LENDING RATES AND GROWTH RELATIONSHIP IN NIGERIA: THE ROLE OF STRUCTURAL BREAKS

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ABSTRACT

The paper examines the dynamics between lending rates and economic growth in Nigeria, especially by accounting for the role of structural breaks in defining the true relationship between both variables. It utilised the Autoregressive Distributed Lag (ARDL) technique to ascertain the nature of the relationship. With the aid of quarterly data spanning 2010Q1 to 2022Q4, the paper found that among others, in both the long- and short-run, the lending rate had a positive relationship with economic growth. However, when structural breaks, represented by 2020Q2 (when the economy was locked down due to the COVID-19 pandemic) was accounted for, the relationship became negative. The paper therefore concluded that accounting for structural breaks matters for the relationship, especially in the short run.

Keywords: lending rates, economic growth, structural break

JEL: E22, E31, E43. O42

1. INTRODUCTION

The quest for sustained growth by countries has remained a focus of governments, policy makers and scholars. Economic theorists, such as Keynes, have also dwelt on the drivers of economic growth in countries. According to Keynes (1936), factors such as capital, labour and productivity are essential drivers of potential growth in countries. The economic literature is also replete with empirical works on the factors that influence growth among countries (Akinwale, 2018; Andabai & MaryAnn, 2018; Buabeng, Adabor, & Nana-Amankwaah, 2021; Kpoghul, Okpe, & Anjande, 2020; Iyaji & Faith, 2021; Ugochukwu & Oruta, 2021; Iortyer & Onuh, 2022; Olowe, 2022). Much of the identified studies noted the role of capital in driving growth. Capital is primarily provided by commercial banks through their intermediation role between surplus and deficit economic units. Banks, therefore, provide investment funds for businesses in need of capital with which growth of the economy is ensured (Adabor, 2022). In providing capital for businesses, banks charge a cost – lending rate. The lending rate is therefore a major determnant of the amount of funds mobilised by investors for growth to occur.

Despite the theoretical postulation by Keynes (1936), who stated that high lending rate affects growth negatively since it increases the cost of borrowing, studies have found a mixed

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relationship between the variables. Although studies on the subject are scarce, there are mixed outcomes on the observed behaviour of the relationship. Some studies like Nasir, Ali, and Khokhor (2014) and Akinwale (2018) observed that lending rates related negatively with economic growth, while Kayode (2012) in (Adabor, 2022) found no relationship between both variables for Nigeria. This makes a distinct comprehension of the behaviour of the variables confounding, thus hindering its relevance for policy.

The lack of consistency between the variables of interest was reaffirmed by Andabai and MaryAnn (2018) who noted that the inconsistent nature of the relationship could be attributed to the unfriendly business environment that distorts the rational behaviour of economic agents, thereby providing higher rewards for riskier business activities. Some studies have also attributed the nature of the relationship to a multiplicity of factors such as: inefficiencies in the intermediation process, due to infrastructure issues which are reflected in the high cost of mobilising funds; perverse incentives offered by the presence of low-cost non-private deposits; rising credit risks due to higher Non-Performing Loan (NPL) ratios; lean investment options and high demand for securities as well as the under developed capital market (Tule, *et al.*, 2015).

Among other considerations, an important reason for the seeming imprecise relationship between both variables is the role of structural breaks. According to Perron (2008), relationships between variables can be sensitive to structural breaks, of which, if these breaks are not accounted for, the observed relationship could be inaccurate, hence leading to wrong policy prescriptions. Structural breaks occur on account of various factors, such as a disaster, war, earthquake, famine, disease outbreaks, and change in government policies or a certain government directive (Wanyama, Ngala, & Byaruhanga, 2021). The Nigerian economy has witnessed events that could alter the behaviour of economic relationships of interest. For instance, the bank consolidation exercise of 2005, the global financial crises of 2009 and, the economic recession of 2014 which accompanied the slump in crude oil prices, among other occurrences. Accounting for structural breaks in the relationship could therefore lead to a more precise estimation of the nature of the relationship between the variables.

There is therefore a need to re-assess the unique nature of the relationship between commercial bank lending rate and economic growth, while accounting for structural breaks. using a more current dataset. This objective would be the major preoccupation of this paper. After the introductory section, the second section discusses the literature while the third section presents the Methodology. The Results are discussed in the fourth section while the final section concludes the paper.

2. LITERATURE REVIEW

2.1 Interest rate and Output Growth Nexus

The theoretical literature on the dynamics between bank lending rate and economic growth is not clear cut (Tibinyane & Kaulihowa, 2021). While most researchers agree on a negative relationship, others reported a positive or mixed relationship. According to McKinnon and Shaw (1973), the relationship between real interest rates and economic growth is positive. They also demonstrated that countries should stop implementing interest rate ceilings and allow for free market determination of interest rates to attain economic growth through financial liberalisation. They further stated that increases in interest rates promotes increased savings and investment and, stimulate economic growth. The Neo-Keynesian model and the neoclassical theory of investment also aver that the interest rates have a negative influence on firms' cost of capital, due to the inverse relationship between interest rates and output (Drobyshevsky, Bogachkova, Trunin, & Elena Sinelnikova-Muryleva, 2017). Therefore,

when interest rates are high, firms' output diminishes, since firms need to repay higher interest rates on debt. Firms therefore, would be unable to invest in an additional capital-intensive project to spur economic growth.

Keynes also alluded to the negative relationship between high interest rates and lower investments, and thus reduced economic growth (Keynes, 1936). Miyo and Le Roux (2018) in (Afful & Kamasa, 2020) also opined the negative relationship between lending rates and economic growth. Blume and Sargent (2015) reviewed the 'Essay in Dynamic Theory' by R. F. Harrod (1939) that real sector development acts as an input for economic development. The level of savings and productivity of capital explains the economic growth rate. The mobilisation of saving and generation of investment accelerates economic growth, therefore the growth rate of an economy is observed as a direct utility of savings and a converse function of the capital output (Blume & Sargent, 2015).

Keynes' view leads to the 'Keynesian Liquidity Preference Theory' which states that interest rates and economic growth have a positive relationship, based on the liquidity preference money supply relationship, also known as the LM (Lagrange Multiplier) curve (Hicks, 1936). If there is an increase in money supply in an economy, there will not be a demand for loanable funds. Tobin's monetary growth model also agrees that a higher interest rate on deposit funds negatively affects demand for credit by investors, just as the higher deposit interest rates harms the higher loanable funds rates. Central banks can thus influence the level of investment by influencing the supply/demand for money, through changes in the interest rate on deposits (Tobin, 1969). Therefore, banks would need to lower interest rates to encourage borrowers to provide funds to entrepreneurs and firms.

2.2 Empirical Review

Though studies that focused on the behaviour of lending rates and economic growth appeared to be scanty, identified studies ascertained the impact of bank lending rates on selected macroeconomic variables across countries as well as the nature of the relationship among the variables and found various results. A number of the studies focused directly on the impact of lending rates on economic growth, while others focused on its impact on savings and investments, among other variables

The inverse relationship between lending rates and economic growth appeared to be the more dominant finding across studies, such as those by Buabeng, Adabor, and Nana-Amankwaah, (2021), Gylych (2016), Osadume (2018), Obamuyi (2009). These findings were in line with the theoretical postulation of Keynes that high lending rates discouraged economic growth since it made it more expensive for businesses to borrow, invest and promote growth. However, the significance of the relationship was mixed as some findings showed a mild impact (Gylych, 2016) while others found a significant relationship between the variables (Osadume, 2018; Obamuyi, 2009). In addition, some of the reviewed papers dwelt on the investment channel of transmission to establish the relationship between lending rates and growth. They averred mainly that the behaviour of interest rate is important for economic growth in view of the relationships between interest rates and investment and investment and growth (Obamuyi 2009). On the relationship between lending rates and investments, some authors found a positive relationship in both the short- and long-run (Afful & Kamasa, 2020), while others observed that the relationship was negative. For instance, Ofori and Asumadu (2018), Tehranchian and Behravesh (2019) and Ogero (2021) noted that changes in interest rate played a negative and important role in investment decision in Ghana and that there was a also negative relationship between demand for credit and interest rate variations in both the

short- and long-run. In performing the studies, most authors employed the autoregressive distributed lags model (ARDL), the VAR framework and the Dynamic Ordinary Least Square (DOLS). The techniques adopted by the authors was in line with the behaviour of the data used in the papers.

Similarly, some papers dwelt on the impact of structural breaks in influencing the nature of the relationship between the variables. Hatmanu, Cautisanu, and Ifrim (2020) found that in the short run, interest rates negatively impacted economic growth, while influecnig exchange rates positively, and that the business climate in the Euro area has mixed effects on economic growth. Similarly, Olowofeso, Adeleke, and Udoji (2015) undertook a study on the impact of private credit on economic growth in Nigeria using the Gregory and Hansen (1996) cointegration test that accounted for endogeneity problems and structural breaks. They found a structural break in 2012Q1, and that, higher prime lending rates hurt growth outcomes.

Structural breaks have also been identified in the assessment of regime changes in international interest rates, among other variables of interest. For instance, Rapach and Wohar (2005) investigated if the regime changes in international interest rates were due to a monetary phenomenon or otherwise. The authors also tested for multiple structural breaks in a bid to ecxplain the nature of structural breaks in global interest rates with aveergae interst taes in 13 countries. They observed that structural breaks affected average inflation rates in the countries.

3. METHODOLOGY

3.1. Model Specification

The study relied on the works of Adabor (2022) who observed that there was an asymmetrical effect of lending rate on economic growth in Ghana using gross domestic product, lending rate, monetary policy, foreign direct investment, inflation and exchange rate variables. While the study adopted the Non-ARDL model since it focused on ascertaining the non-linear relationship in the model, the present study adopted the ARDL model.

The econometric specification of the model used in the paper is:

$$lnGDP_t = \beta_0 + \beta_1 lnLR_t + \beta_2 lnMPR_2 + \beta_3 lnFDI_t + \beta_4 lnINF_t + \beta_5 lnEXCR_t + \mu_t \quad (1)$$

where the variables $GDP,\ LR, MPR, FDI\ and\ EXCR$ represent gross domestic product, lending rate, monetary policy, foreign direct investment, inflation and exchange rate variables, β_0 is the constant term, μ_t is the error term and the $\beta's$ are the coefficients of the respective variables.

In place of monetary policy rate and foreign direct investment used in Adabor (2022), the present paper uses domestic investments to capture the transmission channel of lending rate to economic growth. The impact of monetary policy is seen on the dynamics of lending rate since monetary policy rate serves as a signal to other money market rates.

To ascertain the relationship between output growth and lending rate, the ARDL model for this study is therefore specified below.

$$\Delta GDP\_g_t = \beta_0 + \sum_{i=1}^{\rho} \beta_{1i} \Delta GDP\_g_{t-i} + \sum_{i=0}^{\rho} \beta_{2i} \Delta mlr_{t-i} + \sum_{i=0}^{\rho} \beta_{3_i} \Delta inv_{t-i} + \sum_{i=0}^{\rho} \beta_{4_i} \Delta inf_{t-i} + \sum_{i=0}^{\rho} \beta_{5i} \Delta exc_{t-i} + \beta_6 GDP\_g_{t-1} + \beta_7 mlr_{t-1} + \beta_8 inv_{t-1} \beta_9 inf_{t-1} + \beta_{10} exc_{t-1} + \mu_t \quad (2)$$

Where Δ is the difference operator and other components are as already defined.

Similarly, the error correction model for estimating the short run dynamics of the model is specified thus:

$$\Delta GDP\_g_t = \beta_0 + \sum_{i=1}^{\rho} \beta_{1i} \Delta GDP\_g_{t-i} + \sum_{i=0}^{\rho} \beta_{2i} \Delta mlr_{t-i} + \sum_{i=0}^{\rho} \beta_{3_i} \Delta inv_{t-i} + \sum_{i=0}^{\rho} \beta_{4_i} \Delta inf_{t-i} + \sum_{i=0}^{\rho} \beta_{5i} \Delta exc_{t-i} - ECM_{t-1} + \mu_{1t} \quad (3)$$

A negative and significant ECM_{t-1} coefficient (μ_{1t}) implies that any short-term disequilibrium between the dependent and explanatory variables will converge back to the long-run equilibrium relationship.

3.2. Data Sources and Measurements

The study utilised secondary data with a quarterly frequency from 2010Q1 to 2022Q4. The use of secondary data confers certain advantages as to the macro nature of the relationship among the variables. This series differed significantly from the works of some authors who relied on firm-specific data obtained at the primary level such as (Bhattarai, 2015; Alade, 2015). The present study adopted, with some modifications, the work of Adabor (2022), but differed with the use of Monetary Policy Rate and Foreign Direct Investment (FDI), and substituted same with Domestic Investment. The monetary policy rate serves as an anchor rate that signals the rate at which other monetary instruments are priced in the money market, rather than being the rate at which credit is mobilised for investments and growth in the country. Similarly, domestic investment was used in place of FDI since domestic investments are mobilised on the basis of maximum lending rates charged by banks.

Consequently, the set of variables adopted in the paper includes growth rate of real Gross Domestic Product (GDP_g), inflation (INF), Maximum Lending Rate (MLR), domestic investment (DINV) and exchange rate (EXC). Economic growth was proxied by the growth rate of real GDP, inflation was computed using the Year-on-Year growth rate of the Consumer Price Index (CPI), Domestic Investment is represented by Gross Fixed Capital Formation (GFCF), while the lending rate was proxied using Maximum Lending Rate, which is the lending rate available to most businesses in the country. In addition, the average official exchange rate of the Naira to the US dollar from the interbank and Investors' and Exporters' windows were used to proxy the exchange rate variable.

All data were obtained from the Central Bank of Nigeria's statistical database. The span of the data, given the frequency, provides the analysis with 52 data points which are considered relatively adequate for the analyses carried out.

4. RESULTS AND DISCUSSIONS

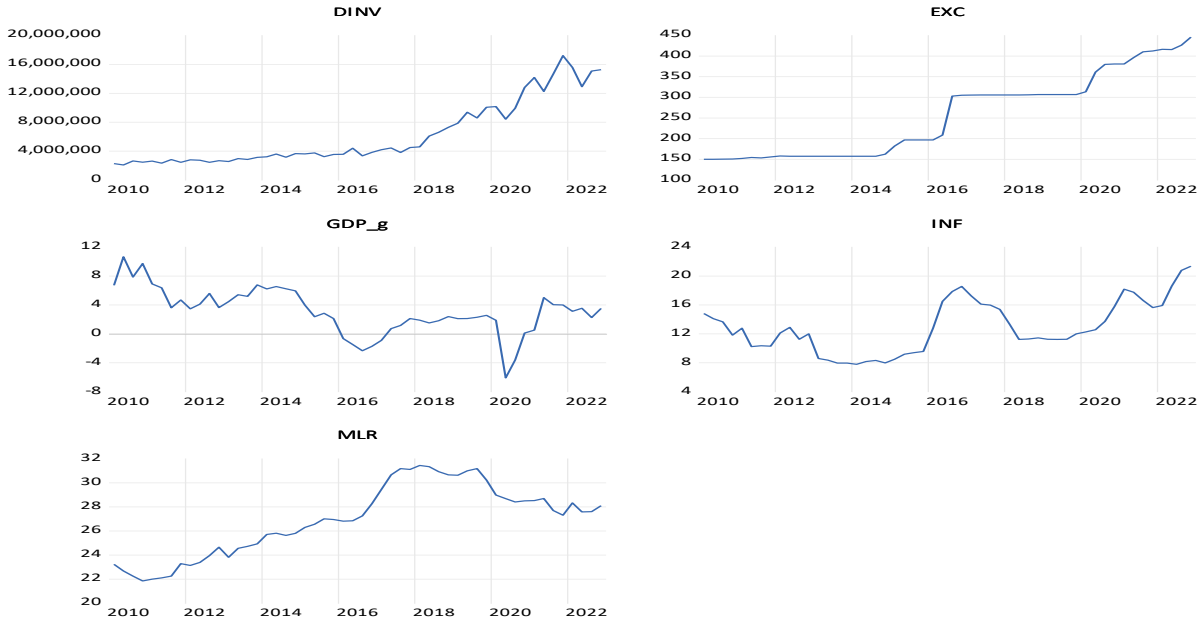
4.1. Graphical Presentation

The graphical presentation made in Figure 1 highlights the nature of the variables used in the study in their level form. Some of the variables, such as the growth rate of real GDP and inflation indicated the possibility of cyclical fluctuations during the period of the study.

Specifically, the growth rate of real GDP (GDP_g) indicated a general downward trend with significant contractions observed in 2016 and 2020. The inflation variable also indicated a cyclical behaviour with an upward trend, peaking at above 20.0 percent in 2022. Other variables, such as domestic investment and exchange rate indicated an upward trend. In the domestic investment variable, a spike in the volume of domestic investments was witnessed from 2018.

For the exchange rate variable, marked depreciation in rates was witnessed in 2016, and after 2019. This was in line with vulnerabilities that the economy was exposed to following the crude oil price slump in 2015 and the COVID-19 shock in 2020. The maximum lending rate variable also exhibited an upward trend for most parts of the period, except from 2020 when a downward trend was observed. In addition, all of the variables exhibited breaks which would be confirmed with the formal breakpoint test while a visual inspection of the graphs suggests that all the variables are non-stationary.

Figure 1: Graphical Presentation of Variables



Source: Authors' Compilation

4.2. Descriptive Statistics

The descriptive statistics of the variables are presented in Table 1.

Table 1: Descriptive Statistics

	Mean	Median	Maximum	Minimum	Std. Dev.	Skewness	Kurtosis	Jarque-Bera
DINV	6,157,791	3,772,240	17,205,509	2,079,136	4,448,975	1	3	10
EXC	256.0	255.9	445.7	149.9	99.4	0.4	1.7	5.0
GDP_G	3.1	3.3	10.7	-6.1	3.2	-0.3	3.6	1.8
INF	12.9	12.2	21.3	7.8	3.6	0.4	2.3	2.6
MLR	26.9	27.1	31.4	21.9	2.9	-0.1	1.9	2.8

Source: Author's Compilation

On the average domestic investment stood at ₦6.157 billion, ranging between ₦2.1 billion and ₦17.2 billion during the period of analysis. It is also moderately skewed to the right and

has a kurtosis of 3. Exchange rate variable had an average value of ₦256/US$ and ranged between ₦150/$ and ₦445/US$ throughout the sample period with a wide deviation from the mean as indicated by the standard deviation of the series. The wide variation in the range is an indication of the pressure on depreciation of the rates over time as it peaked to ₦445.7/US$ in 2022Q4. Similarly, the growth rate of overall output was below 5 percent through the period, averaging 3.1 per cent with the fastest growth of 10.7 percent recorded in 2010Q2 and a contraction of 6.1 per cent in 2020Q2 owing to restrictions placed by the country to combat the spread of the COVID-19 pandemic. Amid the slow growth recorded in the period, inflation was largely in double digits with an average of 12.9 percent and the fastest growth of 21.3 percent in prices recorded in 2022Q4, while the slowest rate of 7.8 percent was recorded in 2014Q1. Similarly, lending rates in the country was also in double digits during the period, averaging 26.9 percent, with the highest value of 31.4 percent recorded in 2018Q1, and the lowest value of 21.9 percent in 2010Q4.

There is an observed wide variation in the series as the standard deviation of each of the variables are above 2.8 points. In terms of skewness, all the variables, except GDP growth rate and maximum lending rate are positively skewed. While domestic investment is moderately skewed, the remaining variables in the study are approximately asymmetric. In terms of kurtosis, domestic investment, GDP growth rate and inflation are highly peaked, having a kurtosis of greater than 2. The test of normality, as reported by the Jarque-Bera statistic, suggests that all the variables are normally distributed.

4.3. Unit Root Tests

The Augmented Dickey Fuller (ADF) and Phillip Perron (PP) unit root test results are presented in Table 2 below.

Table 2: Results of Unit Root Tests

p-values			***Log(DINV)***	***EXC***	**GDP_g**	***INF***	***MLR***
Level	***ADF***	**Intercept**	0.9504	0.9898	0.1505	0.6037	0.6675
		Intercept & Trend	0.2679	0.5137	0.2888	0.3896	0.9815
		None	0.9726	0.9984	0.0620	0.7403	0.9265
	PP	**Intercept**	0.9948	0.9908	0.1505	0.7418	0.6440
		Intercept & Trend	0.3314	0.4821	0.3009	0.6529	0.9528
		None	1.0000	0.9989	0.0712	0.7546	0.8828
			Log(DINV)	***EXC***	**GDP_g**	***INF***	***MLR***
First Difference	***ADF***	**Intercept**	0.1108	0.0000	0.0000	0.0003	0.0001
		Intercept & Trend	0.2874	0.0000	0.0000	0.0010	0.0003
		None	0.0498	0.0000	0.0000	0.0000	0.0000
	PP	**Intercept**	0.0000	0.0000	0.0000	0.0003	0.0001
		Intercept & Trend	0.0000	0.0000	0.0000	0.0013	0.0003
		None	0.0000	0.0000	0.0000	0.0000	0.0000
Decision I(d) (ADF)			I(1)	I(1)	I(1)	I(1)	I(1)
Decision I(d) (PP)			I(1)	I(1)	I(1)	I(1)	I(1)

Source: Author's Compilation

The results of both tests indicate that, at 5 percent level of statistical significance, none of the variables are stationary at levels. The variables were, however, stationary after first difference.

To ascertain the validity of structural breaks in the model, the breakpoint unit root test was conducted, and results presented in Table 3. The results of the test indicated the presence of breaks after a first difference at various dates. For GDP growth, the breakpoint unit root test indicated a break date of 2020Q2. To capture the effects of the breakdate, dummy variables were generated and included in the estimation.

Table 3: Results of Breakpoint unit root Test

Null Hypothesis:		**The select variable has a unit root**									
		GDP-g		***Log(DINV***		**MLR**		**INF**		**EXC**	
		Break date	**p-values**	**Break date**	**p-values**	**Break date**	**p-values**	**Break date**	**p-values**	**Break date**	**p-values**
Level	**Intercept**	2014Q4	0.3666	2018Q1	0.5347	2011Q3	0.9318	2015Q4	0.8145	2016Q2	0.9715
	Intercept & Trend	2021Q1	0.5459	2008Q3	0.1141	2019Q3	0.3808	2022Q1	0.9535	2016Q2	0.7837
First difference	**Intercept**	2020Q2	<0.01	2022Q2	<0.01	2017Q2	<0.01	2016Q2	<0.01	2016Q3	<0.01
	Intercept & Trend	2020Q2	<0.01	2022Q2	<0.01	2018Q1	0.4925	2016Q4	<0.01	2016Q3	<0.01

Source: Authors' computation

In addition, the Chow test was used to confirm the validity of the identified breakpoint unit root test for growth rate of real GDP in 2020Q2. The result rejected the null hypothesis of no breaks at the specified break date. The rejection of the null hypothesis indicates the validity of the presence of the identified structural break. In addition, the break date could be said to have an influence on the behaviour of the model.

Table 4: Results of Chow Test

Chow Breakpoint:	**2020Q2**
Null Hypothesis:	No breaks at specified breakpoints
Sample:	2010Q1 – 2022Q4
F-statistic	4.5100***
Note: * denotes a 1% level of statistical significance.**	

Source: Authors' computation

Given the validity of the structural break date, four dummy variables were created for domestic investments, exchange rate, inflation and maximum lending rates, as, DUMDINV, DUMEXC, DUMINF and DUMMLR, respectively.

4.4. ARDL Bunds Test

In estimating the relationship between lending rates and economic growth, following the results of the unit root tests, which indicated that the series were integrated of order 1, I(1)) an autoregressive distributed lag model was employed. However, this process begins with ascertaining the presence of a long run relationship/cointegration among the variables in the model. The result of the co-integration test based on the ARDL-bounds testing method is presented in Table 5.

Table 5: ARDL-Based cointegration Test Results

Test Statistic	Value	Significance.	I(0)	I(1)
F-statistic	11.44776	10%	2.2	3.09
K	4	5%	2.56	3.49
		2.5%	2.88	3.87
		1%	3.29	4.37
ARDL Model	(3, 4, 2, 4, 3)			

Source: Author's Computation

The results indicate that the F-statistic is greater than the upper critical bound at all significance levels. This study therefore rejects the null hypothesis of no co-integration. This shows that there is a long-run causal relationship among the variables in the model.

4.5. Long Run and Short Run Estimates

The estimated long run coefficients of the relationship between lending rates and economic growth in Nigeria is presented in Table 6.

Table 6: Long run Results of relationship between Lending rate and economic Growth

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DINV	0.000001	4E-07	2.591887	0.0163
EXC	-0.11699	0.03319	-3.52475	0.0018
INF	0.679491	0.313403	2.168103	0.0407
MLR	0.983545	0.433688	2.267865	0.033
C	-11.3239	9.205488	-1.23012	0.2311

Standard errors in parenthesis. *P-value less than 1%, **P-value less than 5% *** P-value less than 10%, ^ P-value above 10%, C=Constant, ∆=change

Source: Author's Estimation

The results indicate that in the long run, lending rates have a positive relationship with economic growth as a percent increase in lending rate would lead to a 0.98 percent increase in economic growth. This could be associated with the fact that in the long run, higher lending rates enable investments to be mobilised in the most productive sectors leading to improved growth. It is also in line with the McKinnon–Shaw hypothesis (1973) in Alaabed and Masih (2016) who postulated that liberalisation of interest rates in a developing country would lead to increase in savings and investments, thus eventually leading to increased economic growth, especially in the long run. This outcome is corroborated by the works of Egbetunde, Ayinde, and Balogun (2017) and Akinwale (2018) who found similar positive relationships between both variables. The behaviour of other variables indicated that inflation and domestic investments postively affected growth as a percent increase in inflation and investments led to 0.68 per cent and 0.00001 per cent increase in growth, respectively. The positive relationship between investments and economic growth is in line with apriori expetations and the Solow growth model that investments promote growth through increases in capital. In addition, the positive relationship between inflation and growth attests to the fact that higher prices act as an incentive for economic actors to be engaged in economic actviities, deriving higher nominal profits in the process. In the long run, exchange rate depreciation hurts growth as a percent increase in depreciation would lead to a 0.12 percent decline in growth outcome.

This finding is indicative of the structure of the economy that is not diversified in export earnings, thus not gaining competitivess from exchange rate depreciation. This is in addition to the fact that continued depreciation increaes the cost of improts, thus suppressing aggregate demand and overall output.

The estimates of the short run relationship between lending rates and economic growth model are presented in Table 7.

Table 7: Short run Results of relationship between Lending rate and Economic Growth

Variable	Coefficient	Variable	Coefficient
D(GDP_G(-1))	0.015918^	D(INF(-1))	-0.289363***
	-0.12108		-0.166652
D(GDP_G(-2))	-0.300844*	D(INF(-2))	-0.499748*
	(-0.087424)		-0.166652
D(DINV)	0.0000011	D(INF(-3))	-0.470894*
	-0.0000002		-0.166652
D(DINV(-1))	0.0000011*	D(MLR_E)	0.969177*
	-0.0000002		-0.187226
D(DINV(-2))	0.00000090*	D(MLR_E(-1))	0.320662^
	-0.0000002		-0.189793
D(DINV(-3))	0.0000009*	D(MLR_E(-2))	0.49282*
	-0.0000002		-0.178767
D(EXC)	-0.066795*	DUMMLR	-1.286635*
	-0.010682		-0.0008
D(EXC(-1))	0.054566*	DUMDINV	-0.000006***
	-0.013242		-0.0000003
D(INF)	-0.690394	DUMEXC	0.101906*
	-0.114698		-0.038438
		DUMINF	0.550448**
			-0.246616
		Coint Eq(-1)*	-0.829311*
			-0.090691
R-squared	0.872631	Log likelihood	-47.65359
Adjusted R-squared	0.786203	Durbin-Watson stat	2.195594
S.E. of regression	0.854997		

Standard errors in parenthesis. *P-value less than 1%, **P-value less than 5% *** P-value less than 10%, ^ P-value above 10%, Coint=co-integrating parameter, C=Constant, Δ=change
Source: Author's Estimation

Lending rates and investments were also found to positively impact economic growth in the short run as they did in the long run. After a quarter lag, it was observed that a percent increase

in maximum lending rates would lead to a 0.97 percent increase in economic growth, and a 1 percent increase in investments would impact growth by 0.000001 per cent. However, unlike in the long run, inflation was found to negatively affect growth while exchange rate depreciation also depressed growth in the short run. The study found that in the short run, a percent increase in inflation would lead to a 0.69 per cent decline in real output growth even as a one percent depreciation in exchange rates would hurt growth by 0.07 per cent, after a quarter lag.

The inclusion of the structural breaks affected significantly, the behaviour of the variable as represented by their respective dummies, especially the DUMMLR, and DUMEXC at 1 percent and DUMINF at the 5 percent levels of statistical significance. Accounting for the impact of COVID-19 on the economy, which was characterised by movement restrictions that started in 2020Q2 and led to contraction in economic activities, the relationship between lending rates and growth was reversed. Similarly, inflation and growth relationship in the short run was reversed to positive as indicated by its dummy (DUMINF). However, given the impact of the lockdown measures, exchange rate depreciation had a positive relationship with economic growth in the short run. The positive relationship between depreciation and growth, due to the lock down measure, indicated the need for competitiveness and response to heightened foreign exchange pressure that accompanied the period

The coefficient of the error correction model (ECT-1) is negative and significant . This suggest that the model is mean reverting, hence a short-run disequilibrium is corrected in the long run, making the model stable.

4..6. Post Diagnostics Tests

Three diagnostic tests were conducted to ascertain the stability of the model. Specifically, serial correlation, heteroscedasticity and specification tests were conducted using the Breusch-Godfrey serial correlation, Breusch-Pagan-Godfrey homoscedasticity and the Ramsey RESET tests. The null hypotheses of the tests could not be rejected indicating that the model has no elements of serial correlation and heteroscedasticity, and was well specified.

Table 8: Post Diagnostics

A	Breusch-Godfrey Serial Correlation LM Test	
	F-Stat	0.49867
	Prob. F(2,21)	0.6143
	Heteroscedasticity	
	Breusch-Pagan-Godfrey	0.701856
	Prob. F(24,23)	0.8025
C	Specification Test	
	Ramsey RESET Test	0.404394
	Prob (1,22)	0.5314

Source: Authors' computation

5. CONCLUSION AND RECOMMENDATION

In conclusion, lending rates play a significant role in mobilising investments for growth. The paper found that lending rates had a positive relationship with economic growth in both the short run and long run. This implies that higher interest rates promoted efficiency in business operations and investment mobilisation, thus supporting growth. Efforts should be made to ensure that it does not get beyond a tipping point where it would hurt growth. However, it found that the relationship between both variables became negative when structural breaks were accounted for, thus indicating the importance of accounting for observed breaks in the series. Further studies on a possible threshold for the relationship, while accounting for structural breaks could be explored.

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