Theoretically proposed policy instrument to address the negative effect of inflationary inflow into positive macroeconomic growth: The case study of the Sierra Leone economy

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Theoretically proposed policy instrument to address the negative effect of inflationary inflow into positive macroeconomic growth: The case study of the Sierra Leone economy

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ABSTRACT

The paper empirically examines the predictive factors of the inflationary rate observed to be the vector force, and a predominant shock of the macro-economy, with an extended impact on the rise and fall of the domestic currency value of the Sierra Leonean economy. The author thereby relied on a statistical tool of an *Exogenous uni-variate auto-regression integrated moving average*, to design a forecasting model that will probably estimate the future inflationary direction of the Sierra Leone economy, as well identify the degree of correlation effect of other independent forces of the market that has a significant impact on the domestic inflation. On that basis prescribe structural policy instrument, as a recommendation for a sustainable macroeconomic growth in a loose-out inflationary condition. The empirical study deduced that at an average price shift of (+/- 0.032) of the Leone currency with the US dollar at the open market exchange rate, thus causes a percentage point change of prices transmission to the endogenous economy, when all other factors remain constant.

Keywords: Inflation, Exchange rate, policy instrument, regression models, monetary policy

JEL Codes: E5, E17, E52, E58

A. INTRODUCTION AND BASIC HISTORY

The Currency called 'Leone' with the ISO code as (4217) and the symbol SLL at the Global Financial Market became an official currency of Sierra Leone in (1964) after the government decided to replace the British West African pound [BWF(P)] with the Leone at an exchange rate of 1:2 an implication of every Le 2 was equivalent to BWF(P) 1. Leading to the issuance of the Leone coins of Le 1, Le 5, Le 10 and Le 20, which carried the face of Sir Milton Augustus Strieby Margai, who served as a head of Government from (1954) to (1964). It became historically noted that the rate of inflation from (1964) up to (1995) was extremely high and seem to have attained some level of marginal escalation beginning from (1996) onwards. This permitted the Government to further issue new leone coins for Le 10, 20, 50 and 100. Around (2014), Le 500 coin was finally introduced. In (2010), the official Central Bank of Sierra Leone on behalf of the Government, introduced a new banknote ranging from Le1,000, Le 2,000, Le5,000 and Le 10,000 which is still in circulation for economic transactions up to date. Currently, the cent rated over Leon is (1:100) as its monetary unit. It is therefore on records that throughout the history of Sierra Leone, after the independence in (1961), it is only from (1996) onwards that the country could boast of major inflationary stable trends of endogenous character, which has been captured in the scope of statistical analysis and forecast. Analysis based on the author's perspective suggest that, an extensive scholarly writings of the financial-economic market of Sierra Leone started from the year (2000s). Prior to this date, most scholarly writings focused on the community mining programs and trade transactions across the Sierra Leone economy, examining its account of positive and negative impact. For instance, the submission of Ravichandran (2011) analyzed the major causes of economic disorder and high corruption rate within the Government. And concluded by elaborating on the oppression and marginalization of

individuals, both within and outside of tribal groups, deepening the poverty rate in Sierra Leone. Gottschalk, et.al, (2008) argued in favour of my earlier claim of lack of empirical data, and statistical capacity of the Sierra Leone economic market before the 2000s. And reported, data limitations arose because of the civil conflict, which introduced severe structural breaks in the dataset, thereby restricting the analysis of the economy to the post-conflict period. Beginning from the period of (2000s), Kovanen (2006) conducted a cross-section and time-series regression to establish an understanding of the inflation dynamics in Sierra Leone. His findings concluded that the market price changes were frequent due to uncertainty about inflation, as well as low value-added content to domestic products. His final remarks stated, the timing of re-pricing tends to be [State]-dependent unlike developed economies, which tends to be predetermined by the market. And suggested the reduction of monetary surprises and supply constraints would help reduce the fraction of items being re-priced, and as well the frequency of re-pricing, thus reducing the level and volatility of inflation, which was a consequential cost to the business community as in weak productive performance, and escalated circumstance of an entrenched poverty. Despite (Gottschalk et al, 2008) submission on the significant contributing factors of inflation in Sierra Leone, which was beyond the Central Bank's technical ability, and defined the condition as Institutional weaknesses and fiscal needs. He further acknowledged the fact that the Central Bank capital positioning was very weak with just a portfolio of Treasury bills and Treasury bearer bonds, very insufficient to conduct meaningful open market operations. Which he further argued, there was a situation, whereby the fiscal policy stance did conflict with the Central Bank reserve money target, in most times, with the Central Bank taking a mostly passive monetary policy stance, resulting in a frequent overshoot of it intermediate monetary target, a key contributive factor to persistent high inflation. (Gottschalk, Kalonji, and Miyajima, 2008)

posits, the fiscal expansion complicated the conduct of monetary policy, because of deficit financing through foreign grants and borrowing from the Central Bank to increase the money supply in the absence of adopting a monetary sterilization approach. Though, it was admitted that, the Central Bank had an alternative approach to resolve this problem as a significant contribution to inflation as at then, by engaging in an open market operations to sterilize the increase of the monetary supply through the engagement of the sales of foreign exchange, yet the historical evidences indicated, the Central Bank initially lacked the will to do so because of its primary objective, to build a comfortable reserve cover, and such engagement in open sales of foreign exchange could have led to undesirable exchange rate fluctuations against the domestic economy. Moving forward as a proactive Central Bank to resolve some of the inflationary causes within monetary policy stance, the first-ever memorandum of understanding was entered between the Central Bank and the Ministry of Finance in October (2006) to help in the conversion of part of the non-interest bearing, which was non-negotiable Government paper into Treasury bills to replenish the prescribed minimum paid-up capital of the Central Bank, as well develop the instrument to conduct open market operations. Fast forward to (2019), Jackson, Tamuke and Jabbie, (2019) argued through their paper that, the major key causes of inflation in the Sierra Leone economy were weak real sector activities, excessive fiscal expenditure by government, imbalance of payment activities and expansionary monetary policy, and recommended that real sector productivity is required to reduce the extent of importations. Then further recommends the adoption of interest rate payment on foreign account holders in Sierra Leone as well as digital innovation to minimize the high level of cash transactions in circulation within the economy. Upholding, such a fundamental theoretical understanding of the Sierra

Leonean economy, the next subtopic of the paper was to examine the general leading literature perspective on inflation and Economic growth.

B. LITERATURE REVIEW AND EMPIRICAL FOUNDATION

Inflation in the definition of economic taxonomy implies sustained increase in the general price level of goods and services of an economy, over a period of time. In respect to the *ex-post-facto* observation of countries in Sub-Saharan Africa as the focal study of the author, it became evident that after the independence, most of these countries are struggling on capping down their real inflationary rate of the domestic economy to be below (5%) as a mean average on annual basis, and to further sustain it. However, the Central Banks in these jurisdictions are mostly helpless to achieve the threshold target of inflationary control for desired economic growth. As a result the fundamental purpose of this project work, was to present a cogent response in a theoretical framework to address the problem of concern. Therefore, to begin with the empirical argument of this very paper towards the problem intended to solve, the author present relevant submissions on similar subject as in Inflation and Economic growth, relational study of macroeconomic management, by recounting on authoritative papers in this field of study.

(Carvalho et al, 2017) in their theoretical exposition, deduced that inflation is inversely correlated to the level of the technological content of the economy, human capital, and cyclical unemployment. And concluded, the degree of inflation persistence was directly related to terms of trade growth, with an observation that there was an inverse and low correlation between inflation persistence and economic development. Bruno and Easterly (1998), empirical findings suggested that economic growth and inflation are negatively related. Johnson (1967) argued,

there was no conclusive empirical evidence for either a positive or negative association of inflation to economic growth. (Wai, 1959: Bhatia, 1960: Dorrance 1963, 1966) None of this hotbed inflationist at the IMF then, with a series of studies in the IMF papers around the 1960s found little evidence of damage from inflation to an economy. (Pazos 1972; Galbis 1979) both submitted findings around the (1970s) of Latin America with a high rate of inflation, then, the evidence of inflationary damage was ambiguous. Fischer (1993) found negative associations between inflation and economic growth in a pooled cross-section, time-series regression for a large set of countries. Studies from (De Gregorio, 1992, 1993: Barro, 1995) had similar findings. (Levine and Zervos, 1993) showed that the cross-section correlation between inflation and growth was a rare occasion, and if one could find it at all, will depend on a couple of extreme inflation. On the account of existing literature reports and the established evidence of lack of correlation between Inflation and growth of an economy, a firsthand survey study to the real economy of Sierra Leone on this subject matter was carried out as a complimentary study to the empirical works of this paper. Prior to the industrial survey study towards the understanding the nature and dynamics of the domestic inflationary emergence of the Sierra Leonean economy, the author relied on the internal study work of Jackson et al (2019), which in their findings deduced that, the high inflationary economy of Sierra Leone is significantly a contributive factor to its high importation market of trade. With such a deductive submission, the author applied a non-probability sampling framework, in which, a total of one hundred and fifty (150) trade business owners were directly engaged with questionnaires, with one hundred and twenty-four (124) availing themselves as a first hand respondents to the posed-out questions, generally enquiring of the essence in engaging a particular trade business, it became evidenced (65)% indicated that, it was profitable to engage in importation trade business in Sierra Leone than any other kind of

business. With the detailed reason that, the open market is in price competition domestically, and to be able to survive and sustain within the trade commerce circle, hoping for a reasonable profit in the circumstance of the environment, then that is the best venture option. Details of the field survey reports is sectioned as appendix at the last page of the paper.

The author further ingrained his study on alternative authoritative body of extensive theoretical submissions, whose arguments established the correlation effects of inflation and economic growth, with a special empirical deduction on the negative impact of inflation to an economy. The paper referenced the study of Ashraf et al (2013) using an agent-based computational approach to show how inflation above (3%) worsens macroeconomic performance by disrupting the mechanism of exchange in a decentralized market economy. And further argued, why cross-country regressions may fail to detect a significant negative effect of trend inflation on output, even when such an effect exists in reality. Logue and Willett (1996) postulated, inflation and Economic growth had a positive association at certain high level variability, which such effect was not observed in highly industrialized countries. Therefore, in a holistic summary of the 'for' and 'against' debate on inflationary effects on economic growth, ranging for over five decades, evidences depicts that the old empirical designs were strongly engaging datasets analytics of a highly industrialized countries, and in a larger extent to the emerging economies of the Asian – tigers, who has significantly progressed in industrial capacity, unlike the continent of Africa, observed to still have a very weak industrialized muscles and in most cases referred as fragile economies. It thereby require an independent dataset of African origin for interrogation to establish a deductive evidence of inflation and Economic growth relation. Upon this very reason, a miniature empirical study of inflationary effect on economic growth, was conducted on Sierra Leone as a zone-out country within the continent of Africa, which the observational study

depicted that high level inflationary variability posed threat to economic growth by switching the economy naturally into a state of high threshold importation trading cycle for household consumption, weakening the production sector, which had the backbone of growth through the channel of employment, thereby raising the sovereign assets through exportation, which further had positive effects on domestic savings and investment growth. The author in a desire of advancing his study to incorporate the mechanism of adapting to an undesired effects of inflation into a positive macroeconomic management, argued of the relevant design of a policy instrument. And the character of the policy instrument is expected to conform to the theoretical tenet of Bastiat (1801-1850) as he submits, every economic action as in policy design does function like two faces of a coin, it has a seen effect(s), and unseen effect(s), either in a short term or long term. On this very reason, the beneficial economic policy of any government system in short term impact, in all expectation have a long term negative effect, to be an unseen phase of such decision and it corresponding action. Therefore, the policy instrument should have the ability to establish a probable 'trade-off' between the 'benefit' and the 'damaging effect', of both short term and long term of every economic activities.
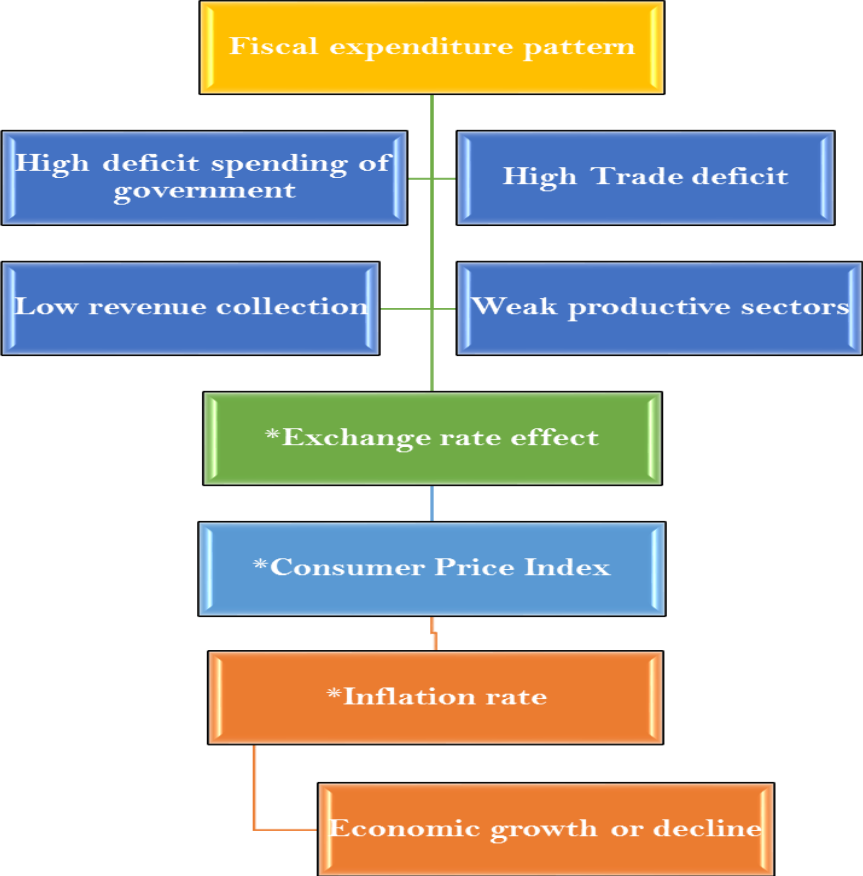
C. METHODOLOGY AND EMPIRICAL ANALYSIS

Considering the character that the policy instrument seek to assume based on earlier theoretical submission of this paper, then, how should it architectural design look like? For that very reason, the author resorted to 'process tracing' as submitted in the study of Beach (2017) as a method for tracing causal mechanisms using detailed, and within-case empirical analysis of how a causal process, plays out in an actual case. (Evera, 1997) argued, 'process tracing' is the cause-effect link that connects independent variables and outcomes unwrapped and divide them into smaller

steps; for the investigator to obtain the observable evidence of each step. In this very instance, an effort was made by the author to trace-out the causal flow effect of inflation in the SL-economy, and below is the outcome of the structural tracing model labeled as Fig.D1.

Fig. D1.

Inflation rate causal flow

```
                    ┌─────────────────────────────┐
                    │  Fiscal expenditure pattern │
                    └─────────────────────────────┘
    ┌──────────────────────────┐      ┌──────────────────────────┐
    │ High deficit spending of │      │    High Trade deficit    │
    │        government         │      └──────────────────────────┘
    └──────────────────────────┘
    ┌──────────────────────────┐      ┌──────────────────────────┐
    │  Low revenue collection  │      │  Weak productive sectors │
    └──────────────────────────┘      └──────────────────────────┘
                    ┌─────────────────────────────┐
                    │     *Exchange rate effect   │
                    └─────────────────────────────┘
                    ┌─────────────────────────────┐
                    │     *Consumer Price Index   │
                    └─────────────────────────────┘
                    ┌─────────────────────────────┐
                    │        *Inflation rate      │
                    └─────────────────────────────┘
                    ┌─────────────────────────────┐
                    │  Economic growth or decline │
                    └─────────────────────────────┘
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E.T. Senzu (2020). 'Process Tracing' chart

After the 'process tracing' to establish the actual causal factors of inflation in the macro-economy of Sierra Leone, which to large extent confirms some of the findings of Jackson et al (2019) causal factors of inflation in the Sierra Leone economy. it became relevant to rely on additional secondary data collection set, as the second phase of the paper empirical study to examine the relationship effects of the 'process tracing' variables as in inflationary rate, exchange rate, and consumer price index dataset from credible institutions like the Sierra Leone

Statistical Service, Central Bank and World Bank, in other to examine empirically, the extent of

correlation among the independents and dependent variable as well determine the statistical

relation within the variables relying on time series data from (2010) to (2019), and draw

inferences for theoretical deductions and propositions. Appreciating the conceptual positioning

and analytical focus of the paper, the author opted to rely on the 'exchange rate' from the open-

market-price of the Leone currency trading with the US-dollar, which was further used as the

Central Bank external reserve currency, to be the proxy of the data-point of (EXR). The next

source of solicited data, was taken from Sierra Leone Statistical Service to obtain a consumer

price index dataset, which became a proxy data point for (CPI). While the averagely computed

inflationary rate of the Sierra Leone economy by the World Bank was also used as a comparative

checks and confirmation. Below is the study on dataset of [EXR] among the three variables from

(2010) to (2019). Tabled as D2. With a graphical display as follows.

Table D2 [USD/SLL] |EXR|

Year	Highest Price	Lowest Price	Average Price
2019	9487.10	7039.36	8002.98
2018	8390.29	6304.77	7712.38
2017	7662.46	5472.60	7474.56
2016	5653.14	3928.39	4822.84
2015	4498.77	3443.18	4146.42
2014	4391.30	4219.03	4339.69
2013	4355.99	4272.28	4323.40
2012	4453.75	4310.86	4360.27
2011	4418.87	3101.74	3689.47
2010	4192.97	0.00	3085.69

E.T.Senzu (2020)

Fig.D/2

USD/SLL Average exchange rate graph
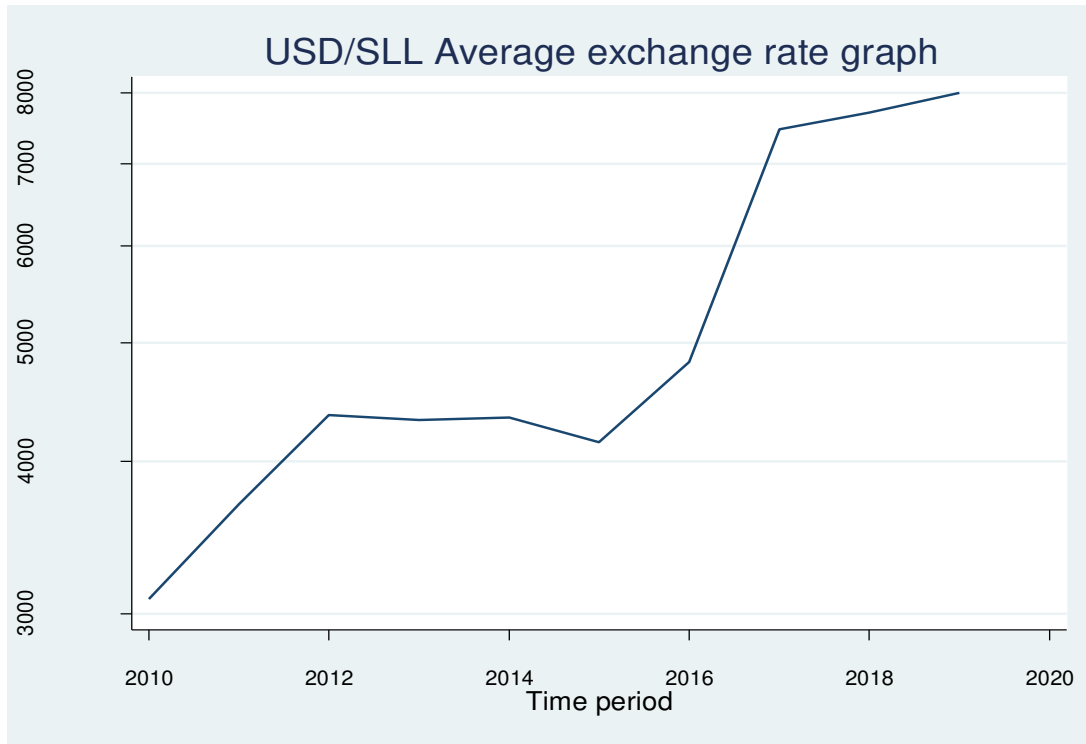
Even though there are high and low price data-points available per table D2, the researcher relied on the average data point assumed to express accurately the vector direction of the exchange rate annually, which is graphically plotted above as fig. (D/2).

The author further outsourced secondary data reports of the Consumer Price Index from the Sierra Leone Statistical Agency as earlier stated, and computed for the average Consumer Price Index below. The results is tabled, as a report from (2010) to (2019) in the Sierra Leone economy, presented as annual average data points for the last (10) years period, tabled as D3, with a label [CPI] as detailed below;

Table D3.

Years/Months	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
January	14.16	18.48	16.24	11.32	8.09	8.64	9.83	18.66	14.69	14.35
February	17.22	17.48	15.82	10.63	7.58	8.26	9.24	19.82	14.40	14.08
March	17.85	18.07	16.37	10.89	7.49	8.29	9.27	20.22	14.91	14.77
April	18.42	18.32	16.42	11.16	7.35	8.51	9.50	19.20	15.14	16.56
May	17.85	20.83	14.86	10.28	7.47	8.54	10.08	18.91	16.02	14.97
June	18.11	19.78	14.07	10.14	7.79	8.67	10.70	19.41	16.57	14.65
July	18.21	20.93	13.55	9.52	7.86	8.69	10.94	18.56	17.71	14.89
August	18.35	19.53	12.51	9.34	8.78	8.88	11.35	18.01	18.22	15.43
September	18.51	16.98	11.41	9.07	8.85	9.31	11.68	17.83	19.23	15.16
October	17.63	17.01	11.72	8.93	8.91	9.66	12.56	16.86	19.29	15.85
November	18.37	18.07	12.17	8.71	9.34	9.98	15.26	16.26	18.14	13.09
December	18.40	16.91	11.86	8.53	9.84	10.07	17.41	15.33	17.46	13.89
AVERAGE	**17.76**	**18.53**	**13.92**	**9.88**	**8.28**	**8.96**	**11.49**	**18.26**	**16.82**	**14.81**

E. T.Senzu (2020) Computed ACPI data

Fig.D/3

CPI Trajectory [2010-2019]
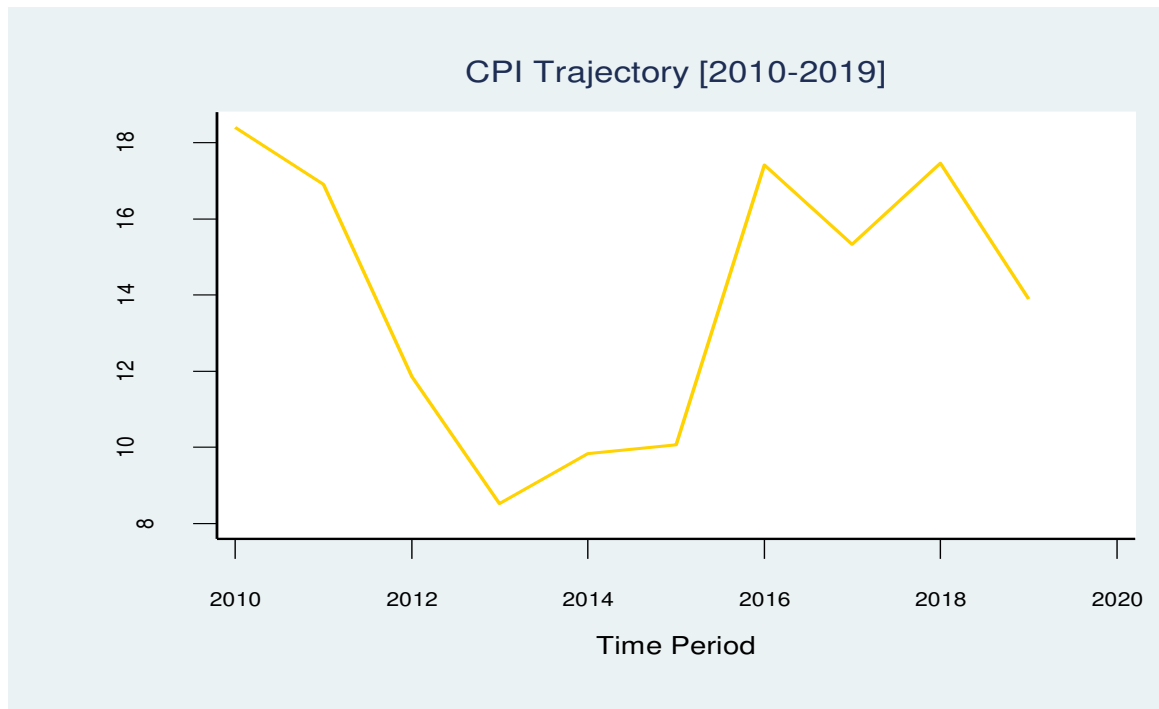
E.T.Senzu (2020)

The graph above indicates the trend of consumer price index within the Sierra Leone economy from (2010) to (2019). This suggests prices of consumer goods were very high in the early years up to (2010) and (2011), which began to decline in the latter part of (2011) up to (2014). Prices of the open-market started rising again up to (2017), with an observation of price decline once again beginning from (2018) downward to (2020). In the 'process-tracing' study, the author observed a situation of endogenous and exogenous forces, both having a positive effects on the rise of inflationary rate within the domestic market. However, the endogenous inflationary causatives were examined to be a very weak factor-push to price changes of the domestic market within the studied period, unlike the exogenous factors, which was dependents on the channel of the open-exchange-market rate of the Leone currency, trading with the US dollars in most cases.

On the account of such an observation, the author placed an effort to examine the extent of the correlation between the exchange rate effects and inflationary rate of SL-economy, to model out a forecasting estimate based on these two variables, as an inferential for a theoretical proposition of policy instrument towards monetary policy plans, and macro prudential management for growth.

For a successful relationship model of this two variables to be established, and examine the correlation effect among them, for the period of (10) years from (2010) to (2019), a time series *exogenous regression model* was designed below;

$$Y_t = \mu + \beta_1 X_t + \varepsilon_t \dots \dots \dots \dots \dots \dots Eq.\,1$$

$Y_t \dots$ *Average Inflation rate |AINF| representing the dependent variable*

$\mu \dots\dots Residual\ of\ the\ regression$

$\beta_1 \dots\dots First\ coefficient$

$X_t \dots\dots Average\ exchange\ rate\ \left(\dfrac{USD}{SLL}\right) |AEXR| representing\ a\ independent\ variable\ within\ the\ equation$

$\varepsilon_t \dots\dots Regressional\ error$

$\varepsilon_t \dots\dots the\ error\ term\ from\ autocorrelation\ in\ error$

$$|AINF|_t = \mu + \beta_1 |AEXR|_t + \varepsilon_t \dots \dots \dots Eq.\,1-2$$

Auto-correlation in regression model: the model was designed in a univariate series because it was observed that the |ACPI |and |AEXER| as chosen independent variables for multivariate modeling were experiencing significant effect of *multi-collinearity*, which the computed dataset is presented as evidence at the subsequent page. Therefore, the author has to rely on |AEXR| to

represent both effects as the best statistical option for the development of the *uni-variate*

regression model as below;

$$|AINF(p)|_t = \mu + \beta_p \sum_{i=(t-p)}^{n=p} |AEXR| + \mathcal{E}_t \dots \dots \dots \dots . Eq.3$$

Auto-correlation in error model:

$$|\mathcal{E}(q)|_t = \theta_1 \varepsilon_{t-q} + \varepsilon_t \dots \dots \dots \dots \dots .. Eq.4$$

Finally, inflation data was outsourced from the World Bank inflation report of Sierra Leone

within the same time frame (2010-2019), which is tabled as 'D4'.

YEARS	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
INFL. REPORT %	7.19	6.79	6.59	5.52	4.65	6.69	10.88	18.22	16.86	13.63

E.T. Senzu(2020) World Bank Inflation report of SL

Understanding the sensitivity nature of the variables, which the author was dealing with, as

outlined below;

1. Average Exchange rate |AEXR|

2. Average Consumer Price Index |ACPI| both as independent variables and

3. Average Inflation rate |AINF.| as dependent variable. His next effort was to obtain *stationarity*

through differencing $\dfrac{\delta y}{\delta x}$ because the above graphs as depicted in Fig.D/2 , D/3 and data of

table D4 shows trends confirming unit roots presence.

Below is the data graph of first differencing of variables to attain *stationarity* labeled below as Fig D/5

Fig.D/5

Graphical expository of stationarity in variables

Legend: D1.INFL, D1.ACPI, D1.AEXR(db)
X-axis: Time period (2009, 2011, 2013, 2015, 2017, 2019)
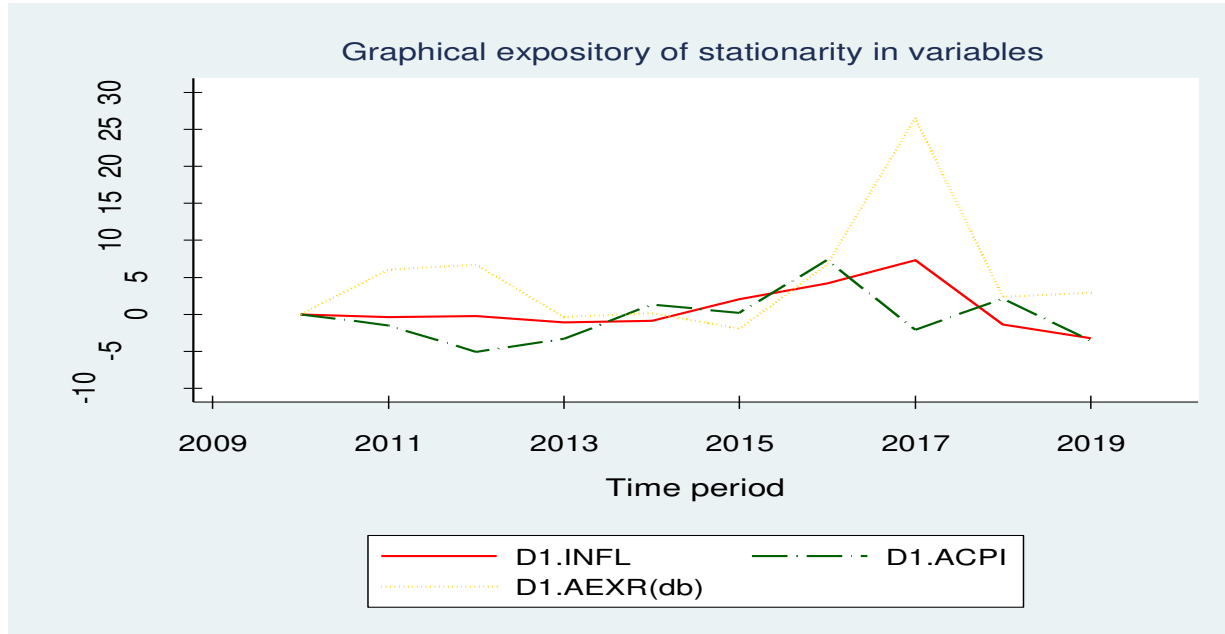
E. T. Senzu (2020)

After obtaining *stationarity* to the variables dataset, which the author relied upon for analytical study, various estimates and diagnostics checking's were further conducted using STATA 14 version with the observational reports outlined below under brief explanations.

I. First Observation report computed between |D1.AEXR| and |D1.ACPI|;

Source	SS	df	MS			
				Number of obs	=	10
				F(1, 8)	=	0.11
Model	1.534982	1	1.534982	Prob > F	=	0.7496
Residual	112.495311	8	14.0619139	R-squared	=	0.0135
				Adj R-squared	=	-0.1099
Total	114.030293	9	12.6700326	Root MSE	=	3.7499

d1acpi	Coef.	Std. Err.	t	P>|t|	Beta
d1aexr	-0.001	0.002	-0.33	0.750	-0.116
_cons	-0.204	1.402	-0.15	0.888	.

During the empirical study, we observed the likely *collinearity* between the open-exchange-rate market data collected on Leone currency and US dollar, from a credible data management on open-exchange-rate of currencies, based in the UK, then continue the secondary data collection of Consumer price index from Sierra Leone statistical services based in Freetown and subjected it to analytical diagnostic above. The findings suggest that there was an existence of correlation effect but minimal at a rate of (0.01), however, the low value of the standard error estimate at the range of (0.0-1.4) was a strong signal of *collinearity* through its residual. Furthermore, the T-test at the range of (-0.2 to -0.3) at a confidence interval of 95% confirms there was a significant similarity among the chosen variables. Finally, the high probability condition (0.75 -0.89) of the finding was a piece of strong evidence to resolve the situation of *collinearity* status of the variables, acknowledging the vector direction of information flow among these two variables, hence, resulted in depending on the exchange rate as the critical variable to rely upon to build the *univariate model* in other to estimate and forecast inflation in SL-economy, elaborated above as Equation-(3).

II. Second Observational report computed |D1.AINF| and |D1.AEXR|

Source	SS	df	MS		Number of obs	=	10
					$F(1, 8)$	=	10.32
Model	48.3445639	1	48.3445639		Prob > F	=	0.0124
Residual	37.4856789	8	4.68570986		R-squared	=	0.5633
					Adj R-squared	=	0.5087
Total	85.8302428	9	9.53669364		Root MSE	=	2.1647

d1infl	Coef.	Std. Err.	t	P>|t|	Beta
d1aexr	0.003	0.001	3.212	0.012	0.751
_cons	-0.744	0.810	-0.919	0.385	.

From the empirical analysis, the coefficient determination (R-square) was (0.6) suggesting a 60% quality of the regression model based on the exchange rate of Sierra Leone to predict its inflationary rate. The Beta coefficient of the regression was (0.75) about 75% strong signal of an independent variable, with a greater effect on the dependent variable. The observed standard deviation error of the regression was (0.001), which is a signal of the independent variable quality to estimate the dependent variable. In respect to the diagnostics above, the auto-correlation of the regression model with first-degree freedom holds about (48.34)% of the information in the prediction of the dependent variable, which is the inflation and the additional residual as the auto-correlation error model at the 8th degree of freedom, holds about (37.49)% of information to predict the dependent variable. In the fusion of both structural models, the entire series is expected to hold about (85.83) % of information reliable to the prediction of inflation in the Sierra Leone economy with only (14.17) % as unaccounted information within the structural system of the macro-economy. This suggests the quality nature of the model for inflation forecast of SL-economy, which such equation model is outlined below as (Eq.5)

ARIMA (1,1,8) : As a forecasting model equation, it holds the assumption that the dataset used for the model was 'contiguous'. The model below is qualified as dynamic, relevant to Sierra Leonean economic system prediction at *caeteris paribus.*

$$|INF|_t = [\mu + \varepsilon_t + \beta_1 |EXR|_t] + \left[\phi_8 \sum_{i=(t-8)}^{n=8} |\varepsilon| + \varepsilon_t\right] \ldots \ldots Eq.5$$

On the basis if equation (Eq.5), grant a fundamental procedure to observe the open-market performance of the Sierra Leone economy to formulate an inflationary policy instrument in a structure and condition to satisfy a macro prudential management of the system. As a result, the

author proceeded to offer recommendation of policy instrument, effective for the economy. Van Nispan (2011) defined policy instruments as a means of government intervention in market imperfections or, in a broader perspective to the society in other to accomplish goals or to solve problems. And concluded, policy instrument comes not in isolation, but is part of the intervention theory in tackling policy problems. The instrument becomes one of the variables in a contextual approach that takes policy implementation at a point of departure. Hood & Halen (2007) made the first distinction between policy instruments, which considers one part of the policy instruments for collection of information and classified it as detectors, and the second instrument directed to influence development in society, thereby classified it as effectors, by which the present conjecture tone of the paper uphold-on to the latter, which is the effector's dimension of policy instrument.

Empirically, the model deduces that the major exogenous causal effect of inflation in the Sierra Leone economy, is its *open-market-exchange rate*, which it predicts in accuracy over (85) % of the inflationary conditions within the macro-economy. Therefore, in other to formulate a policy instrument capable to cap the *open-market exchange rate* between the Leone currency and the US-dollar, on the basis of empirical deduction, the following theoretical principle was required to be uphold within the Sierra Leone system, that is the necessity to dominate the domestic economy with 'Cavernous Entrepreneurial' system complimented with a regulated 'Shallow Entrepreneurial' system.

How do a system initiate 'Cavernous Entrepreneurial' Economy? The [State] is required to engage in a deliberate policy implementation programmes that attract 'Agencies' and 'Agents' that are highly skilled, productively focus to embark on initiatives that contribute significantly to the 'GDP' and 'GNI' growth to the economy in medium and long term, targeting the relevant

sectors of the economy that needs industrial revolution, in other to ground the structure of the domestic production. It should be a localized share-holder driven Enterprises, with a [State] protection devoid of political influence, but efficient in private management initiatives. Based on the above character prescription of proposed Enterprises, then, it success in statutory protection, as in the Enterprise legal existence should be grounded in Public-Private Partnership (PPP), but upholding a statutory clauses that shield it operational independence from negative political infringes.

The 'Shallow Entrepreneurial' Economy is presented in this paper as an economy that promote the vigorous growth in 'Commerce Industry' in most cases are 'importation' based driven. This nature of economy in fragile settings require a supervisory task force to analyze it growth curve and dynamics on regular bases for appropriate policy regulation to be in tune to the holistic policy objective within the fiscal-monetary framework, and towards sustainable economic growth.

INFLATIONARY RATE
POLICY INSTRUMENT FRAME WORK

Policy Instrument (Options)	Seen Effects [*Both Short and long term goals*]: Positive initiative for macroeconomic growth	Unseen effect [*Short term goals*]: Negative occurrence per decisional effects	[*Cautions*] and [*Conditions*] for Policy effectiveness towards sustainable macroeconomic growth
Allow *high* exchange rate of USD against the Leone currency *within a threshold boundary*	1. Develop a structured and responsive [*Chamber of Commerce*] for importation and distribution. 2. Initiate Exports promotion programs for essential production, which holds a comparative advantage to the Sierra Leone economy under a structured *Chamber of Industry* 3. Introduction of *innovative taxation programme* as a major source of government revenue with a controlled conditions as a *sub-policy program* to avoid 'uncontained' consumer price hikes at the open domestic market.	I. *High* inflationary rate at a capped level II. *A* weak purchasing power of the Leone currency within a *bandwidth limit*	1. All the initiatives should be monitored and coordinated by government assigned ministry, herein as (Ministry of Finance & Economic Planning). 2. The *Chamber of Commerce of import* and the *Industrial exports production* activities should coordinate with the proactive *University faculties* as a mandate to support in the *intellectual framework design of labour forces* towards public-private partnership. Furthermore, productive investment initiatives, *should be private sector led* but *transparently regulated by government agency* as a welfare [State].

| Striving for a *low* inflationary rate of the Economy | 1. Initiative to cut-down importation business to *"essential goods importation",* while interventional efforts of government is initiated in favour of exportation trade initiatives through *Export investment and promotion programs,* with a high focus to the empowerment of a *Chamber of Industry* for *essential goods and services*.

2. Innovative *tax incentive* programs for competitive exportation ventures with significant *impact on GDP and GNI.*

3. Government should be discipline to deficit spending and set a *cap on percentage of excess deficit* spending annually, below 3% as a precise sub-policy program recommendation. | I. *Low* inflation rate

II. *Strong and quality purchasing power* of Leone currency and *parity* at the open exchange market. | The ultimate focus of government should be an enabling environment *towards innovative investment programs and dynamic credit lending scheme for private sector* towards production, as well in exportation drives, as submitted by *Senzu (2019/2020) on dynamic credit lending effective to enterprises in fragile economy* |

E.T.Senzu,(2020), Policy instrument framework

F. FINDINGS AND CONCLUSIONS

It became evident throughout the study of the macro economic performance of Sierra Leone, that the underlying vector force that defines the economic growth is strongly dependents on the inflationary rate, when all the necessary productive indicators of the economy were hold on constant. And the channel it uses to transmit to the domestic economy is the open-market-exchange rate of the Leone currency to the US-dollar in most cases, such that at an average shift of the Leone price at the open market peg around (+/- 0.032) to the USD has a leading significant effects on the domestic economic growth performance, correspondently.

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[APPENDIX]

- Used questionnaire for the *Survey Study* is outlined below;

1. What kind of Trade Business are you involved?
2. What is the underlying reason towards your choice of trade patronization?

[Table S1.]

Types of Traders	Actual number of Respondents from Sample population	Percentage of Respondents from Sample population
Export Traders	25	16.7%
Import Traders	56	37.3%
Retail Traders	43	28.7%
Non-Respondents	26	17.3%
Total	150	100

E.T. Senzu (2020), survey study reports

[Table S2.]

Types of Traders	Responses Categorization	Frequency in Percentage
Export Traders	Government Supports	16%
Import Traders	Reasonably Profitable	36%
Retail Traders	Profitable with less capital	29%
Non-Respondents	No Response	19%
Total		100

E. T. Senzu (2020), survey study reports