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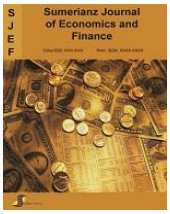

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Empirical Analysis of the Impact of Interest Rate Spread on Commercial Banks' Credit in Nigeria (An ARDL Model Approach)

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Abstract

The main objective of this study is to analyze the impact of interest rate spread on the efficacy of commercial banks' lending in Nigeria. Data were obtained from secondary sources; Central Bank of Nigeria (2018) and International Monetary Fund (2018), International Financial Statistics and data files. Unit root test on the time series data displayed a combination of 1(0) and 1(1) variables, the Autoregressive Distributed Lag (ARDL) Model was employed for data estimation. Several diagnostic tests such as auto-correlation test, Ramsey stability test, serial correlation test and test for heteroscedasticity were also carried out and they all confirmed the goodness of fit and validity of the model employed. Findings reveal that: interest rate spread impacted positively and significantly on commercial banks' loans and advances in Nigeria. The study therefore concludes that interest rate spread impacted commercial banks' loans and advances in Nigeria positively across the period covered by this study. The study recommend that commercial banks in Nigeria should maintain their current interest rate spread strategy, since it is working well for them and helping them realize a high demand for their loans and advances in Nigeria.

Keywords: Interest rate spread; Commercial banks' Loans and advances; Liquidity ratio; Monetary policy rate; Inflation rate and exchange rate.

1. Introduction

The cardinal objective of commercial banks in any economy is financial intermediation. That is, the facilitation of the channeling of funds from surplus economic unit to deficit economic unit. Financial intermediation is enhanced if a higher percentage of the population in a financial system is included financially. Financial inclusion brings so many prospective banks' customer into the banking net and enable commercial banks realize more customers which would ultimately lead to increase liquidity for the banks for on lending to borrowers seeking out loan facilities. Depositors are paid certain rate to encourage them to save their money with the banks and such saved funds are lend out to investors for a higher interest rate than that paid to the depositors.

The difference between lending rate and deposit rate is what is referred to as interest rate spread. Interest rate spread is the difference between the interest rate charged to borrowers and the rate paid to depositors (Maureen and Joseph, 2014). Efficient financial intermediation is achieved when the depositor or saver receives the highest expected return for his savings while also providing funds for borrowers or investors at the lowest interest rate possible. Efficient intermediation benefits the real economy by allowing higher expected return to a saver and providing more opportunity by cheap investable funds (Quaden, 2004).

Akmal *et al.* (2012), opined that higher interest rate spread discourages potential savers and is a barrier for a potential investor; since the cost of intermediation between the saver and the investor have strong correlation and synergy in financial intermediation and capital mobilization. Inefficiencies associated with financial intermediation causes higher intermediation cost and increase loss of productive funs in the process of intermediation, this will further culminate to loss in savings, lending and profitability of the banks and by extension economic growth and development in that economy.

However, Doliente (2005) opined that high interest rate spread shows the problem in the regulatory environment of banks and information asymmetry. According to him, higher interest rate can improve profitability of banking system. Nazarian and Hashemi (2010), argued that high interest spread indicates the low efficiency of the banking system and non – competitive market conditions. On the other hand, they agreed with the assertion of Doliente (2005) that high amount of the variable indicates inadequate regulation, lack of depth in the financial system and a high level of information asymmetry.

Several authors have disclosed above have taken different positions either in support or in negation that high interest rate spread leads to profitability of the banks. It is against this backdrop that this study attempts to analyze the impact of interest rate spread on commercial banks' loans and advances in the Nigerian financial system.

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1.1. Hypotheses

$H0_1$: Interest rate spread has no significant impact on commercial banks' loans and advances in the Nigerian financial system.

$H0_2$: Monetary policy rate has no significant impact on commercial banks' loans and advances in the Nigerian financial system.

$H0_3$: Statutory reserve has no significant impact on commercial banks' loans and advances in the Nigerian financial system.

$H0_4$: Inflation rate has no significant impact on commercial banks' loans and advances in the Nigerian financial system.

$H0_5$: Exchange rate has no significant impact on commercial banks' loans and advances in the Nigerian financial system.

2. Literature Review

2.1. Conceptual Review

2.1.1. Factors that Influences Interest Rate Spread

1. Inflation rate: the rate of inflation in the financial system is capable of influencing interest rate spread; this is so because once there is inflation, there is a sharp drop in the value of money in circulation in that economy. There fore, commercial banks will increase the lending rate which will in turn increase interest rate spread so as to meet up the value of the declining currency in circulation.
2. Legal Reserves: the major commodity of commercial banks is money, the trade money to make profit in form of loans to investors. Legal or statutory reserve influences interest rate spread in the sense that commercial banks are by law required to keep some percentage of their deposits with the central bank; that proportion of funds tight down in the vault of the central bank would have been utilized for on lending to investors. When the reserve ratios are increased, the banks are left with fewer funds to lend to investors which will in turn increase interest rate spread.
3. Bank performance: the performance of a bank can determine its interest rate spread, a commercial bank that has lots of customers that are repaying their loans and advances as at when due, won't have problem of reducing its interest rate spread since the bank is doing well, but in a situation where a bank is not doing well and their stock of bad debt is piling up, such bank won't have any reason to reduce their interest rate spread, instead their spread would be on the increase in order to cover up lost funds.

2.2. Empirical Review

Varaidzo and Asrat (2018) in their paper captioned the impact of interest rate spread on the banking system efficiency in South Africa; the researchers utilized total banking asset as the dependent variable while gross domestic product (GDP), interest rate spread, non-performing loans and real exchange rate (ZAR/US$) as the explanatory variables. This study used Nonlinear Auto Regressive Distributed Lag Model (NARDL) approach was adopted and their findings revealed that non-performing loans was significant in reducing the effectiveness of the South African banking system while interest rate spread has a negative and significant impact on banking system efficacy in South Africa.

In another study, Muine and Essau (2012) under took a study titled Determinants of commercial banks' interest rate spread in Namibia. This study employed a panel data analysis approach and used ordinary least squares regression technique to analyze data between 2004 and 2011. Net interest margin (NIM) was employed as the explained variable while liquidity ratio, non-performing loans, banks' core capital, tax paid by commercial banks and deposit market shares were utilized as independent variables. The study deduced that deposit market share and cost efficacy ratio narrow interest rate spread.

In a similar study, Arezoo and Malihe (2016) studied the determinant of interest rate spread in banking industry in Iran. The authors identified non-performing loans, demand deposit, non-interest income and capital adequacy ratio as the core determinants of interest rate spread and concluded that all the above mentioned variables were significant in influencing interest rate spread in the Iran financial system. However, limited attention has been focused on the empirical understanding of the impact of interest rate spread on commercial banks' lending efficacy in the Nigeria banking system.

Felix *et al.* (2015), used the classical least squares method to empirically examine interest rate deregulation effect on commercial banks' lending operations in Nigeria between the periods 1970 and 2013. The period was grouped into two policies regime periods; the regulated interest rate era spanning 1970-1986 and the deregulated period 1987-2013. The Chow test was utilized to analyze if there was any significant changes in the relationship between commercial banks' lending in the Nigerian financial system and interest rate for the two periods. The empirical result obtained for the interest rate regulation era revealed that interest rate spread had a negative and significant effect on the volume of commercial banks' loans, while for the deregulation era, the result further revealed that interest rate spread was found to be positive and significantly impacted on commercial banks' loans and advances for the period. The chow test result confirms the impact of deregulation on volume of commercial banks loans and advances due to the deregulation of interest rate. The study submits that, there exist a relatively inelastic relationship between interest rate spread and banks' loans at the deregulated interest rate era.

3. Methodology

3.1. Research Design

This study adopts the *ex-post facto* research design as it deals with event that had taken place and secondary data were readily available for collection. The model was estimated using the Auto-Regressive Distributed Lag (ARDL) Model. Since we are making use of annualized time-series data and the study cover a long sample period, we made sure our data set were not impaired by unit root; hence we tested for stationarity of the series by employing the Augmented Dickey-Fuller (ADF).

3.2. Source of Data Collection

Data for this study are elicited from Central Bank of Nigeria (2018) and International Monetary Fund (2018), International Financial Statistics and data files. The study period covers 1981 through 2018.

3.3. Method of Data Analysis

This study used descriptive statistics, unit root test and Auto Regressive Distributed Lag (ARDL) Model in testing the hypotheses of the study. E-view 9.0 econometric statistical software package was used for the analysis.

3.4. Model Specification

This research utilizes a primary model formulated by the authors; the model for this research is built or structured to establish the functional relationship between interest rate spread and the efficacy of commercial banks lending in Nigeria, 1981 - 2018. The model tested in this study is a multiple regression model stated below:

LOGCBLA=F (IRS, MPR, SR, IFR, EXR)……..…….…… (1)

By modifying the functional model in equation (1) into econometric model (semi-log):

$LOGCBLA = \beta_0+\beta_1IRSt+\beta_2MPRt+\beta_3SRt+\beta_4IFRt+\beta_5EXRt+\mu_t$ ...……...……. (2)

Where β_0, β_1, β_2, β_3, β_4 and β_5 are the parameters

CBLA = Commercial banks' loans and advances in Nigeria

IRS = Interest rate spread (Lending rate - Deposit rate)

MPR = Monetary policy rate

SR = Statutory reserve (liquidity ratio)

IFR = Inflation rate

EXR = Exchange rate

μ_t =Stochastic term

LOG = Natural logarithm

3.5. A Priori expected results

Interest rate spread is expected to have a negative impact on commercial banks' loans and advances in Nigeria.

Monetary policy rate is expected to have a negative impact on commercial banks' loans and advances in Nigeria.

Statutory reserve is expected to have a negative impact on commercial banks' loans and advances in Nigeria.

Inflation rate is expected to have a negative impact on commercial banks' loans and advances in Nigeria.

Exchange rate is expected to have a negative impact on commercial banks' loans and advances in Nigeria.

4. Data Analysis and Results Interpretation

4.1. Pre-Estimation Test Result (Unit Root Test)

Unit root test was carried out to establish the order of integration. The results of the Augmented Dickey-Fuller based unit root test are as summarized in Table 1 below:

Table-1. Unit root test results

Variable	Level	First difference	Order of integration
LOG(CBLA)	1.690842{0.9994}	-4.050866{0.0033}***	I(1)
IRS	-2.154500{0.2256}	-6.380394{0.0000}***	I(1)
MPR	-3.212879{0.0271}**		I(0)
LR	-3.589969{0.0108}**		I(0)
IF	-2.885282{0.0567}	-5.592820{0.0000}***	I(1)
EXR	1.335249{0.9984}	-3.537770{0.0125}**	I(1)

Source: *Author's analysis using e-view 9 output*

Note: ** and *** denote significance @ 5% and 1% respectively

Figures in parenthesis { } denote the p-values

Based on the results of the Augmented Dickey-Fuller unit root test in Table 1, all the variables are integrated of order I(1) except MPR and LR which are integrated of order I(0). Being that the variables are of mixed integration, that is, I(0) and I(1), the Autoregressive Distribution Lag (ARDL) approach to ordinary least squares (OLS) was used for the empirical analysis.

4.2. Descriptive Statistics

Table-2. Descriptive statistics

	CBLA	IRS	LR	MPR	IFR	EXR
Mean	3662.065	6.323158	46.87828	13.06579	19.33263	104.4552
Median	446.9264	6.960000	46.22500	13.25000	12.55000	111.1675
Maximum	16117.20	11.06000	65.10000	26.00000	72.84000	306.1000
Minimum	8.582900	0.320000	29.10000	6.000000	5.380000	4.536700
Std. Dev.	5284.304	2.804789	9.691184	4.100381	17.25014	78.39935
Skewness	1.236060	-0.591343	0.232822	0.669171	1.743174	0.719999
Kurtosis	3.088449	2.579050	2.459034	4.231054	4.839820	3.421495
Jarque-Bera	9.688733	2.495245	0.806658	5.235529	24.60431	3.564487
Probability	0.007873	0.287187	0.668092	0.072966	0.000005	0.168260
Sum	139158.5	240.2800	1781.374	496.5000	734.6400	3969.298
Sum Sq. Dev.	1.03E+09	291.0732	3475.005	622.0855	11009.99	227418.9
Observations	38	38	38	38	38	38

Source: Author's analysis using e-view 9 output

The descriptive statistics presented in Table 2 shows that CBLA has the highest mean value of 3662.065, followed by EXR which has 104.4552, then LR with 46.87 while IFR, MPR and IRS have 19.33, 13.06 and 6.323 respectively. Note that the Mean describes the average value for each data series in the model. From the analysis, CBLA has the highest Standard Deviation as it recorded 5284.304, implying that it is the most volatile variable in the model as it has the highest percentage of dispersion from the mean. Four variables, IRS, LR, EXR and MPR with -0.591343, 0.232822, 0.719999 and 0.669171 respectively, are skewed a little to the left, while CBLA and IFR which have 1.236060 and 1.743 respectively are skewed to the right.

Kurtosis measures the peakedness or flatness of the distribution of a series. The kurtosis of a normal distribution is 3. If it exceeds 3, it means that the distribution is peaked or leptokurtic relative to the normal. Conversely, if it is less than 3, it shows that the distribution is flat or platykurtic relative to the normal. From Table 2 above, CBLA, MPR, IFR and EXR are peaked or leptokurtic because they have values of 3.08, 4.23, 4.83 and 3.42 respectively, while IRS and LR have a values of 2.57 and 2.45 are said to be flat or platykurtic.

Although these skewness and kurtosis indicate departure from normality, such point is not strong enough to discredit the goodness of the dataset for the analysis in view. The number of observation of 38 depicts the duration of the study.

4.3. ARDL Model Result

Table-3. ARDL result

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
LOG(CBLA(-4))	0.320372	0.193278	1.657570	0.1213
IRS(-2)	0.063883	0.029121	2.193713	0.0470
MPR(-4)	0.037255	0.011624	3.204950	0.0069
LR(-2)	-0.007669	0.007154	-1.071918	0.3033
IFR(-3)	-0.010299	0.003857	-2.670071	0.0193
EXR	-0.001053	0.001117	-0.942444	0.3632
C	0.755930	0.892872	0.846627	0.4125
R-squared	0.998464	Mean dependent var		6.499280
Adjusted R-squared	0.996102	S.D. dependent var		2.484840
S.E. of regression	0.155148	Akaike info criterion		-0.614990
Sum squared resid	0.312922	Schwarz criterion		0.327762
Log likelihood	31.45482	Hannan-Quinn criter.		-0.293484
F-statistic	422.5910	Durbin-Watson stat		2.247067
Prob(F-statistic)	0.000000			

Source: Author's analysis using e-view 9 output

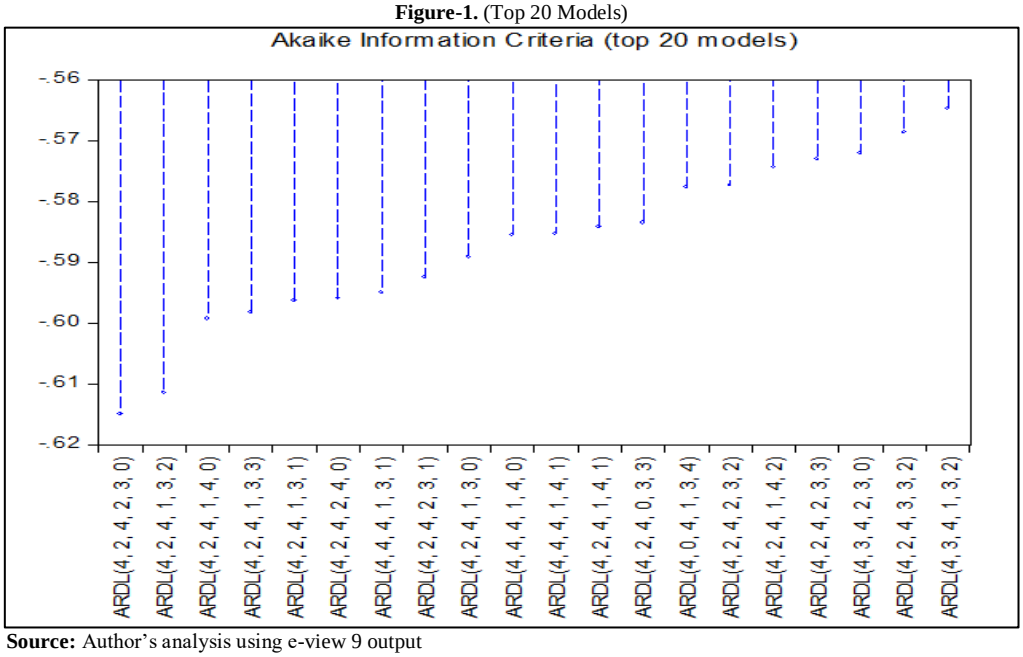
From the ARDL Model result above in table 3, the result revealed that the R-squared was 99%, this means that the independent variables accounted for about 99% variations in the dependent variable while the remaining 1% may be attributed to variables not included in the model. Put differently, all the independent or explanatory variables accounted for about 99% changes in commercial banks' loans and advances in Nigeria, while the remaining 1% could be attributed to stochastic term.

The result revealed that IRS had a positive and significant impact on CBLA such that a unit increase in IRS would bring about a 0.06 percent increase in CBLA. MPR had a positive and significant impact on CBLA such that a percentage increase in MPR would bring about a 0.03 percent increase in CBLA. LR recorded a negative and insignificant impact on CBLA such that a percentage increase in LR would bring about a 0.007 percent decrease in CBLA. IFR was found to have a significant negative impact on CBLA such that a unit increase in IFR would bring

about a 0.01 percent decrease in CBLA. Furthermore, EXR was observed to record a negative yet insignificant impact on CBLA such that a unit increase in EXR would bring about a 0.01 percent decrease CBLA.

The result further revealed that the overall model was a good fit owing to the f-statistic value of 422.5910 and its corresponding p-value of 0.000000 which shows that the model is significant at 5% level of significance. Durbin Watson Statistic of 2.24 showed that the variables were free from auto-correlation since it is within the region of 2.

Figure-1. (Top 20 Models)



Source: Author's analysis using e-view 9 output

The figure above reveals the top 20 models. It reveals the best model selected by ARDL Model analysis as being (4, 2, 4, 2, 3, and 0) and interpreted in table 3 above. This was done in order to further proof the validity and reliability of the selected model.

4.4. Diagnostic Test

4.4.1. Test for Heteroskedasticity

Table-4. Heteroskedasticity Test: Breusch-Pagan-Godfrey

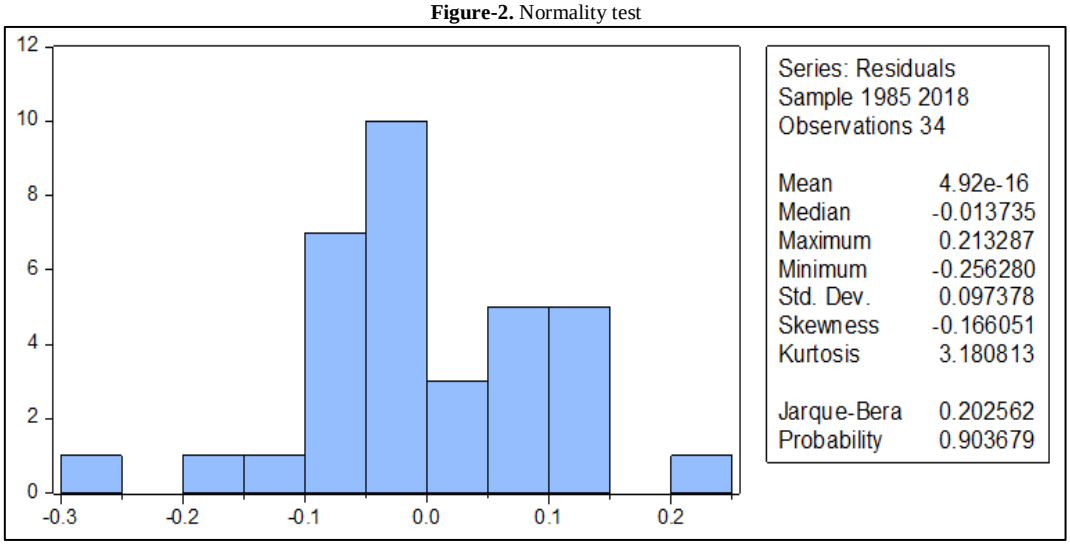
F-statistic	**0.716318**	**Prob. F(20,13)**	**0.7562**
Obs*R-squared	17.82514	Prob. Chi-Square(20)	0.5989
Scaled explained SS	2.841517	Prob. Chi-Square(20)	1.0000

Source: Author's analysis using e-view 9 output

The Heteroskedasticity test above suggests that the variables are free from the problem of Heteroskedasticity since the p-values of F-stat. and Obs*R-squared are > 5% significance level. This outcome is further strengthened by the p-value of approximately 1.00 for the Scaled explained SS which also suggest the absence of Heteroskedasticity

4.4.2. Test of Normality

Figure-2. Normality test



Source: Author's analysis using e-view 9 output

This test is conducted to ensure that the data employed in this study are normally distributed. Observing from the normality diagram in the figure above, as well as the Jarque-Bera value of 0.20 and its corresponding p-value of 90% which is >5% significant level confirms that the data are normally distributed.

4.4.3. Test for Auto Correlation

Table-5. Correlogram Q-statistic

Q-statistic probabilities adjusted for 4 dynamic regressors						
Autocorrelation	**Partial Correlation**		**AC**	**PAC**	**Q-Stat**	**Prob***
.*| . |	.*| . |	1	-0.129	-0.129	0.6202	0.431
. | . |	.*| . |	2	-0.065	-0.083	0.7834	0.676
. | . |	.*| . |	3	-0.065	-0.087	0.9482	0.814
***| . |	***| . |	4	-0.386	-0.427	7.0410	0.134
. |*. |	. | . |	5	0.103	-0.053	7.4876	0.187
. | . |	.*| . |	6	-0.040	-0.151	7.5560	0.272
. |*. |	. |*. |	7	0.178	0.087	8.9940	0.253
. |*. |	. | . |	8	0.122	-0.011	9.6907	0.287
. | . |	. | . |	9	-0.048	0.029	9.8045	0.367
. | . |	. | . |	10	0.030	0.022	9.8511	0.454
.*| . |	. | . |	11	-0.142	0.001	10.929	0.449
.*| . |	**| . |	12	-0.194	-0.223	13.022	0.367
. | . |	.*| . |	13	0.022	-0.071	13.050	0.444
. |*. |	. | . |	14	0.117	0.051	13.894	0.458
. | . |	**| . |	15	-0.063	-0.208	14.151	0.514
. | . |	.*| . |	16	0.051	-0.171	14.326	0.574

Source: Author's analysis using e-view 9 output

This test is carried out to further test for auto correlation and to consolidate on the result of Durbin Watson Stat in table 3. The result of Correlogram Q-Statistic in table 5 above, suggest that the variables are free from auto correlation, since the correlogram Q- Stat. table indicates that all p-values were >5% hence, the conclusion that the model was free from auto correlation.

4.4.4. Test for Serial Correlation

Table-6. Serial correlation

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	0.618007	Prob. F(2,11)	0.5567
Obs*R-squared	3.434491	Prob. Chi-Square(2)	0.1796

Source: Author's analysis using e-view 9 output

In line with the rule, the Breusch-Godfrey Serial Correlation LM Test table above shows that the probability values of 0.55 indicates that the variables are free from serial correlation. Also, F-statistic and Obs*R-squared of 0.61 and 3.43 respectively further strengthen the assertion of no serial correlation amongst the variables. The probability values are statistically insignificant at 5% level of significance. Hence, the null hypothesis that there is serial correlation in the model is rejected. Thus, the model is said to be free from serial correlation.

4.4.5. Stability Diagnostic Test

Table-7. Ramsey RESET Test

Ramsey RESET Test			
Equation: UNTITLED			
Specification: LOG(CBLA) LOG(CBLA(-1)) LOG(CBLA(-2)) LOG(CBLA(-3))			
LOG(CBLA(-4)) IRS IRS(-1) IRS(-2) MPR MPR(-1) MPR(-2) MPR(-3)			
MPR(-4) LR LR(-1) LR(-2) IFR IFR(-1) IFR(-2) IFR(-3) EXR C			
Omitted Variables: Squares of fitted values			
	Value	df	Probability
t-statistic	1.652938	12	0.1242
F-statistic	2.732203	(1, 12)	0.1242

Source: Author's analysis using e-view 9 output

From the Ramsey reset test result in table 7 above, the t-statistic of 1.65 and its corresponding p-value of 0.12 suggest that the model is correctly specified, so null hypothesis of linear specification not rejected at 5% level of significance, since the p-value is >5%.

4.5. Test of Hypotheses

4.5.1. Test of Hypothesis One

$H0_1$: Interest rate spread has no significant impact on commercial banks' loans and advances in the Nigerian financial system.

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
LOG(CBLA(-4))	0.320372	0.193278	1.657570	0.1213
IRS(-2)	0.063883	0.029121	2.193713	0.0470

Source: Extracted from table 3

Since the p-value for interest rate spread (IRS) of 0.047 (4.7%) is within the acceptable significance level of 5%, that is, < 5%, we fail to accept the null hypothesis that interest rate spread has no significant impact on commercial banks' loans and advances in the Nigerian financial system

4.5.2. Test of Hypothesis Two

$H0_2$: Monetary policy rate has no significant impact on commercial banks' loans and advances in the Nigerian financial system.

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
LOG(CBLA(-4))	0.320372	0.193278	1.657570	0.1213
MPR(-4)	0.037255	0.011624	3.204950	0.0069

Source: Extracted from table 3

Since the p-value for monetary policy rate (MPR) of 0.0069 (0.069%) is within the acceptable significance level of 5%, that is, < 5%, we fail to accept the null hypothesis that monetary policy rate has no significant impact on commercial banks' loans and advances in the Nigerian financial system.

4.5.3. Test of Hypothesis Three

$H0_3$: Statutory reserve has no significant impact on commercial banks' loans and advances in the Nigerian financial system.

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
LOG(CBLA(-4))	0.320372	0.193278	1.657570	0.1213
LR(-2)	-0.007669	0.007154	-1.071918	0.3033

Source: Extracted from table 3

Since the p-value for lending rate (LR) of 0.30 (30%) is >5% level of significance, the null hypothesis that statutory reserve has no significant impact on commercial banks' loans and advances in the Nigerian financial system is not rejected.

4.5.4. Test of Hypothesis Four

$H0_4$: Inflation rate has no significant impact on commercial banks' loans and advances in the Nigerian financial system.

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
LOG(CBLA(-4))	0.320372	0.193278	1.657570	0.1213
IFR(-3)	-0.010299	0.003857	-2.670071	0.0193

Source: Extracted from table 3

Since the p-value for inflation rate (IFR) of 0.0193 (1.93%) is within the acceptable significance level of 5%, that is, < 5%, we fail to accept the null hypothesis that inflation rate has no significant impact on commercial banks' loans and advances in the Nigerian financial system.

4.5.5. Test of Hypothesis Five

$H0_5$: Exchange rate has no significant impact on commercial banks' loans and advances in the Nigerian financial system.

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
LOG(CBLA(-4))	0.320372	0.193278	1.657570	0.1213
EXR	-0.001053	0.001117	-0.942444	0.3632

Source: Extracted from table 3

Since the p-value for exchange rate (EXR) of 0.36 (36%) is >5% level of significance, the null hypothesis that exchange rate has no significant impact on commercial banks' loans and advances in the Nigerian financial system is not rejected.

Table-8. A priori expectation verification

Variables	Expected Signs	Actual Signs	Remark
IRS	Negative (-)	Positive (+)	Do not conform
MPR	Negative (-)	Positive (+)	Do not conform
LR	Negative (-)	Negative (-)	Conform
IFR	Negative (-)	Negative (-)	Conform
EXR	Negative (-)	Negative (-)	Conform

5. Summary of Findings

The following findings were deduced from the results of the analysis above:

1. Interest rate was found to have a positive and significant impact on commercial banks' loans and advances in Nigeria. This could be as a result of the effectiveness and efficiency of the Nigerian financial system in financial intermediation; depositors are paid the highest return possible for their deposits, while investors are provided credit facilities for the least cost possible, which made interest rate spread fair and moderate for investors to keep taking loans and advances of commercial banks in Nigeria. This assertion is in support of the postulations of Quaden (2004) who advocated for an efficient intermediation process owing to a moderate interest rate spread charged by commercial banks.
2. Monetary policy rate was also found to have a significant positive impact on commercial banks' loans and advances in Nigeria; this could possibly be attributed to stability of the Nigerian financial system and the effectiveness of the regulatory institutions in terms of fixing a moderate monetary policy rate that the market responds positive to.
3. Liquidity ratio recorded a negative and insignificant impact on commercial banks' loans and advances in Nigeria. This result was in consonance with A priori expectation, since a huge amount of funds (deposits) that was supposed to be given out as loans by commercial banks are required by law to be kept in the banks' vault as stored liquidity of the banks; this reduces the banks' prowess of making new money.
4. Inflation rate recorded a negative and significant impact on commercial banks' loans and advances in Nigeria, supporting A priori expectation that high inflation would discourage borrowings from commercial banks in Nigeria.
5. Exchange rate recorded a negative yet insignificant impact on commercial banks' loans and advances in Nigeria, the possible reason for the insignificance of exchange rate on commercial banks' loans and advances in Nigeria may be because of the fact that commercial banks in Nigeria did not really engage much in international transactions enough to be really influenced by exchange rate even though a negative impact was recorded.

6. Conclusion

In summary, this study was carried out to ascertain the impact of interest tare spread on commercial banks' loans and advances in Nigeria between 1981 and 2018. Auto-regressive Distributed Lag ARDL Model was employed and several diagnostic tests were carried out and all pointed towards the same conclusion that interest ate spread was significant in impacting positively on commercial banks' loans and advances in Nigeria within the period under review.

Recommendations

From the foregoing, this study proffers the following recommendation:

1. Commercial banks in Nigeria should maintain their current interest rate spread strategy, since its working well for them and helping them realize a high demand for their loans and advances in Nigeria.
2. The monetary authorities in Nigeria should also maintain the level of monetary policy rate charged to the commercial banks in Nigeria in order to allow the commercial banks fix a moderate and competitive interest rate spread.
3. The Central Bank of Nigeria should continue ensuring that commercial banks maintain adequate liquidity in consonance with the statutory reserve requirement of the monetary authorities.
4. The monetary authorities in Nigeria should put economic mechanisms in place to fight and curb high inflation, since high inflation reduces the volume of commercial banks' loans and advances in Nigeria.
5. Proper exchange rate policies have to be formulated and implemented by the Central Bank of Nigeria to check excessive high exchange rate between the Naira and the US Dollar.

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Appendix

DATA USD FOR ANALYSIS (All in N' Billion)

YEAR	EXR	IFR	LR	MPR	CBLA	IRS
1981	110.39	20.81	38.5	6.00	8.58	3.2
1982	109.86	7.7	40.5	8.00	10.28	1.94
1983	109.84	23.21	54.7	8.00	11.09	2.57
1984	113.20	17.82	65.1	10.00	11.50	1.99
1985	99.90	7.44	65.0	10.00	12.17	0.32
1986	51.89	5.72	36.4	10.00	15.70	0.72
1987	14.72	11.29	46.5	12.75	17.53	0.87
1988	4.5367	54.51	45.0	12.75	19.56	3.67
1989	7.3916	50.47	40.3	18.50	22.01	5.77
1990	8.0378	7.36	44.3	18.50	26.00	5.52
1991	9.9095	13.01	38.6	15.50	31.31	5.13
1992	17.2984	44.59	29.1	17.50	42.74	6.72
1993	22.0511	57.17	42.2	26.00	65.67	8.41
1994	21.8861	57.03	48.5	13.50	94.18	7.39
1995	21.8861	72.84	33.1	13.50	144.57	6.7
1996	21.8861	29.27	43.1	13.50	169.44	6.78
1997	21.8861	8.53	40.2	13.50	385.55	10.63
1998	21.8861	10	46.8	13.50	272.90	8.08
1999	92.6934	6.62	61.0	18.00	322.76	7.48
2000	102.1052	6.93	64.1	14.00	508.30	9.58
2001	111.9433	18.87	52.9	20.50	796.16	8.18
2002	120.9702	12.88	52.5	16.50	954.63	8.1
2003	129.3565	14.03	50.9	15.00	1,210.03	6.5
2004	133.5004	15	50.5	15.00	1,519.24	5.48
2005	132.147	17.86	50.2	13.00	1,976.71	7.42
2006	128.6516	8.24	55.7	10.00	2,524.30	7.14
2007	125.8331	5.38	48.8	9.50	4,813.49	6.65
2008	118.5669	11.54	44.3	9.75	7,799.40	3.27
2009	148.8802	11.54	30.7	6.00	8,912.14	6.03
2010	150.298	13.72	30.4	6.25	7,706.43	11.06
2011	153.8616	10.84	42.0	12.00	7,312.73	10.33
2012	157.4994	12.22	49.7	12.00	8,150.03	8.39
2013	157.3112	8.84	63.2	12.00	10,005.59	8.78
2014	158.5526	8.06	38.3	13.00	12,889.42	7.21
2015	193.2792	9.01	42.3	11.00	13,086.20	7.7
2016	253.4923	15.68	46.0	14.00	16,117.20	9.37
2017	305.8000	16.52	49.1	14.00	15,775.44	8
2018	306.1000	12.09	61.0	14.00	15,417.47	7.2