

Inflation and Growth Nexus: An Estimate of the Threshold Level of Inflation in Sierra Leone

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Abstract

This study investigates the relationship between inflation and economic growth, and determines the threshold level of inflation in Sierra Leone, using a non-linear model (quadratic function) with time-series data from 1980 to 2020. The study employs the Ordinary Least Squares estimation technique within the framework of Hendry's General-to-Specific approach to obtain a parsimonious result. The results of the unit root test confirm that all the variables are stationary in the first difference, i.e. they are integrated of order one or I(1), with an optimal lag length of two (2). The findings confirm the presence of a non-linear relationship in the inflation-growth nexus. The results reveal that the threshold level of inflation (optimal level of inflation) favourable for economic growth is 10.3 per cent. Thus, inflation is growth-enhancing in Sierra Leone when it is below 10.3 per cent, (i.e. ≤ 10.3 per cent). However, inflation above the threshold is detrimental to economic growth. The results also indicate that economic growth is largely influenced by investment, openness and dummy variable for war, with statistically significant coefficients. Specifically, the results confirm that both openness and investment have a positive impact on economic growth, whilst war dummy has a negative effect on economic growth. The results suggest that the regressors explain 86% of the variation in economic growth and the F-stat reveals that the regressors are jointly significant. The policy implication of this study is that the central bank should implement a prudent monetary policy aimed at maintaining inflation below the threshold level of 10.3 per cent. In this regard, the authorities should follow a rule-based approach to monetary policy implementation rather than discretion in order to contain inflation at the threshold level.

Keywords: inflation threshold, economic growth, Sierra Leone, Hendry's General-to-Specific Regression, annual data

JEL Classification: C22, E31, O47, O55

1. Introduction

In most developing economies, a major contention within the macroeconomic paradigm concerns the inflation-growth nexus. The primary objective of macroeconomic policies is to achieve high economic growth with low and stable inflation (Seleteng et al., 2013; Vinayagathan, 2013). The literature suggests that low and stable inflation enhances the development process of a country, boost economic activities, hence promote growth. Furthermore, low inflation promotes the efficient use of productive resources and provide an enabling environment for investment, with a positive impact on growth (Ahortor et al., 2011). On the other hand, high inflation may create uncertainty, with negative consequences on economic performance. An inflationary environment imposes welfare cost on society, discourage savings and investment by creating uncertainty about future prices, reduce the purchasing power of low-income households, affects a country's export competitiveness, through appreciation of the real exchange rate (due to relative prices) with a negative impact on the trade balance (Bawa and Abdullahi, 2012). Furthermore, high inflation affects consumption, investment and production decisions, as well as widens the gap between income groups by disrupting the social distribution of income, with severe impact on fixed income earners. Thus, maintaining moderate and stable inflation will ensure economic stability, boost economic growth and consequently improve people's quality of life.

The existence and nature of the link in the inflation-growth nexus have been the subject of considerable interest and debate (Munir and Mansur, 2009). The literature has produced conflicting results on the inflation-growth relationship.

Studies suggest that the effect of inflation on growth can be neutral, positive or negative depending on whether money is super-neutral (Sidrauski, 1967), substitute for capital (Mundell, 1965; Tobin, 1965) or complementary to capital (Stockman, 1981). The theoretical paradigm proffers different evidence on the inflation-growth relationship. The Keynesian theory, which is based on the standard aggregate demand (AD) and aggregate supply (AS) model, suggests that there is a stable long-run positive relationship between inflation and growth. However, the theory further posits that there is no short-run relationship between the two variables due to rigidities in prices and wages. On the other hand, the monetary doctrine suggests that there is a positive short-run relation between inflation and economic growth, but no long-run relationship due largely to the neutrality of monetary policy in the long run (Gokal and Hanif, 2004). The neo-classical theory remains inconclusive on the relationship between inflation and growth and indicates that different models could produce different results. Thus, proponents of the neo-classical doctrine have produced conflicting results. The findings by Tobin (1965) suggest a positive relationship between inflation and growth, due to the fact that money is a substitute for capital, whilst the empirical work of Stockman (1981) establishes a negative relationship between inflation and growth, given the complementary linkage between money and capital (see Gokal and Hanif, 2004). Yet the study by Sidrauski (1967) found no relationship between the two variables, given the super-neutral nature of money.

Most of the empirical literature reveals a non-linear relationship in the inflation-growth nexus, with a threshold level of inflation conducive for growth. Few studies suggest a single-digit inflation threshold level. For instance, Yabu and Kessy (2015) suggest a threshold level of 8.46 percent for East African Community (EAC) member states; while Younus (2012) establishes a threshold of 8.0 percent for Bangladesh. However, other studies establish a double-digit threshold level. The study by Quartey (2010), establishes an inflation threshold level of 22.2 percent for Ghana; whilst the findings by Rutayisire (2013) show 14.97 percent as the threshold level of inflation in Rwanda.

Sierra Leone is a member of the West African Monetary Zone (WAMZ) programme, whose aim is to establish a monetary union, with a single currency and a common central bank, similar to the European Monetary Union. The member states of WAMZ include: The Gambia, Guinea, Ghana, Liberia, Nigeria and Sierra Leone. Member states are required to attain a single-digit inflation rate as one of the convergence criteria. However, attainment of this criterion has been challenging for Sierra Leone, due largely to the chronic fiscal deficit (usually financed through central bank borrowing), excessive depreciation of the exchange rate, negative terms of trade, and structural problems including poor infrastructure such as road and electricity as well as hike in oil prices. The country is plagued with high inflationary episodes, which tend to undermine macroeconomic stability. Critical analysis of inflation dynamics as shown in Figure 1 indicates that the country experienced an inflationary spiral in the early 1990s as the inflation rate stood at 110.9 percent and 102.69 percent in 1990 and 1991, respectively. This period coincided with the start of the civil conflict in Sierra Leone, which affected the agriculture and transport sectors, and caused disruption to the production and supply of basic goods and services. However, inflationary pressure eased between 1993 and 1999, albeit high, with an average inflation rate of 25.7 percent during the period. The decline in inflation was partly due to an increase in the supply of goods on account of the bumper harvest as well the appreciation of the domestic currency.

Following the restoration of peace in 2000, the government implemented an economic recovery and rehabilitation programme with a view to sustain peace, promote economic recovery and maintain broad macroeconomic stability. The relative stability witnessed during this period, strengthened business confidence and consequently resulted in a significant slowdown in domestic prices, as the inflation rate averaged 2.23 percent between 2001-2003. Also, between 2008-2015, inflation remained in single digit, with an average inflation rate of 6.64, due largely to increased production in the agricultural sector, improved infrastructure in terms of road network and electricity, exchange rate stability and stable political environment, which heightened investors' confidence. However, between 2016-and 2020 the country recorded double-digit inflation rate, with an average inflation rate of 14.68 percent, mainly due to exchange rate depreciation and a hike in fuel prices.

Sierra Leone's growth trajectory showed that the country was in recession during the 1990s, with an average negative growth rate of -3.9 percent between 1991-1999, due largely to the political impasse exacerbated by the civil war and the military coup d'états, whose combined effects disrupted economic activities in the agriculture, education, health, transport and mining sectors. However, economic growth rebounded following the signing of the peace accord in 2000. Economic activities picked up in the mining and agricultural sectors and coupled with the implementation of the Resettlement, Reintegration and Rehabilitation (RRR) programme, the economy registered positive growth of 2.57 percent in 2001. Growth remained positive between 2003 and 2006, albeit decelerated slightly from 6.6 percent in 2004 to 4.2 percent in 2006. Also, between 2008 and 2013, economic activities picked up, and growth increased from 5.4 percent in 2008 to 20.7 percent in 2013. The impressive growth especially in 2012 and 2013 was on account of increased economic activity in the mining and services sectors, following the production and export of iron ore. However, economic growth decelerated in 2014 and 2015, due to the combined effect of a decline in the international price of iron ore and the prevalence of the Ebola viral disease. The economy rebounded thereafter, with an increase in

growth from 3.50 percent in 2018 to 5.3 percent in 2019. The economy, however, registered negative growth in 2020 due partly to the COVID 19 pandemic.

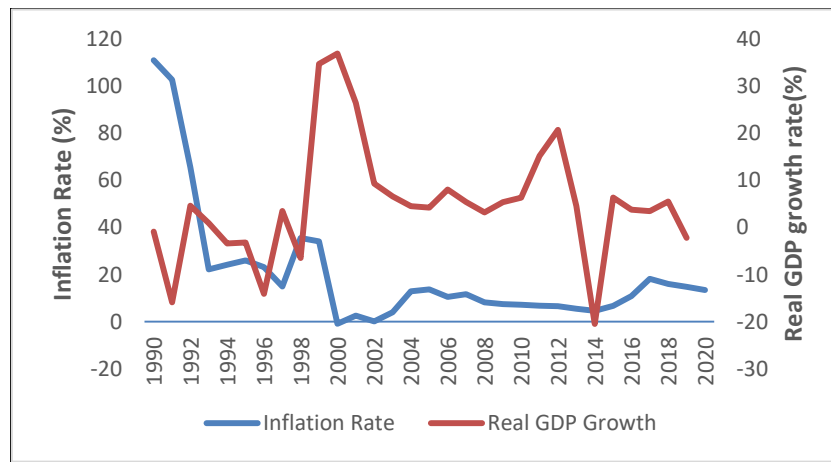


Figure 1. Inflation and Real GDP growth rates

Source: Authors compilation

The analysis shows that the relationship between inflation and economic growth remains a mirage in the Sierra Leone context. Thus, the major issue for policymakers is to determine the relationship between inflation and real GDP growth and establish the threshold level of inflation that is favourable for growth.

Against this background, the study intends to provide answers to these questions. The aim of this study is to investigate the relationship between inflation and economic growth and to determine the threshold level of inflation favourable for economic growth in Sierra Leone. This study adopts a non-linear model (quadratic regression model) and employs the Ordinary Least Square (OLS) technique within the framework of Hendry's General-to-Specific approach. This approach allows us to establish the turning point in the inflation-growth relationship. The rest of the paper is organized as follows: Section 2 presents the empirical literature on the inflation-growth nexus. Section 3 articulates the model specification, estimation techniques and data. Section 4 discusses the empirical findings, and section 5 gives the conclusion and policy recommendations.

2. Literature Review

The empirical literature is replete with studies on the inflation-growth nexus. However, most of these studies proffer mixed conclusions. For instance, Sanga and Gui-Diby (2020) examines the inflation-growth nexus in Franc zone currency union from 1970-2018 using cointegration method. The results suggest a threshold level of 5.6 percent. Also, Tenaw and Demeke (2020) investigates the threshold of inflation on economic growth in Ethiopia from 1975-2018 using a Two-regime Threshold Auto-regressive (TAR) model. The findings indicate a threshold level range between 9-10 percent. Azam and Khan (2020) re-evaluate the threshold effect of inflation on growth for 27 countries from 1975-2018, using the balanced panel model. The findings reveal a threshold value of 12.23 percent for developing economies and 5.36 percent for developed economies. Furthermore, Arcade (2017) examines nonlinearities in the inflation-growth nexus in Africa, using a dynamic panel threshold regression. The findings indicate a threshold level of 6.7 percent for the whole sample. Obi and Uzodigwe (2016) examine the inflation-output growth nexus in Nigeria using annual data from 1970 to 2015 and employ the conditional least square technique. The findings reveal a threshold level of 12.0 percent. Sivakiran and Prabhakar (2017) investigate the relationship between economic growth and inflation and establish the threshold level of inflation in India, with annual data from 1971 to 2012, using the Johansson estimation technique. The results show a threshold level of inflation of 6.5 per cent. Tung and Thanh (2015) also investigate the inflation-growth relationship for Vietnam, covering the period from 1986 to 2013. The findings show a threshold level of 7.0 percent.

Sumon and Miyan (2017) examine the relationship between inflation and economic growth in Bangladesh with annual data from 1986 to 2016, employing the Engle-Granger and Johansen co-integration tests. The findings confirm a positive relationship between inflation and economic growth, with a threshold inflation level of 8.0 percent. In a similar analysis, Ahmed and Mortaza (2005) investigate the relationship between inflation and economic growth for Bangladesh, using the Engle-Granger co-integration procedure and error correction model. The study finds a long-run negative relationship between inflation and economic growth, and a threshold inflation rate of 6 percent, above which

inflation adversely affects economic growth. Kremer et al. (2013) examine the inflation threshold and growth nexus for 124 industrialized and non-industrialized economies using the dynamic panel threshold model, with data from 1950 to 2004. The study confirms a threshold of 2.0 percent for industrialized countries and 17 percent for non-industrialized countries. Using data for US for the period 1960-2011, Ahmed and Zaid (2016) examine the inflation threshold level using the Non-Linear Least Square method. The results confirm a threshold level between 0 and 1.5 percent.

Lee and Wong (2005) estimate the threshold levels of inflation for Taiwan and Japan using quarterly data spanning from 1965 to 2002 for Taiwan and 1970 to 2001 for Japan. The results reveal a threshold level of 7.25 per cent for Taiwan and 9.66 per cent for Japan. Also, Mubarik (2005) estimates the threshold level of inflation for Pakistan, with annual data from 1973 to 2000, and employs the Granger Causality test. The results suggest a threshold level of inflation of 9.0 percent for Pakistan. Khan and Senhadji (2001) investigate the relationship between inflation and growth with panel data for 140 countries from 1960 to 1998, and employing the Non-linear Least Squares method. Their findings show an inflation threshold level of 1-3 percent for developed and 7-11 percent for developing countries. Vinayagathan (2013) investigates the relationship between inflation and economic growth for 32 Asian countries for the period between 1980 and 2009 using a dynamic panel threshold model. The results indicate a threshold value of 5.43 percent. Using data for Sierra Leone, Tarawalie (2011) examines the inflation-growth relationship with annual data from 1970 to 2008, and employs the conditional least square econometric technique and granger causality test. The findings confirm an inflation threshold level of 10 percent, above which inflation retards economic growth. However, this current study adopts a non-linear model, and employs the OLS estimation method within the framework of Hendry's General-to-Specific approach, with recent data from 1980 to 2020, which reveal a major departure from the work of Tarawalie (2011).

3. Methodology

The study adopts a growth model that expresses the link between economic growth and inflation. The model also includes other determinants of growth as control variables. The specification of the growth model and selection of variables is largely informed by the theoretical paradigm and empirical findings on the inflation-growth nexus. It is also based on the availability of data and the structure of the Sierra Leone economy, a small-open economy that witnessed severe civil war for over a decade. The growth model for the study is specified as follows:

$$Y_t = \alpha_0 + \beta_1 Inf_t + \beta_2 ER_t + \beta_3 Inv_t + \beta_4 Open_t + \beta_5 Tot_t + \lambda D + \varepsilon_t \quad (1)$$

Where, Y_t is the growth rate of the real gross domestic product; Inf_t is the inflation rate measured by the annual percentage change of the consumer price index; ER is real exchange rate; Inv_t is investment as a share of GDP; $Open_t$ is trade openness, defined as the ratio of the sum of imports and exports to GDP; Tot_t is terms of trade measured as the ratio of exports price index to imports price index, D is dummy variable that takes a value of 1 for war period (1991-2000) and zeroes elsewhere; α_0 is the intercept term, β_i ($i= 1....5$) is the slope coefficient of explanatory variables; t is the time period and ε_t is the error term that is identically and independently distributed with mean zero and constant variance, i.e. $\varepsilon_t \approx iid(0, \delta)$. All the variables are expressed in natural log and their coefficients are interpreted as elasticities.

To determine the threshold level of inflation, the study utilizes the quadratic regression model, which is a nonlinear model and is estimated as a second-degree polynomial. This approach is appropriate to estimate the threshold level or the turning point in the inflation-growth nexus, beyond which, inflation exerts a negative effect on economic growth. This estimation technique is akin to the empirical works of Clements et al (2005). The specification of the quadratic model is derived by adding the squared term of inflation into equation (1). Thus, the quadratic model is specified as follows:

$$Y_t = \alpha_0 + \beta_1 Inf_t + \beta_2 Inf_t^2 + \beta_3 ER_t + \beta_4 Inv_t + \beta_5 Open_t + \beta_6 Tot_t + \lambda D + \varepsilon_t \quad (2)$$

Where the squared term of inflation, Inf^2 has been included in the model, and other variables are as defined in equation 1. To investigate whether the hypothesis of non-linear effect of inflation on growth holds, the study proceeds to estimate equation (2) with a view to validate the significance of the coefficients of the linear and squared terms. From the model, it is expected that the coefficient of the linear term of inflation (inf) should be positive, which explains the impact of low inflation on output. However, the coefficient of the squared term of inflation (inf^2) is expected to be negative, symbolizing the severe impact of high inflation on growth. Once both coefficients are significantly different from zero, the study proceeds to find the peak of the quadratic function that identifies the turning point of inflation (threshold level) beyond which, inflation has a detrimental impact on growth. To calculate the threshold level of inflation, the study computes the partial derivative of equation (2) with respect to inflation and set to zero. That is;

$$\frac{\delta Y_t}{\delta Inf_t} = \beta_1 + 2\beta_2 Inf_t = 0 \tag{3}$$

Solving Equation (3) for Inf_t , the study obtains the optimal value of inflation (threshold level) above which the marginal impact of inflation becomes negative. That is:

$$Inf_t = \frac{-\beta_1}{2\beta_2} \tag{4}$$

To estimate equation (2), the study employs the ordinary least squares estimation technique and Hendry’s General-to-Specific approach to obtain a more parsimonious result, with better predictive ability. The study utilizes annual time series data for the period 1980 to 2020, which is adequate enough to conduct any meaningful study of such nature and also based on the availability of data. Data for the study were sourced from World Development Indicators, International Financial Statistics yearbook, World Economic outlook and Bank of Sierra Leone database.

4. Analysis of Empirical results

4.1 Stationarity Test

To determine the time-series properties of the variables, the study performs the unit root test using both the augmented Dickey-Fuller (ADF) and Phillip-Perron (PP) tests. The result of the unit root test is presented in Table 1. The results indicate that the null hypothesis cannot be rejected since the t-statistics of the ADF and PP tests are insignificant at both 1% and 5%, respectively. This implies the variables are non-stationary in levels. However, when the variables were differenced once and subjected to a unit root test, all the variables became stationary in their first difference, which confirms that all the variables are integrated of order one, i.e. I(1) variables. C

Table 1. Results of Unit Root Test

Variables	Augmented Dickey-Fuller		Phillips-Perron		Order of Integration
	Levels	1 st difference	Levels	1 st difference	
Y	-2.02	-4.520*	-1.429	-4.421*	I (1)
Inf	-1.338	5.231*	-1.391	-5.652*	I (1)
ER	-2.322	-3.449**	-1.541	-4.172*	I (1)
Inv	-1.381	-4.552*	-1.376	-4.891*	I (1)
Open	-2.003	-3.2*58*	-2.211	-4.932*	I (1)
Tot	-1.622	-6.441*	-1.223	-6.821*	I (1)

Note: ** = 1 per cent level of significance, with critical value = -3.62, and * = 5 per cent level of significance, with critical value = -2.94.

4.2 Lag Order Selection Criteria

Prior to the estimation of the quadratic model in equation (2), the study conducts the lag length selection criteria, to determine the optimal lag in the estimation of the model. The result as presented in Table 2, indicates a lag length of two (2) as the optimal lag for the estimation of the quadratic model. This lag length bodes well for this study, given the small sample size and the need to preserve the degrees of freedom.

Table 2. Optimal Lag Results

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-86.75	NA	3.91e-07	3.52	3.19	3.52
1	325.60	113.40	3.54e-10	-13.18	-11.81*	-12.25
2	479.85	125.21*	1.35e-15*	-14.63*	-10.66	-12.97*
3	496.64	46.72	2.36e-15	-14.50	-9.37	-12.78
4	549.68	49.75	2.75e-15	-14.46	-7.18	-11.8

Source: Authors compilation

4.3 Granger Causality Test

The study proceeds to perform the granger causality test in the inflation-growth relationship, within the context of the Toda-Yamamoto Granger Causality test. The rationale for the granger causality test is to determine if one time series is relevant in forecasting another. Thus, the granger causality is used to examine the linear causality in the inflation-growth relationship in Sierra Leone. Furthermore, the test is used to validate whether inflation is an exogenous variable in the growth model. Otherwise, it is possible that inflation may not be an exogenous variable in the inflation-growth model, which may lead to biased coefficient of inflation. Thus, the granger causality test will establish whether there is a uni-directional causality or bi-directional causality in the inflation-growth relationship. The granger causality test result is presented in Table 3. The result suggests a uni-directional causality from inflation to economic growth. The results confirm that inflation granger cause economic growth at the conventional level of significance, but

economic growth does not granger cause inflation. The results validate the choice of the dependent and independent variables in the inflation-growth model.

Table 3. Results of Granger Causality Test

Sample: 1980-2020			
Lags: 2			
Null hypothesis	Observation	F-statistics	P-value
Inflation does not granger cause Economic growth	41	4.2412	0.0389
Economic growth does not granger cause inflation		0.7642	0.3821

Source: Authors compilation

4.4 Quadratic Regression Results

Given the optimal lag of two (2), the study estimates the quadratic model specified in equation (2) using Hendry’s General- to-specific technique to obtain a more parsimonious regression result. The idea behind Hendry’s General-to-specific technique involves estimation of the general model and successively deleting insignificant independent variables to obtain a more parsimonious regression result. The study employs the ordinary least square approach for the estimation of the model. The result of the quadratic regression model is presented in Table 4.

Table 4. Quadratic (non-linear) regression results

Variable	Coefficient	Standard error	t-statistics	Prob
C	45.3601	10.2842	4.4107	0.0004
Inf	0.2236	0.0934	2.3940	0.0242
Inf ²	-1.0821	0.3231	-3.3491	0.0004
Inv	0.0598	0.0287	2.0836	0.0485
Inv ₋₁	1.0235	0.5029	2.0352	0.0500
Open ₋₁	0.1221	0.0452	2.7013	0.0093
D	-0.4120	0.1006	-4.0954	0.0007
R-squared	0.86			
Log-likelihood	65.56			
Durbin-Watson Stat	1.92			
Prob (F-statistics)	0.000			
Diagnostic test				
ARCH (1 1)	0.0781			
Ramsy RESET Test	1.8452			
Normality Test	0.0084			
Jarque Bera Test	2.9834			

Source: Authors computation

The study proceeds to estimate the threshold level of inflation. The first step in the estimation involves, taking the partial derivatives of the quadratic regression result with respect to inflation and set to zero. The second step is to solve for the optimal level of inflation (inf*), which gives the turning point.

The threshold inflation value is calculated as follows:

$$\frac{\delta Y}{\delta Inf} = 0.2236 - 2(1.0821)Inf = 0$$

$$0.2236 - 2.1642Inf = 0$$

$$0.2236 = 2.1642Inf$$

$$Inf = \frac{0.2236}{2.1642}$$

$$Inf^* = 10.3\%$$

The result provides the threshold value of inflation for Sierra Leone. The result posits that, economic growth is at its optimum when inflation reaches the threshold level of 10.3 percent. Thus, in the case of Sierra Leone, inflation is growth-enhancing when inflation is equal to or below 10.3 percent (i.e. ≤ 10.3 per cent), but beyond this threshold value, inflation is detrimental to economic growth. This finding is consistent with the results obtained by Khan and Senhadji (2001); Mubarak (2005); Tarawalie (2011); Singh (2010).

The result further indicates that investment, openness and dummy variable for war are significant determinants of economic growth in Sierra Leone. Specifically, the result reveals a positive relationship between trade openness and economic growth with a significant coefficient. The result indicates that a one percent increase in trade openness will increase economic growth by 0.1 percent. The openness of the economy leads to job creation, poverty reduction and

boosts economic growth. Trade openness provides new market opportunities for domestic firms, stronger productivity, and innovation through competition.

Furthermore, the result indicates that investment and its lag value have a positive impact on economic growth, with statistically significant coefficients. A percentage increase in investment will boost real GDP by 0.06 percent. The Literature suggests that an increase in investment will promote economic activities, and therefore increase economic growth. Furthermore, the investment will create capital accumulation, hence increasing real output. A similar result was obtained by Dollar (1992). Finally, the war dummy has a negative impact on growth. War periods are characterised by disruption to economic activities in key growth-enhancing sectors including agriculture, mining, services, education and health, with negative effect on output growth. The diagnostic results suggest that 86% of the variation in economic growth is explained by the regressors, as indicated by the R-squared, while the F-statistics reveal that the regressors are jointly significant.

5. Conclusion

The main objective of the study was to investigate the relationship between inflation and economic growth and to determine the threshold level of inflation conducive to economic growth in Sierra Leone, using a non-linear model (quadratic function) and time-series data from 1980 to 2020. The study employed the Ordinary Least Squares estimation technique and Hendry's General-to-Specific approach to obtain a parsimonious result.

The results of the unit root test confirmed that all the variables were stationary in their first difference, i.e. integrated of order one, I(1), with an optimal lag length of two (2). The empirical results revealed that, the threshold level of inflation (optimal level of inflation) conducive to economic growth is 10.3 percent. Thus, inflation is growth-enhancing in Sierra Leone when it is equal to or below 10.3 percent, (i.e. ≤ 10.3 percent). However, beyond the threshold level of 10.3 percent, inflation was found to have a negative impact on growth. The result further confirmed that, investment, openness and a dummy variable for war were the main determinants of economic growth in Sierra Leone, with statistically significant coefficients. Specifically, the result revealed that both openness and investment had a positive impact on economic growth, whilst a negative relationship was established between the war dummy and economic growth. With an R-squared value of 0.86, the result confirmed that 86% of the variations in economic growth are explained by the regressors, and the F-statistic reveals that the regressors are jointly significant. The policy implication of the study is that the central bank should implement a prudent monetary policy aimed at maintaining inflation below the threshold level of 10.3 percent, since the inflation rate above the threshold level will have a negative impact on economic growth. One option is to ensure that fiscal deficit financing is maintained within the statutory limit, in order to contain the growth of the money supply. Furthermore, to contain inflation at the threshold level, the authorities should follow a rule-based approach to monetary policy implementation rather than discretion.

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