



THE EFFECT OF CREDIT TO THE PRIVATE SECTOR ON ECONOMIC GROWTH IN SIERRA LEONE

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Abstract:

Economic growth is important for poverty reduction, and it is of interest to all policymakers. Also, finance is important for boosting investment and hence growth and it takes various forms. The study therefore investigates the effect of bank credit to the private sector on economic growth in Sierra Leone. The study uses aggregate amount data on real Gross Domestic Product (GDP), credit by banks, and other control variables for the period 1992 to 2022. Variables are tested for the existence of unit roots and the Autoregressive Distributed Lag (ARDL) was used to test for cointegration and estimation of short-run and long-run models of growth. The results show that credit to the private sector has a positive effect on economic growth in Sierra Leone. Other results show that interest rates and inflation harm real GDP growth. The important policy implication is the need for the central bank to continue its financial stability efforts, the need for strengthened macroeconomic stability, and structural reforms that bind investment celebrate for more bank credit to the private sectors, in reducing to enhance growth.

JEL: O16, G21, E51, O55

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1. Introduction

There is growing interest in money supply and its relationship to GDP. Over the past few years, modeling the relationship between money supply and income levels has been one of the main controversial issues of interest for economists, researchers, and policymakers. Swamy (1994) noted that the public sector in the 1980's was becoming over-extended and increasingly suffered from economic mismanagement. According to Ryan (2001),

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Structural Adjustment Programme (SAP) of the 1980's under the tutelage of the World Bank and the International Monetary Fund was aimed at improving the resource allocation and microeconomic stabilization. Money supply can be defined as the total stock of money circulating in the economy. The circulating money involves the currency, printed notes, money in the deposit accounts, and the form of other liquid assets. Valuation of the money supply helps analysts and policymakers frame the policy or alter the existing policy of increasing or reducing the supply of money. The valuation is important as it ultimately affects the business cycles and thereby affects the economy (OECD, 2014).

There are several standard measures of the money supply, including the monetary base, M1 and M2. The monetary base defines the sum of currency in circulation and reserve balances (deposits held by banks and other depository institutions such as micro-financing institutions in a given country). M1 is defined as the sum of currency held by the public and transaction deposits at the depository institutions, financial institutions that obtain their funds mainly through deposits from the public, such as commercial banks, savings and loans associations, savings unions, and credit unions (Jamie, 2005). M2 refers to M1 plus deposits issued in amounts less than \$ 100,000 standard currency and retail market money. Data on monetary aggregates are reported in the Federal Reserve's statistical release. In Sierra Leone, this is done by the Central Bank of Sierra Leone through its bi-annual monetary policy report.

The Central Bank of Sierra Leone capped the real growth rate of Sierra Leone at 3.5% in 2017 and 3.8% in 2018. This was the annual measure of GDP growth adjusted for inflation and expressed as a percentage. The Sierra Leone Growth rate is relatively slow compared to other developing nations. The following benefits accrue to improving GDP. Sierra Leone stands to improve the living standards of its citizens. Economic growth is vital to a country in bringing about an improvement in the living standards of its people. It also helps to reduce the rates of poverty for people of low incomes.

This is principally true for underdeveloped and developing countries where growth is considered a principal method of reducing poverty among the populace such as in the case of Sierra Leone. Economic growth results in bringing a high rate of employment. tax revenues for the government, making it stronger. Along with this, the government spends less amount of money on unemployment benefits. Government finances are usually cyclical. As the country's economy boosts up, more tax revenues flow into the Government Treasury. This provides the government with additional money, which can be used for financing other projects that might lead to further development. The overall objective of the study is to investigate the immediate and delayed effect of bank lending on economic growth in Sierra Leone. With specific objectives which are to; investigate the short-run effect of credit to the private sector on the economic growth in Sierra Leone and investigate if there is a long-run relationship between credit and private investment in Sierra Leone.

2. Theoretical Review

2.1.1 Classical and Neoclassical Economic Growth Models

Economic growth and development are dynamic processes and thus necessitate dynamic models. Thoughts and theories on economic growth can be traced back to the classical economists of the eighteenth and nineteenth centuries such as Adam Smith, Robert Malthus, Ricardo, and Marx. Until the turn of the twentieth century and long after, economists remained remarkably silent on the issue of growth, with just a few exceptions. After the classical model, Harrod-Domar was developed, a theory that sets the base for conditions required for long-run equilibrium growth. Harrod-Domar model is appreciated as an intermediate step between classical and neoclassical theories. The two types of Growth models: the neoclassical growth model, also known as the exogenous growth model, developed by Solow (1956) and Swan (1956), and the new growth theory, also known as the endogenous growth model, pioneered by Romer (1986), Lucas (1988), Barro (1990), and Rebelo (1991) were exploring the flow of economic growth from different point of view for more than three decades. The objective of these growth theories is to identify a nation's sources of economic growth. Though there are various theories, as mentioned above, regarding economic growth, in this section we will address the most applied models: the Neoclassical and Endogenous Growth Models.

The neoclassical models of Solow (1956) and Swan (1956) have played a central role in organizing and guiding subsequent aggregate economic research. Solow (1956) and Swan (1956) turn to neoclassical production functions with varying shares of labor and capital inputs. These two approaches provide the first neoclassical model of long-run economic growth and mark the starting point for most studies on economic growth up to the present day. The Neoclassical model emphasizes how growth arises from the accumulation of capital. Solow (1956) and Swan (1956) created a simple, convenient, and powerful apparatus for finding the steady-state growth path of a one-commodity world. In addition, Swan (1956) demonstrates the importance of technical progress for long-run growth which Solow treated separately in Solow (1957). In the Solow-Swan model, technological progress (TP) leads to an increase in income per capita, which, in turn, leads to higher savings and therefore to higher investments and higher capital stock (per efficient labor unit).

2.2 Empirical Review

Roubini and Sala-i-Martin (1992) used a Barro-type growth regression model and analyzed the relationship between the financial development and economic growth of having cross-country data for 53 countries over the period 1961-1980. They performed their study theoretically as well as empirically and concluded that financial repression reduces the productivity of capital and lowers savings, thus hampering growth. The upshot of these theoretical studies is that financial development leads to stronger economic growth.

Wood (1993) investigated the nexus between financial development and economic growth in Barbados using time series data for the period 1946-1990 by applying Hsiao's testing procedure and found that the two variables i.e. the financial development indicator variable which is measured by the ratio of M2 to GDP and the economic growth indicator GDP, Granger-causes each other which means there exists a bi-directional causality between financial development and economic growth. Moreover, He tested Patrick's hypothesis that states the supply-leading effect dominates during the early stage of development and as the modern sectors of the economy develop, the demand-following financial response becomes dominant, and conducted the causality testing on two subsamples. His choice for the subsample was determined largely by developments in the real sector of the economy. However, the empirical results don't support for Patrick's hypothesis that the direction of causality between financial development and economic growth changes over the course of economic development.

Chang (2002) provides neither the demand-following nor the supply-leading hypothesis for Mainland China. In his study, he uses multivariate VAR models for Mainland China over the period 1987: Q1 to 1999: Q4 to test both the demand-following and supply-leading hypotheses. Based on the Johansen co-integration test, the findings indicate that there exists one co-integrating vector among GDP, financial development, and the degree of openness of three variables. The results from Granger causality tests based on multivariate error-correction models (ECM) suggest independence between financial development and economic growth.

3. Methodology

3.1 Model Specification

This study intends to examine the impact of bank lending on economic growth during the period from 1992 to 2022. The response of bank lending to changes in macroeconomic variables depends primarily on whether those changes are transitory or permanent. Thus, to achieve the objective of this study, a bank lending model is specified based on theoretical and empirical literature. The model is also based on the structure of the Sierra Leone economy.

The model equation will be as follows:

$$Gdp = f(RIR, DCPS, INF, REER) \quad (1)$$

Taking log of variables whose units of movement are not percentages, we obtained equation (2):

$$\text{Log}(GDP)_t = \beta_0 + \beta_1 RIR_t + \beta_2 \text{Log}DCPS_t + \beta_3 INF_t + \beta_4 \text{Log}REER_t + \varepsilon_t \quad (2)$$

Also, we will test the hypothesis of causal relationship between both Private and Public Bank Loans and GDP. The models will be as the following:

$$\text{Log}(RGDP)_t = \beta_0 + \beta_1 RIR_t + \beta_2 \text{LogDCPS}_t + \beta_3 INF_t + \beta_4 \text{LogREER}_t + \varepsilon_t \quad (3)$$

In order to estimate the relationship between macroeconomic indicators, and bank lending performance in Sierra Leone, the study adopted the Autoregressive Distributed Lag (ARDL) model. To carry out this estimation procedure, the study first analysed the time series characteristics of the dataset to establish the unit root properties of the variables.

It is very important to test for the statistical characteristics of variables in the model since time series data are scarcely stationary in level forms. Regression involving non-stationary time series often to the problem of spurious regression. Time series is said to be stationary if its mean, variance, and auto-covariance are independent of time. In view of this, the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests are used. The two tests are similar but there is a difference with respect to the way they correct for autocorrelation in the residuals. The PP and the ADF test the null hypothesis that a series contains a unit root (non-stationary) against the alternative hypothesis of no unit root (stationary). I.e.

H0: $p = 0$ (Yt is non-stationary);

H0: $p \neq 0$ (Yt is stationary).

3.2 The ARDL Co-integration Technique and Bound Testing Procedures

The autoregressive distributed lag (ARDL) Cointegration Test, otherwise known as Bound Test, which was developed by Parasan et al. (2001) is adopted in this study to test for the co-integration relationships among variables in the model regardless of whether the variables under consideration I (0) or of both (1) a combination are. This approach includes lagged values of the dependent variables as well as current and lag, ged values of explanatory variables.

Furthermore, the rationale for the choice of the above approach is centred on the fact that the ARDL co-integration technique has been proven to be more efficient for small sample data sizes as in the case of this study. The current study uses annual time series data covering a period from 1992 to 2022. Thus, the data points are 38 which is comparatively small. The time series analysis of the impact of bank lending on economic growth in Sierra Leone will pursue the technique of co-integration, which will be employed to estimate the long-run determinant of bank lending; escorted by an error correction model (ECM) which provides accurate estimates for the short-run and the adjustment term once co-integration is found to exist.

Moreover, the ARDL approach to cointegration considers a sufficient number of lags to capture the data-generating process from the general to specific modeling framework. The approach solves the problem of endogeneity and serial correlation in macroeconomic variables with the help of the appropriate number of lags. Therefore, the long-run ARDL model for the credit to the private sector on growth rate in Sierra Leone can, therefore, be specified from equation (2) above as:

$$\Delta \ln \text{GDP}_t = \alpha_0 + \sum_{i=1}^p \alpha_{1i} \Delta \ln \text{RIR}_{t-1} + \sum_{i=1}^p \alpha_{2i} \Delta \ln \text{DCPS}_{t-1} + \sum_{i=1}^p \alpha_{3i} \Delta \ln \text{INF}_{t-1} + \sum_{i=1}^p \alpha_{4i} \Delta \text{REER}_{t-1} + \sum_{i=1}^p \alpha_{5i} \Delta \ln \text{REER}_{t-1} + \beta_1 \ln \text{RIR}_{t-1} + \beta_2 \ln \text{DCPS}_{t-1} + \beta_3 \ln \text{INF}_{t-1} + \beta_4 \ln \text{INVREER}_{t-1} + \mu_t \quad (3)$$

Where Δ is the difference operator, α_0 is the constant term β_i and α_i are the long-run and the short-run elasticities, respectively. p is the optimal lag length. $i = 1, 2, 3, 4, 5$

To trace the existence of co-integration, F-statistic is computed from the ARDL regression of equation (3). The null hypothesis of no co-integration will also be tested by restricting the lagged level variables equal to (i.e., $H_0 = \beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = 0$) against the alternative that $H_1 = \beta_1 \neq \beta_2 \neq \beta_3 \neq \beta_4 \neq \beta_5 \neq 0$. The bounds tests will provide two asymptotic critical value bounds. The lower bound assumes variables are $I(0)$ whilst the upper bounds assume $I(1)$ variables hypothesis of no cointegration is rejected if the computed F-statistic is greater than the upper] critical value bound; otherwise, the null hypothesis is not rejected. Once the co-integrating relationship is ascertained, the error correction estimates of the ARDL model are obtained. The diagnostic test statistics of the selected ARDL model are examined from the short-run estimates at this stage of the estimation procedure. Similarly, the test for parameter stability of the model can be performed. The error correction representation of equation (3) is specified as follows:

$$\Delta \ln \text{RGDP}_t = \alpha_0 + \sum_{i=1}^p \alpha_{1i} \Delta \ln \text{RGDP}_{t-1} + \sum_{i=1}^p \alpha_{2i} \Delta \ln \text{RIR}_{t-1} + \sum_{i=1}^p \alpha_{3i} \Delta \ln \text{DCPS}_{t-1} + \sum_{i=1}^p \alpha_{4i} \Delta \ln \text{REER}_{t-1} + \delta \text{ECM}_{t-1} + \mu_t \quad (4)$$

where α_i represents the short-run coefficients and δ is the speed of adjustment parameter or feedback effect which is expected to be negative and significant. ECM_{t-1} is the cointegration residual lagged one period obtained from equation (4).

4. Empirical Results and Interpretations

4.1 Descriptive Statistics

This section briefly discusses the basic statistical properties of the relevant variables of the study. Table 4.1 presents the descriptive statistics of the variables. From Table 4.1, it is evident that all the variables have positive average value (mean). It can also be seen that domestic credit (DCPS), INF, and log Real Exchange Rate (RER) are positively skewed, implying that the majority of the values are less than their means. On the other hand, real interest rate (RIR), and real GDP are negatively skewed implying that the majority of the values are greater than their means.

Table 4.1 Descriptive Statistics

Variables	RGDP.	RIR	DCPS	INF	RER
Mean	3.019670	6.183596	0.780064	17.45772	115.3637
Median	4.104700	7.995973	0.005882	12.82645	111.9213
Maximum	26.52413	27.16974	3.402814+	82.02358	142.8374
Minimum	-20.49107	-31.6974	0.001545	-3.93416	91.35220
Std. Dev.	9.268649	12.45381	1.256537	18.03995	16.16722
Skewness	-0.239342	-1.33710	1.049045	2.334123	0.328902
Kurtosis	4.706684	5.454971	2.265930	8.575300	1.820750
Observation	31	31	31	31	31

4.2 Correlation Matrix

In order to address the problem of multicollinearity in the model, we obtained estimates of a correlation matrix to determine the extent of correlation among the variables. Correlation explains the relationship between two variables without the direction of causality considered. Table 4.2 shows the correlation matrix of variables. However, Table 4.2 shows that the model is free from multicollinearity because the highest value of correlation is 61.8% between inflation (INF) and domestic credit to the private sector (DCPS). Thus, the result shows a negative relationship between real GDP and Real interest rate and inflation, whilst a positive relationship is found to exist between export and the other independent variables.

Table 4.2 Correlation Matrix

Variables	RGDP	RIR	DCPS	INF	
RGDP	1.0000				
RIR	-0.03551	1.0000			
P-Value	(0.8496)				
DCPS	-0.43282	-0.31796	1.0000		
P-Value	(0.0150)	(0.0813)			
INF	-0.61846	-0.18771	0.386856	1.0000	
P-Value	(0.002)	(0.3119)	(0.0316)		
RER	0.25767	0.001613	0.418434	0.116054	1.0000
P-Value	(0.1617)	(0.9931)	(0.0191)	(0.5341)	

4.3 Stationarity Test

Although the bound test Autoregressive Distributed Lag (ARDL) approach to co-integration does not require the pretesting of the variables for unit roots. It is important to conduct this test to confirm the order of integration of the variables. Hence, in order to ensure that some variables are not integrated at higher order, there is a need to complement the estimated process with unit root tests. In view of this, prior to applying the (ARDL) approach to cointegration, unit root tests were conducted in order to investigate the stationarity properties of the data. Therefore, the Augmented Dickey-Fuller (ADF) and Phillips Perron (PP) tests were applied to all variables in levels and in the first difference in order to determine their order of integration and confirm stationarity. The maximum lags length used was determined based on the lag selection by Schwartz-Bayesian Criterion (SBC) and Akaike Information Criterion (AIC). The

results of both Augmented Dickey-Fuller and Philips Perron for unit root with intercept only in the model for all variables are presented in Table 4.3.

Table 4.3 Stationarity Test Results

Variables	Augmented Dickey-Fuller		Phillips Perron		Order of integration
	Level	1 st difference	Level	1 st difference	
RGDP	-5.380247**		-5.401575**		I (0)**
RIR	-7.643529**		-8.477006**		I (0) **
DCPS		-5.768157**		-5.752398**	I (1)
INF	-7.424967**		-7.506858**		I (0)**
RER		-5.683138**		-5.694164**	I (1)

Note: 1 percent level of significance, with critical value = -2.9411

From the /unit root test results in Table 4.3, it found that two of the variables are integrated of order one I (1), which is non-stationary, except RGDP, RIR, and INF are I (0), that is they are stationary at levels. The decision rule states that we accept the null hypothesis if the absolute critical value at a 5% level of significance is greater than the absolute t-statistic value. Since the unit root test results above confirmed the absence of I (2) variables, the ARDL framework is used for estimation.

4.4 Bound Test for Co-integration Analysis

Fundamentally, the overall objective of the study is to investigate the immediate and delayed effect of bank lending on economic growth in Sierra Leone. In view of this, it is essential to test the existence of long-run relationships among variables within the framework of the bounds-testing approach to cointegration. The decision rule states that the null hypothesis, of no co-integration, is not rejected if the f-statistic is less than the lower bound. However, if the computed F-statistic is less than the lower critical bound, then the test fails to reject the null hypothesis, suggesting that a long-run relationship does not exist. Thus, the results of the ARDL F-bounds test are shown in Table 4.4. A maximum lag of two was chosen in the test in order to maximize degrees of freedom.

Table 4.4: Bounds Test Co-integration Result

Test statistic	Value	Signif.	I (0)	I (1)
f-statistic	5.611335	10%	2.2	3.09
k	4	5%	2.56	3.49
		2.5%	2.88	3.78
		1%	3.29	4.37

Based on the results in Table 4.5, we conclude that the calculated F-statistic 5.611335 is higher than the upper bound critical value at the 5 percent level of significance (3.09). This simply shows that the null hypothesis of no cointegration is rejected at the 5 percent level and that there is indeed a cointegration relationship among the Export and its determinants. Therefore, the study proceeds to estimate both the long-run and short-run models within the ARDL framework. The long-run result is presented in Table 4.6 below.

4.5 Short-run Estimation Result

The estimation of a short-run model with the Autoregressive Distributed Lag Model (ARDL) is based on the Akaike Information Criterion (AIC) employed.

Table 4.5: Error Correction Model Representation
 for Selected ARDL Model - ARDL (1, 2, 2, 2, 2, 1)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	27.14003	33.14252	0.818888	0.4398
D(RIR)	-2.39469	0.753260	-3.179045	0.0155
D(DCPS(-1))	0.95004	9.509293	-3.149555	0.0162
D(INF(-2))	-0.216465	0.755129	2.604559	0.0352
D(RE.R(-1))	0.589898	0.180809	3.262546	0.0138
ECT(-1)*	-0.724757	0.114687	-7.173054	0.0000
R-squared (0.934021), Mean dependent var (4.488713), Adjusted R-squared (0.754935), S.D. dependent var (8.514077), S.E. of regression (4.214812), Akaike info criterion (5.846642), Sum squared resid (124.3525), Schwarz criterion (6.806521), Log-likelihood (-58.92967), Hannan-Quinn criterion (6.132064), F-statistic (5.215488), Durbin-Watson stat (3.176288), Prob(F-Statistic) (0.0000013).				

From the short-run result, the coefficient of the error correction term ECT (-1) has a negative sign with a statistically significant coefficient at the one percent level. With a coefficient of 0.72, the result indicates that approximately 72 percent of the disequilibrium caused by the previous year's shocks converges back to the long-run equilibrium in the current year. The result indicates a high speed of adjustment to long-run equilibrium.

The model has a goodness of fit (R-squared) of 0.934021, this means that holding all other factors constant, 93.4% of the changes in economic growth can be explained by commercial bank lending, inflation, real exchange rate, and interest rates. As this figure is above 50%, this means the model has a strong goodness of fit. Additionally, the model has a probability value of 0.0000 entailing that it is statistically significant in explaining changes in economic growth.

Commercial bank lending, which was proxied by domestic credit to the private sector had a positive coefficient value of 0.95004 which entails that a one percent increase in commercial bank lending increases economic growth in Sierra Leone by 0.95 percent. This finding is consistent with the prior expectation as prescribed by the Wicksell theory. A similar result was obtained by Fenta (2012) who found a positive relationship between commercial bank lending and economic growth in Ethiopia. Additionally, the commercial bank lending coefficient was statistically significant as it had a probability value of 0.0162 which is less than the 5 percent level of significance.

The coefficient of inflation was observed to harm economic growth in Sierra Leone. Inflation had a value of -0.2164 which means that if inflation increased by one percent, the level of economic growth in Sierra Leone declined by 0.216 percent which is consistent with theory. This result was also significant given that the p-value of the coefficient was 0.0352.

Thirdly, the interest rate coefficient was recorded as -2.394649 which means that a unit increase in the interest rates drops the level of economic growth by 2.394 percent. As the probability value of this coefficient was 0.0155, this relationship was statistically significant. This finding makes economic sense as interest rates represent the cost of money hence in that cost is on an upward trend, owing to the increasing cost of then doing business, we expect that the economy will shrink or decline. Lastly, the model had a constant value of 27.14003 which means that holding all other factors included in the model constant, it is expected that Sierra Leone's economy will grow by 27.14 percent. Aside from the variables included in the model, other factors such as employment levels, the level of technology, and capital stocks could help explain changes in economic growth. Hence this constant value is a representation of these and other potential variables that can influence growth. The overall model is highly statistically significant as shown by the probability value of the F-statistic (0.000000). Moreover, the Durbin-Watson statistic of 3.176288 confirms the existence of no autocorrelation in the residuals and therefore ensures that the estimated results are not spurious.

4.6 Long-run Estimation Result

Table 4.6: ARDL Long-run Result

Variables	Coefficient	Std. Error	t-Statistic	Probability
RIR	-0.534868	0.637809	-0.838602	0.4294
DCPS	8.141535	2.557618	-3.183249	0.0154
INF	0.972982	0.656770	1.481466	0.1820
RER	22.57058	30.73809	0.734287	0.4866

The result from the long-run estimates in Table 4.6 reveals that domestic credit to the private sector (DCPS), real interest rate (RIR), inflation (INF), and real exchange rate (REER) are the main long-run determinants of bank lending on economic growth in Sierra Leone. Specifically, the result reveals a negative relationship between real interest rate and economic growth in the long run with a statistically insignificant coefficient at the 5 percent significance level. A decrease in the real interest rate by 1 percent will cause economic growth to improve by approximately 0.5 percent during the study period. This result implies that there is an inverse relationship between credit to the private sector and economic growth. The decrease in the credit to the private sector by the commercial banks will lead to a fall in the inter-bank rate which will lead to an increasing credit facility to investors to boost the economic growth. The above result is in line with most studies, including Apkan (2008) and Kin Sibanda (2012) on the interest rate and economic growth relationship. However, Tarawa Lie (2010) found a positive relationship between real interest rates and economic growth in Sierra Leone.

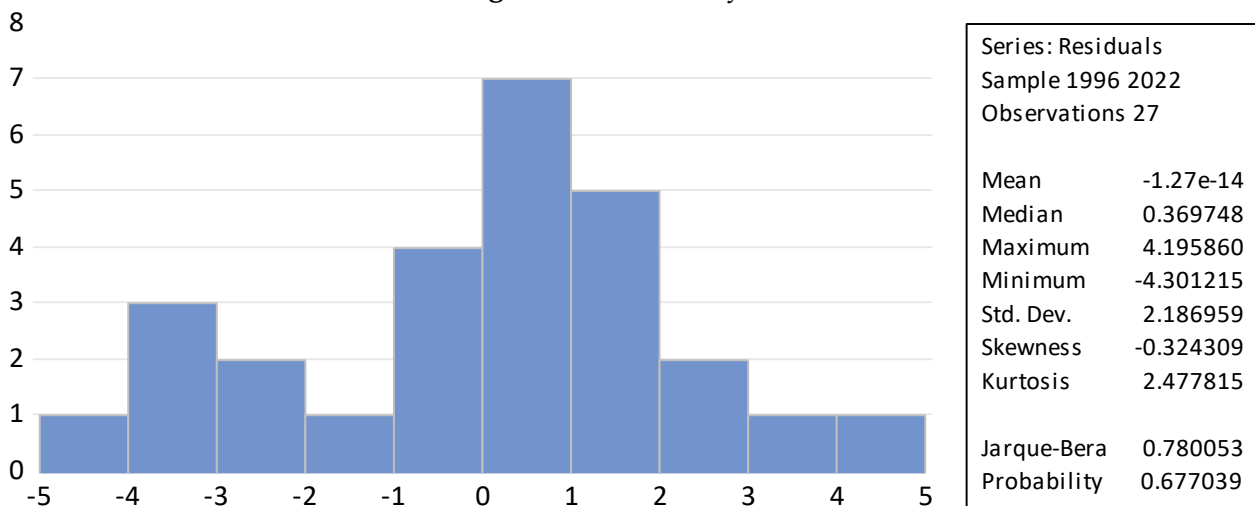
Similarly, the result also reveals that domestic credit to the private sector has a positive relationship with economic growth and it is statistically significant at the 5% significance level. The result implies that the decrease in the domestic credit by 1% would improve the economic growth by 8.2% in the long run. The above result is in line with most studies, including Agather Chisunga and Chibwe (2020) and Kin Sibanda (2014) on

domestic credit to private sector and economic growth relationship. However, Tarawa lie (2010) found a positive relationship between real interest rates and economic growth in Sierra Leone. The result further shows that inflation (INF) and real exchange rate (RER) were found to be positive determinants of economic growth in Sierra Leone. A 1 percent increase in inflation (INF) will increase economic growth by 0.9 percent, whilst a 1 percent increase in real exchange rate will also increase e by 0.3 percent in the long term.

4.7 Normality Test

The model also passed the normality test based on the Jarque-Bera value of 0.780053 and the probability of 0.677039 which is above the required normal 5 percent level. Hence, the residuals are normally distributed across observations as shown in the figure below,

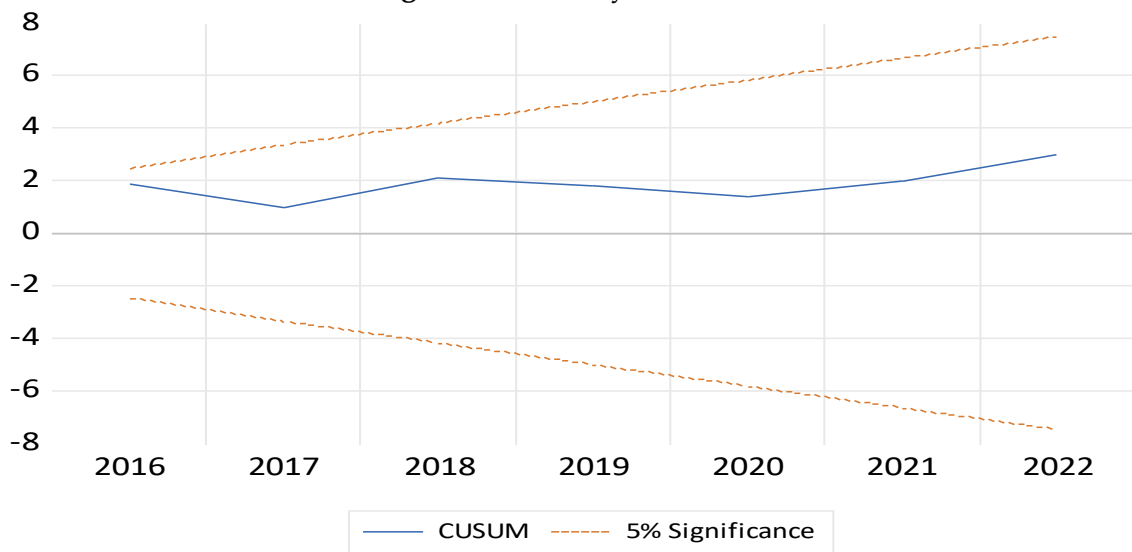
Figure 4.1: Normality Test



4.8 Stability Test

Pesaran and Pesaran (1997) suggests that the test for the stability for parameters using cumulative sum of recursive residuals (CUSUM) and cumulative sum of squares of recursive residuals (CUSUMSQ) plots be conducted after the model is estimated. This is done to get rid of any bias in the results of the estimated model due to unstable parameters. The results for CUSUM and the results depict that the plots of CUSUM for the estimated ARDL model shows are depicted in Figure 2 below. The absence of instability of the coefficients since the plots of all coefficients fall within the critical bounds at a 5 percent significance level. Therefore, the estimated coefficients in the model are stable over the study period.

Figure 4.2: Stability Test Result



5. Conclusion and Recommendations

This main objective of this study was to ascertain the effect that commercial bank lending has on Sierra Leone's economic growth. Commercial bank lending was proxied through private sector credit provision and the study used interest, real exchange rate, and inflation as additional independent variables. GDP was used to represent economic growth which was the dependent variable, and all the variables were logged for uniformity purposes. The ARDL technique was the model of choice used and the results of the regression showed that commercial bank lending had a direct effect on economic growth in Sierra Leone, whilst both inflation and interest rates had a negative effect on economic growth. The long-run result revealed that domestic credit to the private sector, interest rate, real exchange rate, and inflation are the main determinants of economic growth during the study period. With a coefficient of 0.72, the result showed that approximately 72 percent of the disequilibrium caused by the previous year's shocks converges back to the long-run equilibrium in the current year. Given that commercial bank lending positively influences economic growth in the short-run (SR), the state has the incentive to create an environment that is favorable for banks to give out more credit. One way of doing this is through decreasing corporate taxes as well as reducing the policy rate which is the benchmark lending rate. This lowers the operating costs of the banks which they then pass on to society through offering loans at lower rates hence this will have the ripple effect of stimulating growth. Interest rates adversely affect economic growth making it crucial to keep them at low. Loose monetary policy could be held to attain this as interest rates would be low resulting in cheaper credit and hence increased growth given the inverse relationship between the two variables.

Inflation equally hurts economic growth hence the state needs to reduce its levels. This could be achieved through fiscal discipline and exchange rate stability given that the country imports most commodities. Stable exchange rates would stop the country from importing inflation.

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