advances. To ensure that interest rate deregulation has a much significant effect on the loans and advances of deposit money bank, the deregulation of the sector must be full, as against the partial deregulation being presently practiced, to encourage the desired level of competition which would spur the growth of the sector, and ultimately expand credit facilities for the Nigerian economy.**

Keywords- **Interest rate, Loans, Advances, Deposit Money Bank (DMB), and Deregulation**

I. INTRODUCTION

The Federal Government of Nigeria developed and implemented the interest rate deregulation aimed at driving the banking sector to increased private sector participation to boost the economy confidently. Then, the banking sector has not shown any improvement connected to deregulation since the commencement of the policy in 1989 rather developments in the sector are mainly from other policies of the Central bank of Nigeria (CBN)(Francis, 2019). The success of the deposit money banks mainly depends on total savings deposits of customers. This could explain why banks sets high targets of saving deposits for their operations staff to sustain their business.

Interest rate in Nigeria is still indirectly regulated although, officially, the banks are under deregulation. The Monetary Policy Rate (MPR) which the Central Bank of Nigeria (CBN) uses to control interest rate still defines the direction of interest rate flow in deposit money banks. A higher MPR means interest rate will be high and vice versa (Francis, 2019).

Deposit money banks are the most important savings, mobilization, and financial resource allocation institution. Consequently, these roles make them significant in the economic growth and development of a country. In performing these responsibilities, it must be understood that banks have the potential, scope, and prospects for mobilizing financial resources and allocating them to productive investments and in return promote their performance. Thus, no matter the sources of the generation of income or the economic policies of the country, deposit money banks would be interested in giving out loans and advances to several customers taking note of the three principles of profitability, liquidity and solvency guiding which are guiding their operations (Adolphus, 2011).

There was lack of regulation in banking sector and that resulted in banking failure before 1952. At the time, the rapid expansion of indigenous banking companies which was accompanied by a high rate of bank failures which claimed 21 out of 25 indigenous banks by 1952 (Mbaeri, Adioha & Uzokwe, 2015). These bank failures led to enactment of 1952 banking ordinance which had little or no impact to the economy because there was no central bank to effectively supervise the existing banks. This eventually led to the creation of the Central Bank of Nigeria (CBN) in 1958 to control and act as a lender of last resort to commercial banks and other financial institutions, respectively. The financial sector reforms were components of the Structural Adjustment Programme (SAP) which was kicked off in 1986 with the deregulation of interest rate, exchange rate and liberalization of entry/exit into banking business (Iganiga, 2010). Nigeria was one of the countries that adopted this programme aimed at achieving efficiency in all financial sectors and engender financial deepening, respectively. However, the reforms had little or no positive impact on the economy(Akpunonu, Egungwu & Muogbo, 2015)

The deregulation of interest rate was met by mix reactions by expert and scholars in Nigeria. Some researchers are of the opinion that interest rate deregulation has the propensity to affect investment considerably due to high rate of lending (Abiodun, 1987; Ojo, 1988). On the contrary, Iklide (1990) proposed that interest rate deregulation will not only correct the financial repression policy but will also encourage high savings through high deposit rate. Deposit money banks play significant role in the mobilization of resources and allocation of funds to the productive sector (Victor & Richard, 2013). However, the prevailing interest rate will determine the effectiveness of lending of banks (Obagunwa & Akinwale, 2018).

The deregulation of interest rate in Nigeria's financial sector was carried out to create a competitive financial sector capable of advancing credit facilities to spur Nigeria's productive sector. However, the disbursement of loans and advances have fallen short of this expectation in the country, questioning the rational for deregulation in the first place. To address this, the study specifically assessed the impact of lending rate and the deposit rate of deposit money banks on the loans and advances in the face of deregulation in Nigeria.

1.1   Research Questions

The following research questions will guide this study:

i.   What is the impact of the lending rates in the face of deregulation on the loans and advances of deposit money banks in Nigeria?

ii.   What is the effect of deposit rates in the face of deregulation on the loans and advances of deposit money banks in Nigeria?

1.2   Objectives of the Study

i.   To examine the impact of the lending rates in the face of deregulation on the loans and advances of deposit money banks in Nigeria.

ii.   To assess the effect of deposit rates in the face of deregulation on the loans and advances of deposit money banks in Nigeria.

1.3   Statement of the Hypotheses

i. $H_0 1$: Lending rates has no significant impact on the loans and advances of deposit money banks in Nigeria.

ii. $H_0 2$: Deposit rates has no significant effect on the loans and advances of deposit money banks in Nigeria.

II. LITERATURE REVIEW

2.1. Theoretical Literature

Keynes Theory: The theory was propounded by John Maynard Keynes (1883–1946) in his famous work, *The General Theory of Employment, Interest and Money* published in 1936.Keynes theory provides that interest rate is determined by the demand and supply of money and it is at equilibrium where both employment and income are fluctuating with less than full employment. The theory noted that the supply of money is usually determined by monetary authorities while the demand for money is a function of income and interest rate. The theory further stated that transactionary and precautionary motive of liquidity is dependent on income while speculative motive is dependent on interest rate which is interest elastic. Keynesian theory introduced the concept of liquidity trap, a situation where low interest rates discourage savings and consequently reduces investments due to lack of investable fund (Ene, 2015).

Time Preference Theory: This theory was propounded by economist Irving Fisher in "The Theory of Interest, as Determined by Impatience to Spend Income and Opportunity to Invest It."The time preference theory of interest also known as the Austrian theory of interest or agio theory of interest, explains interest rates in terms of people's preference to spend in the present over the future..This theory argues that people prefer to spend today and save for later, so that interest rates will always be positive - meaning that a naira today is more valuable than one in the future. Ene (2015) explained that the time preference is determined by the willingness principle and investment opportunity principle. A comparison of Fishers theory and Keynes theory indicates that both theories are dependent on income and availability of profitable investments. However, opponents of this theory have noted that it is unspecified and narrow theory because it does not really provide a methodological process for the determination of interest rate.

Loanable Funds Theory: This is a neo-classical theory of interest rate which was formulated in the 1930s by British economist Dennis Robertson(Robertson, 1934) and Swedish economist Bertil Ohlin (Ohlin, 1937). However, Ohlin attributed its origin to Swedish economist Knut Wicksell (Wicksell, 1898) and the Stockholm school, which included economists Erik Lindahl and Gunnar Myrdal(Ohlin, 1937). The theory stated that interest rate is determined by the forces of demand and supply of loanable funds. The theory added that the purpose of demand or loanable funds are (i) investment (ii) Hoarding and (iii) dissaving (Francis 2019).Supply of loanable fund comes from savings, dishoarding and bank credits while the demand of loanable fund according to this theory, has primarily three sources; government, businessmen and consumers who requires them for the purposes of consumption, investment, and hoarding. This theory is generally considered to be a superior theory to the Classical theory because of its inclusion of real as well as monetary factors, recognition of the role of bank credits as a constituent of money supply and its regard for money as an active factor in the determination of interest rate. However, Hansen (1941) in Ene (2015) criticized this theoryas being an unspecified theory.

The Classical Theory: The theory was developed by economists like Ricardo, J. S. Mill, Marshall and Pigou which is also known as the capital theory of interest or the saving-investment theory of interest or the real theory of interest. According to this theory, interest is a real phenomenon and the rate of interest is determined exclusively by the real factors, i.e., the supply of and demand for capital under perfect competition. The supply of capital is governed by thrift (i.e. saving) or time preference and the demand for capital is influenced by the productivity of capital.Taussig, 1998 in Ene, 2015stated that the theory completely ignores the effect of investment on income as it is based on the unrealistic assumption of full employment of resources. The study also noted that critics of this theory also argued that the Classicals misinterpreted the amount saved with the propensity to save.

The Modern Theory: The suggestion that previous theories on determination of interest rate were inadequate and unspecified pushed Hicks and Hansen to develop the Modern Theory of Interest(Irving, 1936). This theory take consideration of both monetary and non-monetary factors that influence interest rate by bringing together loanable funds and Keynesian liquidity preference formulations to provide an adequate and well-integrated theory of rate of interest which this study anchored on. The theory according to Hicks, Hansen, Somers, Lerner, and others revealed that the rate of interest, along with the level of income is determined by four factors, namely, the investment demand function (MEC), the savings (consumption) function, the liquidity preference function, and the quantity of money function. The equilibrium state of these four variables jointly describes the rate of interest. Hansen noted that equilibrium is reached when the desired volume of cash balances equals the quantity of money, when the marginal efficiency of capital is equal to the rate of interest, and finally, when the volume of investment is equal to normal or desired volume of saving (Ene, 2015).

2.2.   Empirical Literature

A study conducted by Obagunwa and Akinwale (2018) examined the effect of interest rate deregulation on the Nigerian banking system using Augmented Dickey – Fuller (ADF), Bound test and Autoregressive Distributed Lag (ARDL). The result of ARDL revealed that interest rate had significant effect on loan and advances while lending rate and deposit rate had an insignificant effect on loan and advances. The study concluded that banks should monitor the level of loan and advances in respect to major ratios for effective performance.

Another study by Afza, Raja, Imran and Saima (2018) evaluated the impact of interest rate fluctuations on the profitability of banks using annual data of seven years from 2007 to 2014 in Pakistan. The sample banks were taken based on highest market share and return, and the study uses Correlation and Regression analysis to evaluate the impact of interest rate changes (INT), Advances and Loans (ADV), Deposits with Other Banks (DWOB) and Investment (INV) over the profitability indicators; Advances and Loans (ADV), Return on Assets (ROA), Earnings Per Share (EPS), and Return on Equity (ROE). The result showed that deposits with other banks and interest rate are negatively affecting the profitability of banks, while advances and loans and investment are having positive influence over profitability of banks.

Alhassan, Anokye and Gakpetor (2018) study examined the effect of interest rate spread on the profitability of commercial banks in Ghana. The study based on samples of 24 banks over a ten-year period utilized a panel data to measure interest rate spread using net interest income (IntSp), Net Interest Margin (NIM) and bank profitability using Return on Assets (ROA) and Return on Equity (ROE). The outcome of the study revealed that there is a positive and statistically significant association between interest rate spread and bank profitability in Ghana. The study concluded that the current evidence shows that banks charge higher interest margin to maximize profitability.

Akinkunmi (2017) while carrying out a research on the regulatory impact of bank performance in Nigeria employs a panel dataset on the cost efficiency of Nigerian commercial banks to test the theory whether internal regulation from the monetary authority affects the functioning of the commercial banks. The study revealed that regulation has a negative and significant influence on the total cost while bank output, input prices and bank size have a positive and significant effect. This suggests that the large the bank size, the higher total cost incurred.

Egbetunde, Ayinde and Balogun (2017) on interest rate liberalization, financial development and economic growth in sub-Saharan African economies examined interest rate liberalization, financial development, and economic growth in sub-Saharan African economies. The study employed panel data, and co-integration and Error Correction Model (ECM) as method of analysis. They discovered that trade openness and price stability exert greater significance on the economic growth of sub-Saharan Africa economies than interest rate. Interest rate was shown to have a negative relationship with economic growth.

Akiri (2016) did a research on the effect of financial liberalization on the profitability of deposit money banks in Nigeria using time series annual data from 1975 to 2013 period. The result of the OLS revealed that the financial liberalization in Nigeria improved profitability. On the other hand, Makinde (2016) also did a separate research on the effect of interest rate on commercial bank deposits in Nigeria from 2000-2013 period using OLS Multiple regression technique. He found out that there was a negative relationship between the interest rates and the commercial bank deposits in Nigeria. Also, Ubesie (2016) in his study on the effect of financial sector liberalization on economic growth in Nigeria utilized secondary data while the ECM was used as estimation technique, the study concluded that liberalization has positive effect on economic growth of Nigeria.

Ene et al. (2015) carried out a research to empirically examine the effect of Interest rates deregulation on the performance of deposit money banks in Nigeria between 1986 and 2014 using OLS regression method. The study revealed that deregulated interest rates have positive and significant relationship with the loans and advances of deposit money banks.Also, the deregulated interest rates have positive and significant impact on the ROA of deposit money banks. The study therefore suggested that the banking sector regulatory authority needs to ensure that specific policy tools such as the minimum re-discount rate, maximum lending rate, liquidity ratio, monetary policy rate are effectively managed to induce higher savings, increase credit supply, stimulate investment, and hence

positively impact on the performance of the banking sector and enhance economic growth in general.

Sanya (2015) studiedthe impact of banking sector reforms on the performance of Nigerian Economy. Findings from the study shows that the banking sector reforms have not really improve the performance of Nigerian Economy. The study further revealed that the real growth rate of GDP has not significantly alters the banking sector reforms indicators. The study suggests that monetary authority should be more committed to policy implementation, appropriate policies that will increase credit to the private sector and increase lending behaviour of commercial banks.

Ekong and Udonwa (2015) in a separate study investigated the performance of Commercial Banks in Nigeria from1970 to 2012. The study revealed that the reforms led to some significant variations in commercial banks performance in Nigeria and that commercial banks may improve in performance in terms of profitability but may not really impact on the real economy at least on the short run. The study further demonstrated that much of the benefits to commercial banks in credit creation in the economy will be derived at a price of time.

Guesmi (2015) examined the impact of financial liberalization on the performance of the Algerian public banks using panel regression as the method of analysis. The study revealed that the size of intermediation and concentration of banks have positive impact on the banks while interest rate does not have such impact on banks.

In a separate study in Uganda, Odeke and Odongo (2014) assesses the interest rate risk exposure and financial performance of commercial banks. The result of the study found that a combined variation of maturity gaps, basis risk and assets and liabilities margins for all the commercial banks accounted for up to 14.9% changes in their banks performance. The variation described that 20.19% of the performance of the commercial banks would predict maturity gaps, basis risk, and assets and liabilities margins. However, the general analysis of interest rate risk exposure and bank performance showed generally a positive relationship except basis risk.

Okoye and Eze (2013) study assessed the impact of bank lending rate on the performance of Nigerian deposit money banks between 2000 and 2010 period. The study applied secondary data in a regression where time-series and quantitative design were combined and estimated. The outcome revealed that the lending rate and monetary policy rate has significant and positive effects on the performance of Nigerian deposit money banks. This suggests that lending rate and monetary policy rate are true parameter of measuring bank performance. The study therefore recommended that government should adopt policies that will help Nigerian deposit money banks to improve on their performance and the need to strengthen bank lending rate policy through effective and efficient regulation and supervisory framework.

Enyioko, (2012) the study attempts to examine the performances of banks and macro-economic performance in Nigeria based on the interest rate policies of the banks. The study noticed that the interest rate policies have not improved the overall performances of banks significantly and have contributed marginally to the growth of the economy for sustainable development. The study postulates that banking sector is becoming competitive and market forces are creating an atmosphere where many banks simply cannot afford to have weak balance sheets and inadequate corporate governance. The study further concluded that consolidation of banks may not necessarily be a sufficient tool for financial stability for sustainable development.

The research gap from the review of extant literature that studied the impact of lending rate and the deposit rate of deposit money banks on the loans and advances in the face of deregulation such as Obagunwa and Akinwale (2018) and Ene et al. (2015) that examined the effect of interest rate deregulation on the Nigerian banking system from 1986 to 2016 and the effect of Interest rates deregulation on the performance of deposit money banks in Nigeria between 1986 and 2014 respectively, both have limited coverage. This study extended the scope of coverage from 1986 to 2019 to compare and ascertain the consistency or otherwise on the observed effect of lending rate and the deposit rate of deposit money banks on the loans and advances in the face of deregulation in Nigeria.

III. RESEARCH METHODOLOGY

3.1. Type and Source of Data

Secondary data was employed for the study. It used annual time series data covering the period of 1986 to 2019. The base year of 1986 was chosen because the period marked the structural adjustment process of government during which massive deregulation programs were implemented, while the terminal year of 2019 was chosen as the period is recent enough to capture the relationship. Data for the study was gotten from the annual CBN statistical bulletin.

3.2. Method of Analysis

To carry out the objective of this study, the Autoregressive Distributed Lag (ARDL) model proposed by Pesaran, Shin and Smith (2001) was employed. The model enjoys several advantages over conventional cointegration technics. First, ARDL is superior to conventional cointegration technics when it is used on a small sample size. Second, it allows both short-run and long-run relation to be tested simultaneously. Third, the approach provides unbiased estimates for long run and valid t test when some regressors are endogenous. And fourth, the variables are tested irrespective of whether a variable is difference of order zero or order one.

3.3. Model Specification

To carry out the analysis, the study models deposit money bank loans and advances (*LAD*) as a function of interest rate and deposit rate. The functional form of the model is given as;

$$LAD = f(LR, DR) \qquad\qquad (1)$$

The econometrics form of the model is given as:

$$LnLAD = \alpha_0 + \alpha_1 LnLR + \alpha_2 LnDR + \alpha_3 + \varepsilon_t \quad (2)$$

Apriori Expectation: *LnLR >0, & LnDR <0.*

where, α_0 is the intercept; α_1 and α_2 are the coefficients of the variables; ε_t represents the error term, *LnLAD* represents the natural log of deposit money bank loans and advances, *LnLR* is the natural log of deposit money bank lending rate, while *LnDR* represents the natural log of deposit money bank deposit rate.

3.4. Estimation Procedure

A) Unit Root Test

This study used the Augmented Dickey-Fuller (ADF) test to carry out its unit root test. The Augmented Dickey-Fuller test (ADF) tests the null hypothesis that a unit root is present in a time series sample. The alternative hypothesis is different depending on which version of the test is used but is usually stationary or trend stationary. This test is an augmented version of the Dickey-Fuller test.

B) The ARDL Approach to Co-Integration

To carry out the ARDL method, the first step after stationarity test is to examine the presence of co-integration using the bounds testing procedure. Secondly, the estimate of the long-run coefficient is carried out. The next step is to estimate the short-run dynamic coefficients. The fourth stage involves testing for the stability of the model.

The ARDL model is written as:

$$Y_t = \alpha_0 + \phi_t Y_{t-1} + \beta_t X_{t-1} + \varepsilon_t \qquad (3)$$

where, Y_{t-1} and X_{t-1} are time series variables, ε_t is the vector of the stochastic error term. In general, the model can also be defined as ARDL (p, q), the p and q are lag of the parameter which forms;

$$y_t = \alpha_0 + \sum_{i=0}^{p} \phi_i y_{t-1} + \sum_{j=0}^{q} \beta_j x_{t-1} + \varepsilon_t \qquad (4)$$

In view of the above explanation, the ARDL model used in this study is presented as;

$$\Delta LnLAD_t = \alpha_0 + \sum_{t=0}^{p} \phi_1 \Delta LnLAD_{t-1} + \sum_{t=0}^{q} \phi_2 \Delta LnLR_{t-1} + \sum_{t=0}^{q} \phi_3 \Delta LnDR_{t-1} + \alpha_1 LnLAD_{t-1}$$

$$+ \alpha_2 LnLR_{t-1} + \alpha_3 LnDR_{t-1} + \varepsilon_t \qquad (5)$$

where, α_0 is intercept, t is the time dimension while Δ is difference operator and ε_t is the error term. The long-run co-integration is estimated using;

$$\Delta LnLAD_t = \alpha_0 + \sum_{t=0}^{p} \phi_1 \Delta LnLADP_{t-1} + \sum_{t=0}^{q} \phi_2 \Delta LnLR_{t-1} + \sum_{t=0}^{q} \phi_3 \Delta LnDR_{t-1} + \varepsilon_t$$

$$(6)$$

The selection of ARDL maximum lag (p q) is based on the automatic lag length selection process in the Eview 10 program. The study derived the short-run dynamic parameter from Error Correction Model (ECM) estimation, associated with the long-run estimate.

$$\Delta LnLAD_t = \alpha_0 + \sum_{t=0}^{p} \phi_1 \Delta LnLAD_{t-1} + \sum_{t=0}^{q} \phi_2 \Delta LnLR_{t-1} + \sum_{t=0}^{q} \phi_3 \Delta LnDR_{t-1} + \varpi ECM_{t-1} + \varepsilon_t$$

$$(7)$$

In the Equation [7] ϕ_1, ϕ_2 and ϕ_3 are short-run dynamic coefficients converging to long-run equilibrium while the ECT_{t-1} component of the equation represents the speed of adjustment parameter in the error correction model originating from the estimated equilibrium relationship.

Bound Test- The Bound test models the ARDL equation using of least square procedure, to investigate the existence of long-run relationship among the variables. Here, the *F*-statistics test is conducted for the joint significance of the coefficient of lagged variables, $H_0 : \phi_1 = \phi_2 = \phi_3 = 0$ against the alternative $H_0 : \phi_1 \neq \phi_2 \neq \phi_3 \neq 0$. The calculated F-statistics is compared to the critical value. As a rule, if the *F*-statistics value lies above the bound of critical value, the null hypothesis is rejected, where it falls below the lower bound of critical value, the null hypotheses cannot be rejected, that is, there exist no long-run relationship among the variables; however, if the *F*-statistic value lies within the bound test, the result is considered inconclusive.

C) Residual Diagnostic Tests

To validate the results of ARDL model, the Breusch-Godfrey serial correlation LM test tested for serial correlation; the Jarque-Bera normality test was used to determine the distribution of the residuals in the model; the Breusch-Pagan-Godfrey test was used to test for Heteroskedasticity, while the CUSUM test was used to test for the stability of the model.

IV. DATA AND RESULTS

4.1 Data

The study utilizes yearly data onLoans & Advances(LAD), Lending Rate (LR) and Deposit Rate (DR). This data was retrieved from CBN statistical bulletins 1988 and 2018; and WDI 2020.

4.2 Results

Table 1-5 indicates the outcome for the Unit Root Test,ARDL Bound Test, ARDL Long-run Result, Short-Run Result and Residual Diagnostic Test Results.

A. Unit Root Test

The results of the Augmented Dickey Fuller (ADF) units root tests used to test for stationarity of the time series data are presented on Table 1.

Table 1: ADF Unit Root Test Results

Variable	Order	PP Calculated	Critical Value	Conclusion
LAD	At levels	-0.997653	-3.595026	1(1)
	1st difference	-6.956668	-3.612199	
LR	At levels	-3.164817	-3.552973	1(1)
	1st difference	-7.197581	-3.557759	
DR	At levels	-3.918084	-3.552973	1(0)

Source: *Author's computation using E-views 10*

The ADF test which was conducted at the 5% level showed that only deposit rate (*DR*) was stationary. However, loans and advances (*LAD*) and lending rate (*LR*) were however only stationary after first difference.

B.   . The ARDL Bound Test

The result of the ARDL Bound test following the ARDL optimal model with a lag structure of (1, 4, 3) is presented on Table 2.

Table 2: ARDL Bound Test Result

F-Bounds Test	H_0: No levels relationship			
Test Statistic	**Value**	**Signif.**	**I(0)**	**I(1)**
F-statistic	13.70919	10%	2.63	3.35
K	2	5%	3.1	3.87
		2.5%	3.55	4.38
		1%	4.13	5

Source: *Author's computation using E-views 10*

The ARDL Bound test above revealed the existence of long-run cointegrating relationship among the variables because the F-statistics value of 13.71 is greater than the upper bound critical values of I (1) at all the levels of significance. Consequently, the study conducted the short-run and long-run forms of the ARDL model.

C. The Long-Run Result

Table 3: *ARDL Long-run Result*

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LnLR	1.372505	2.288929	0.599628	0.5558
LnDR	-2.023240	0.500444	-4.042891	0.0007
C	7.707846	7.134782	1.080320	0.2935

Source: *Author's computation using E-views 10*

The long-run result on Table 3 revealed that the deregulation of interest rate made the lending rate in Nigeria positively affect the loans and the advances of deposit money banks in

the country. It was however not significant. The result showed that a unit increase in the lending rate increased deposit money bank loans and advances by 1.37 units.

On the other hand, in line with apriori expectation, the deposit rate in the country inversely affected the loans and advances of deposit money bank. The result showed a statistically significant relationship between deposit rate and the loans and advances of deposit money banks in Nigeria. It showed that a unit increase in deposit rate reduced loans and advances of deposit money banks by 2 units.

D.   Short-Run Result

The result of the parsimonious form of the short-run ARDL result was like the long-run result, except that in the short run, both variables were not significant. The result of the error correction term (*CointEq (-1)**) had an estimated coefficient of -0.16 and it was highly statistically significant, indicating that deviations from equilibrium path in the model was corrected by 16% annually.

Table 4: ARDL Long-run Result

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LnLR)	0.145230	0.208084	0.697940	0.4937
D(LnDR)	-0.043086	0.156758	-0.274855	0.7864
CointEq(-1)*	-0.159329	0.019995	-7.968386	0.0000

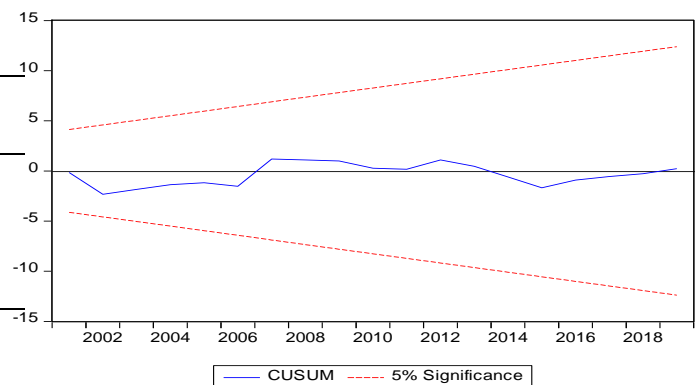Source: *Author's computation using E-views 10*

E.   Residual Diagnostic Test Results

The results of the residual diagnostic tests are presented on Table 5.

Table 5: ARDL Residual Diagnostic Test Results

Diagnostics tests	Observed values	P-values
Breusch-Godfrey Serial Correlation LM Test	0.985433	0.3936
Jarque-Bera Normality Test	0.078697	0.961416
Breusch-Pagan-Godfrey Heteroskedasticity Test	1.160699	0.3728

Source: *Author's computation using E-views 10*

Source: *Author's computation using E-views 10*

Figure 1: *CUSUM Plot*

The result of the diagnostic residual tests showed that the model was free from serial correlation because the Breusch-Godfrey serial correlation LM test accepted the null hypothesis of no serial correlation in the residual since the probability of the F-statistics was greater than the 5% level. Similarly, the Jarque-Bera normality test and the Breusch-Pagan-Godfrey Heteroskedasticity test both had their probability values to be greater than the 5% level, indicating that the ARDL model was normally distributed and free from Heteroskedasticity, respectively. In addition, the result of the CUSUM test on Figure 1 had plots all within the two straight line showing that the ARDL model was stable.

V. CONCLUSION AND RECOMMENDATION

A.   Conclusion

The study concluded that interest rate deregulation favorably affected the loans and advances of deposit money banks in Nigeria. By implication, particularly, the deregulation of interest rate in Nigeria encouraged the disbursement of loans and advances within the economy, but it was however not significant. In addition, the study found that the deregulation of interest rate in the country led to an inverse relationship between deposit rate and loans and advances in the country. Higher deposit rates significantly discouraged deposit money banks from granting loans and advances.

B.   Recommendation

To ensure that interest rate deregulation has a much significant effect on the loans and advances of deposit money bank, the deregulation must be full as against the partial deregulation being presently practiced. Since lending rate had the desired effect on the loans and advances of deposit money bank, encouraging saving culture among Nigerians would make more funds available for disbursement. Furthermore, as earlier stated, a full deregulation of the sector is advocated to encourage competition which would create a market friendly deposit rate for deposit money banks.

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