MONEY SUPPLY, INFLATION AND ECONOMIC GROWTH IN SIERRA LEONE

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Abstract- **The study assessed the effect of money supply, inflation and economic growth in Sierra Leone. The study adopted the Causal research design. Both the qualitative and quantitative data were sourced. A regression analysis technique was used in analysing the collected data.**
The coefficient of 0.243590 indicates that there is a positive relationship between broad money growth rate and GDP per capita growth. However, the p-value of 0.3012 suggests that this relationship is not statistically significant. In other words, the data does not provide enough evidence to conclude that changes in broad money growth rate have a meaningful impact on GDP per capita growth in Sierra Leone.
The negative coefficient of -0.370927 indicates that there is a negative relationship between the GDP deflator-based inflation and GDP per capita growth. This coefficient is statistically significant, as indicated by the p-value of -0.0066. This implies that increases in inflation, as   measured by the GDP deflator, are associated with decreases in GDP per capita growth in Sierra Leone. The study recommends that Sierra Leone should continue to diversify its economic policies and strategies. Economic growth is a multifaceted process influenced by various factors, including monetary policies, fiscal policies, political stability, infrastructure development, and global economic conditions.

1.1 Introduction

Global macroeconomic stability is seriously threatened by inflation, which is defined as an ongoing increase in the general level of prices in the economy. It is generally acknowledged that maintaining price stability is essential to long-term growth and development and that it should be a priority for every economy (Irfan & Ume, 2011). One explanation for this is that the economy may experience social and economic shocks as a result of the high variable inflation rate's detrimental impact on savings, investment, and price stability. Therefore, rather than being primarily concerned with output or unemployment, monetary policy will essentially be confined to the goal of low inflation. The fundamental requirement for economic growth and price stability is an adequate money supply. Analyzing the connection between the money supply, economic growth, and inflation will be useful for us to successfully adjust the monetary policy and prevent prices from excessively growing because the CPI swings significantly in Sierra Leone in recent months.

Since its establishment, the Central Bank of Sierra Leone has continued to fulfill the traditional role expected of a central bank, which is to regulate the stock of money in a way that advances social welfare. It views the money supply in two ways: narrow and broad money, or M1 and M2. Prior to 1988, the public sector's growing influence in the economy, the oil industry's dominance, and an excessive reliance on imports all characterized the economic climate that shaped monetary policy (Isiaka, 2011). The most widely used tool in monetary policy was the publication of credit guidelines, which led to the sectoral allocation of bank credit in order to boost the productive sectors and reduce inflationary pressures. Interest rates were set at relatively low levels primarily to encourage investment and economic growth. Occasionally, special deposits had to be made in order to decrease the banks' free reserves and ability to extend credit.

Considering the conflicting findings of the empirical studies, it is clear that more research is needed to fully understand the relationship between money supply, inflation and economic growth. These and other considerations led to the creation of this study, which by highlighting the effects of money supply and inflation on economic growth, adds to the body of knowledge. Therefore, it offers appropriate policy ramifications intended to reduce the country's negative impact of inflation.

Researchers have worked hard to understand the causal connection between inflation, money supply, and economic growth. The precise relationship between inflation and the money supply as well as the relationship between inflation and economic growth are not, however, fully understood by the empirical literatures currently in existence. Despite the fact that there is a significant positive association between the money supply and inflation, there is debate over the direction of causality. Examining the causal links between inflation and the money supply as well as between inflation and economic growth in Sierra Leone is the goal of this study.

Given the aforementioned, the study's objective is to empirically examine the effects of inflation and money supply on economic development in Sierra Leone from 2000 to 2020. The present study, in contrast to other studies, measures the effects of the monetary policy variables (money supply and inflation) in a single framework, rather than focusing on the influence of either the money supply on economic growth or the inflation on economic growth in Sierra Leone. In addition, the majority of past

empirical researches were primarily concerned with short-term effects, underestimating the possibility that variables' long-term behavior could completely differ from their short-term behavior.

As a result, it is difficult to attain the right combination of monetary aggregate and interest rate required for the intended level of inflation that fuels growth (Irfan & Ume, 2011). This limitation is addressed in the current analysis by looking at both the short- and long-term relationships between monetary policy indicators and economic growth. In addition, works on these macroeconomic variables conducted in Sierra Leone do not consider causal relationships among the variables of interest. As a result, conclusions drawn under these circumstances have a long-term negative impact on the implementation of policies and their results (Omoke, 2010).

2.0 Literature review
2.1 Conceptual framework
2.1.1 Concept of monetary policy in Sierra Leone
Since the Bank of Sierra Leone was established on August 4, 1964, it has had the sole authority to develop and carry out monetary policy using market-based instruments, as specified in the Bank of Sierra Leone Act. The primary goal has been to ensure price stability in order to resist inflationary pressures and mobilize reserves for activities involving foreign exchange. The Bank accomplishes this goal by preserving and controlling the expansion of net domestic assets. However, the IMF's and the World Bank's reform initiatives were planned for the 1980s since direct tools were a crucial route for ensuring the Bank's clear purpose. Due in part to restrictions on the expansion of financial institutions' balance sheets, this resulted in contractions in the growth of money and credit by the Bank. The consequence was that the BSL was the only entity with the authority to determine interest rates on government asset instruments. Furthermore, deposit-taking financial institutions were permitted to keep not less than 40% of the total deposit's liabilities in the form of reserve requirements as a reserve asset of the BSL.

Another effective tool of monetary policy was moral persuasion, in which the governor of the central bank could readily ask the managing directors of commercial banks to assist the bank in fulfilling its statutory mandate. The Central Bank accomplishes this by engaging with these Managing Directors on a regular basis (Mansaray & Swaray, 2013). However, during the Structural Adjustment Programmes (SAPs) era in the second half of the 1980s, stringent monetary policy measures were put in place along with monetary reforms aimed at reducing inflationary pressures and improving the Bank's reserve position. This had the effect of eliminating administrative controls over interest rate and exchange rate ceilings, which were immediately replaced by indirect controls aimed at instruments related to the market. As a result, in 1992, the Bank established a tender mechanism with the stated goal of selling 91-day Treasury Bills to the financial institutions.

In the second half of 1992, the previously separate bank and non-bank financial markets for Treasury Bills were combined, giving rise to open market operations (OMO), which are now the major tool of the Bank's monetary policy in primary markets. This breakthrough resulted in the launching of the Treasury Bearer Bonds (TBB) program precisely one year after the launch of the One Year Obligation (OMO), which was the first government borrowing instrument designed exclusively for the non-bank public. A 33% interest rate was charged on the TBB when it was first issued in the first quarter of 1992 (Bangura, 2010). Despite the post-independence developments, the IMF and World Bank concluded that the majority of the anomalies that occurred during the implementation of monetary policy in low income countries, particularly in the 1980s and 1990s, were caused by vulnerabilities in the financial systems of the majority of least developed countries to global shocks. In order to prevent the country's financial sector from being affected by the global financial crisis, the IMF and World Bank developed the Financial System Assessment Programme (FSAP) in 1999. Its main goal was to evaluate the country's financial regulatory sector.

During this time, monetary policy was focused on establishing macroeconomic stability by reducing inflation and strengthening the position of the Central Bank's foreign reserves, which could cover at least three months' worth of imports. The Bank of Sierra Leone wanted to target growth in net domestic assets (NDAs) in order to manage growth in broad money in order to reduce inflationary pressures and strengthen external reserve balances. Treasury bill auctions held each week can be used as a tool for monetary policy to manage domestic liquidity in the banking system. To create short-term treasury bills that may be applied to the Bank's open market activities from the outstanding stock of ways and means advances. Although small, these choices had an impact on policy results as inflation increased slightly above the program aim and the program's 15% target for growth in broad money was not met. The program's aim of 9.5% of broad money for net credit to the government was not met. However, throughout this time, the Bank of Sierra Leone's net domestic assets expanded by 7% and credit to the private sector surged significantly by 13%. Additionally, the program's requirement that the Central Bank's reserve position should at least cover three months' worth of imports was not met. Under the IMF's Extended Credit Facility Programme, broad money growth between 2003 and 2004 reached 16% as opposed to the 7.2% target, while reserve money rose by 8.5% more than the programme's goal. In 2005, broad money growth increased even more, reaching 32.8% (Bank of Sierra Leone, 2002).

The program target of single digit inflation and a moderate increase in credit to the private sector are the goals of monetary policy in 2006 and 2007. This goal was not met as the inflation rate rose to 14.2% in 2006 before slightly declining to 13.8% in 2007. Food and gasoline price rises are to blame for the ongoing price increase. During this time, credit to the private sector expanded gradually to 7.9% (Bank of Sierra Leone, 2006). In order to improve the Bank of Sierra Leone's ability to conduct monetary policy operations, additional Le32.50 billion in noninterest-bearing marketable securities were converted into interest-bearing marketable securities in 2008. Since inflation rose to an all-time high of 17% during this time, the program's inflation target was once again missed, along with the goals for broad money growth and net domestic product. The global financial crisis occurred around this time, and it further worsened the already appalling macroeconomic fundamentals of the nation (Bank of Sierra Leone, 2006).

*Figure 1 **Trend Analysis Showing Inflation and Broad Money Supply Growth***
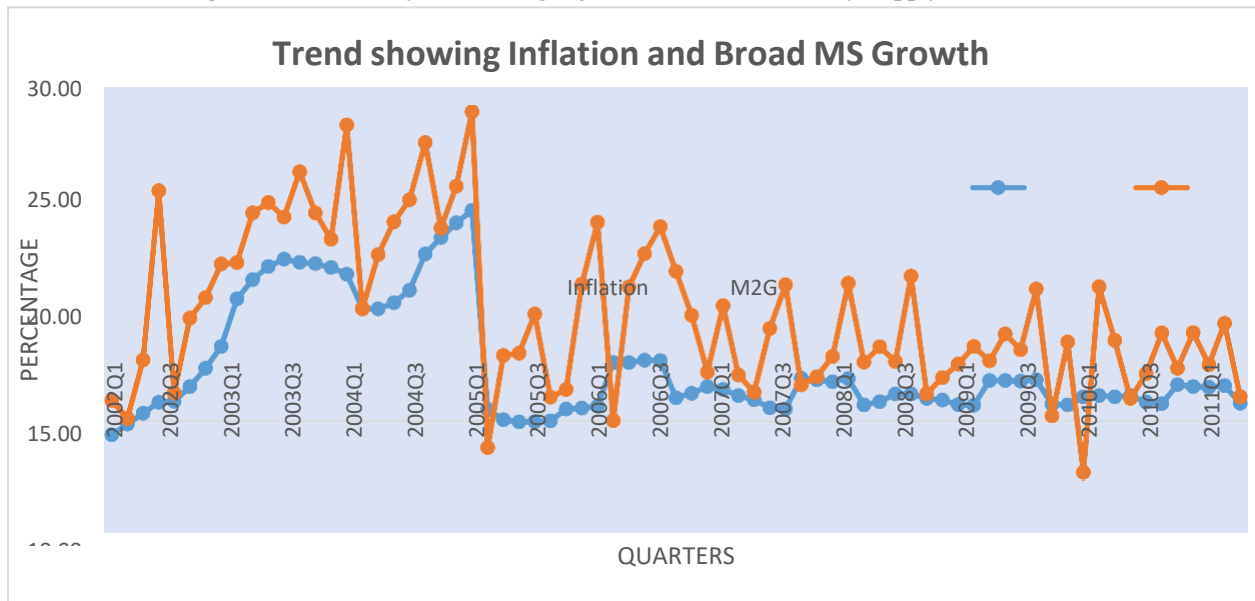
Source: Bank of Sierra Leone (2002-2020)

Figure 1 shows that broad money growth does not appear to follow inflation, suggesting that there is no clear and consistent relationship between the two variables. This makes it challenging to create a good monetary targeting strategy.

2.1.2 Concept of Money Supply, Inflation and Economic Growth

A nation's economy is shaped in large part by three interrelated ideas: the money supply, inflation, and economic growth. Policymakers, economists, and the general public all need to understand how these forces interact. The linkages, ramifications, and important factors relating to the money supply, inflation, and economic growth are explored in this conceptual study.

2.1.2.1 Money Supply

The total amount of money that is in circulation in an economy at any particular time is referred to as the "money supply." It encompasses a variety of types of money, including traditional forms of money like coins and bills as well as digital forms like bank deposits and electronic transfers. The money supply is influenced by the central bank, which has the power to issue money and control monetary policy, through procedures like open market operations, reserve requirements, and interest rates.

*Figure 2 **Money Supply***
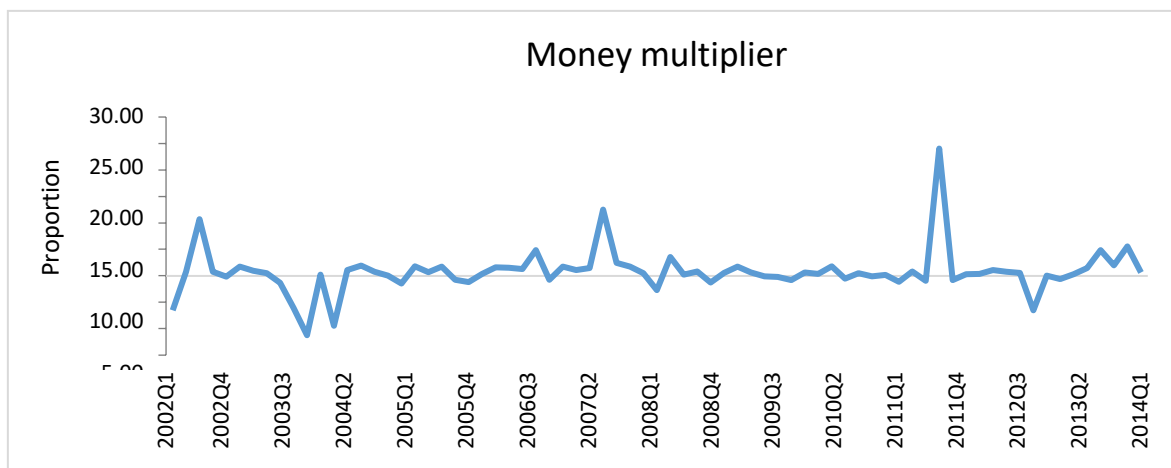
***Source: Bank of Sierra Leone (2002-2020)***

Figure 2 shows that the money multiplier is quite volatile. The BSL must therefore turn to an alternate monetary policy framework as a result of the money multiplier's ongoing instability and the non-tractable relationship between broad money expansion and prices.

2.1.2.2 Inflation

The overall rise in the cost of goods and services over an extended period of time within an economy is known as inflation. As more money is required to purchase the same amount of goods and services, the buying power of money is diminished. An economy is generally thought to benefit from moderate inflation since it promotes investment and consumption. High and unpredictably fluctuating inflation, however, can cause economic instabilities and distortions, as well as adversely affect people

with fixed incomes. Inflation, which is defined as the change in the consumer price index (CPI) by percentage, became a top worry for the government and policymakers in the middle of the 1970s. Numerous macroeconomic factors are expected to significantly change as a result of changes in the consumer price index, according to general consensus. It has been assumed that changes in fiscal policies, monetary growth, exchange rates, and perhaps the growth of real output move parallel to changes in prices.

*Figure 3 **Trend Analysis of Inflationary Period***
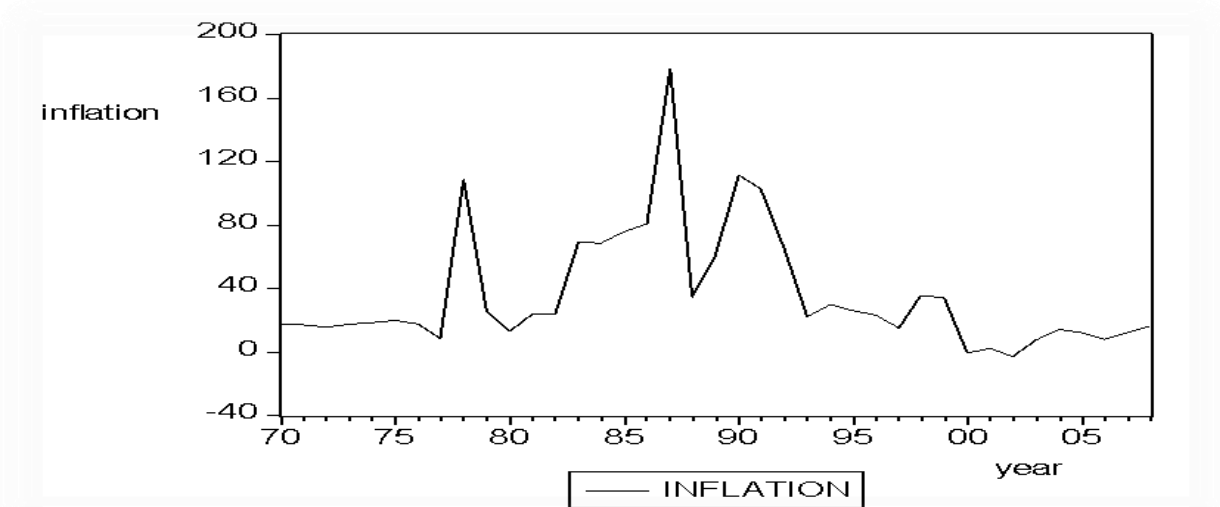
A plot of the inflation rate from 1970 to 2008 is shown in Figure 3. The graph demonstrates how low inflation was throughout the first ten years following independence. However, the economy began to experience periods of significant inflation following the shock of the 1979 oil price. This persisted over the course of the following two decades, during which time the economy registered the greatest inflation rate during the review period (i.e. the highest inflation rate of 179.2% was reported in 1987) prior to the civil turmoil. This time frame was accompanied by the second-highest budget deficit-to-GDP ratio of 14.5 percent over the previous ten years. Early 1990s witnessed fiscal deficit as a share of GDP in single digits and an average inflation rate of 5.1 percent, in contrast to the 1980s which had the greatest inflation rate and slowest economic growth (Essien, et al., 2007).

2.1.2.3 Economic Growth
Economic growth refers to as an increase in the production of goods and services in a country. It is frequently assessed using GDP, which represents the total cost of all products and services produced in a nation over a given time period. For policymakers, achieving sustainable economic growth is essential because it improves societal well-being through boosting living standards, employment prospects, and other factors.

*Figure 4 **Trend Analysis of Gross Domestic Product (GDP) in Sierra Leone***

The annual percentage growth of the GDP is shown in Fig. 4 above. GDP is a measurement of the value of economic outputs that considers price changes (also known as inflation or deflation). This adjustment represents the value of money as it is commonly calculated as total production and expressed in nominal GDP terms. GDP is essentially comprised of "consumer spending, industrial investments, an excess of exports over imports, and government spending."

2.2 Empirical literature review
2.2.1 To examine effect of money supply on economic growth in Sierra Leone
(Isiaka, et al., 2011) found that there   an insignificant long-run positive association between money supply and GDP after applying simple regression to analyze the link between money supply and economic growth in Nigeria for the nine years from 1995 to 2004. In contrast to their findings, (Amassona, et al., 2011) looked at the impact of Nigeria's money supply on a few macroeconomic variables. Annual data from 1986 to 2009 were used with a streamlined OLS, and the results showed that for the time period under consideration, there was an inverse association between the two variables. In order to examine how changes in the money supply affect economic growth in Nigeria, (Taiwo, 2011) utilized the Ordinary Least Square (OLS) estimate technique during the years 1970–2008. The findings showed that monetary aggregate injection has a favorable impact on economic growth while money stock removal had a negative effect on Nigeria's GDP.

(Hussain & Haque, 2017) used the vector error correction model (VECM) model to conduct research on the empirical examination of the relationship between Bangladesh's money supply and per capita GDP growth rate. They conclude that the growth rate is significantly influenced by the money supply. Other researchers have confirmed the same outcomes. Similar to (Chaitipa, et al., 2015), they used the Autoregressive Distribution Lag (ARDL) model to examine the impact of the money supply on economic growth for the Authorized Economic Operators (AEO) open region during the years 1995–2013. They discovered that money supply and economic expansion are related.

(Chude & Chude, 2016) used the ARDL model to study the relationship between general money supply and economic growth in Nigeria from 1987 to 2010. Their findings indicated a close connection between general money supply and GDP. Using the Johanson cointegration model as their econometric model, (Mohammad, et al., 2009) evaluated the empirical relationship between Pakistan's money supply, government spending, output, and price over the years 1977 to 2007. They discovered that there is a beneficial impact of money supply (m2) on economic growth.

2.2.2 To assess the impact of inflation on economic growth in Sierra Leone
(Mkhatshwa, et al., 2015)examine the impact of inflation on economic and agricultural growth in Swaziland from 1980 to 2013. According to the autoregressive distributed lag (ARDL) results, agricultural growth is positively correlated with Swaziland's growth whereas inflation is negatively correlated. While no causal association was discovered between any other variables, the causality test reveals a one-way relationship between the inflation rate and the expansion of the economy.

(Mamo, 2012) examined the impact of inflation on economic growth in 13 Sub-Saharan African (SSA) nations between 1969 and 2009. On variables like inflation, investment, population, and gross domestic product, panel regression is used in the study. The study demonstrates an inverse relationship between inflation and economic growth, and Granger causality demonstrates that a country's inflation rate can be used to forecast global growth rates.

In contrast to the majority of scholars' findings, (Bernard, 2010) contend that inflation is not one of the most important factors determining the nature of money. Furthermore, the findings imply that an interest rate shock permanently lowers money demand and supply while also reducing inflation and real output for the first four months. The monetary tightening has resulted in a considerable and long-lasting drop in headline inflation; as a result, Kenya's interest rate channel is active. According to the author, the repo rate is a hypothetically more valuable policy tool when used in conjunction with reserve funds. This was due to the fact that it is more intrinsically motivated than reserve money, adding another exogenous component.

Inflation threshold was determined by (Moroney, 2012) in the WAMZ cases of Ghana and Nigeria; non-linear (conditional least square approaches) were used in the analysis for 34 years, from 1975 to 2008. The outcome indicates a statistically significant positive relationship between inflation and economic growth in the two countries, but a causality test using lags reveals no relationship between the two variables in either country. The work of (Aminu & Anono, 2012), which carried out an empirical investigation into the impact of inflation on the expansion and development of the Nigerian economy, is comparable to this. The study's analysis of secondary annual data from 1973 to 2010 using the Cobb-Douglas Production function and ordinary least square approach led to the conclusion that inflation has a positive impact on economic growth.

An empirical study on the effect of inflation on economic growth over a 31-year period was conducted by (Osuala, et al., 2013). While the causality test indicates that there is no relationship between the two variables, the VAR results showed a statistically significant positive influence of inflation on economic growth in Nigeria. Similar to this study, Taiwo (a), (2011) used the ordinary least square (OLS) method and annual secondary data from 1981 to 2006 to examine the effects of investment and inflation on economic growth in Nigeria. The study's analysis of the relationship between inflation and GDP showed that as inflation rises, economic growth declines.

2.2.3 To assess policy recommendations of researchers on money supply, inflation and economic growth.
(Lee & Yu, 2021) conducted study on Money Supply, Inflation and Economic Growth in China: Using an ARDL Bounds Testing Approach. A significant policy recommendations variable revolves around the concept of money supply as a primary driver of inflation, and it suggests that raising interest rates can help alleviate inflationary pressures in China. The findings indicate that increases in the national income effectively meet the public's demand for goods and help alleviate inflation. These results serve as a valuable reminder for economic planners that exercising control over interest rates, money supply, and national output levels can play a crucial role in managing inflation. The outcomes of this research align with the principles of monetarism and provide valuable insights for the government in crafting prudent economic policies to curb inflation in China.

(Babatunde & Shuaibu, 2011) examined a monetary growth model for Nigeria, specifically investigating the presence of a substantial long-term relationship among money supply, capital stock, inflation, and economic growth within the period spanning from 1975 to 2008. They employed an error correction mechanism as part of the bounds testing approach to cointegration, within the framework of an autoregressive distributed lag model. The policy recommendations provide valuable insights into the monetary dynamics of Nigeria during the studied period. The positive relationship between money supply and capital stock

highlights the importance of managing money supply effectively to support investment and economic development. On the other hand, the negative relationship between inflation and economic growth underscores the significance of controlling inflation to foster sustained economic growth in the Nigerian context. These findings can serve as a basis for policymakers in Nigeria to formulate appropriate monetary and fiscal policies to promote economic stability and development.

(Gatawa, et al., 2017) conducted an empirical analysis to assess the impact of money supply, inflation, and interest rates on economic growth in Nigeria. They utilized time series data spanning from 1973 to 2013 and employed a Vector Autoregressive (VAR) model, as well as Granger Causality tests within an error correction framework.

Based on their findings, the study recommended several policy actions: The study suggested adopting an expansionary monetary policy to boost money supply, which was found to have a positive impact on economic growth in the long run. Also, the recommendation for zero interest-based finance is aimed at attracting investments in the real sector of the economy. Lower interest rates can stimulate investment, which can, in turn, support economic growth. Moreover, given the negative impact of inflation on economic growth, the study underscores the importance of controlling inflationary tendencies associated with monetary policy.

3.0 RESEARCH METHODOLOGY
3.1 Research design
Research design refers to as the blue print which specifies how data related to a given research problem should be collected and analyzed (Aghion, et al., 2005). The Causal research design was used for the purpose of this study, because it enabled the researchers to generalize the findings to a larger population which include all the commercial banks in Sierra Leone.

3.2 Target population
Target population can be defined as a complete set of individuals, cases/objects with some common observable characteristics of a particular nature distinct from other population (King & Levin, 1993). The target population of the study was the 14 commercial banks licensed and registered with the Bank of Sierra Leone, while specific attention was paid to the Bank of Sierra Leone.

3.3 Data analysis
Analysis of the secondary data collected was done with the help of EViews version 8.

The regression analysis was used in order to assess the effect of money supply, inflation and economic growth in Sierra Leone, while the descriptive statistics was used in order to test the normality of the data.

3.4 Model Specification
This study makes used of the various macroeconomic indicators such as Money Supply and Inflation rate as the independent variables, while the Gross Domestic Product will serve as the dependent variables and represent growth in the economy. A multiple linear regression model is used in order to test the hypothesis of the study.

The following is the specified economic model for this study;
GDP = f (MPS, INF)   **Eq.1**
Where;
GDP------- Gross domestic product
MPS-------- Money Supply
INF---------- Inflation Rates
The econometric form of the equation is thus stated as;
$Gdp = \beta_O + \beta_1 MPS_1 + \beta_2 INF + \mu_t$ Eq. 2
Where;
$B_1 \neq \beta_2$ are the co-efficient of the variables,
B_0----- is the intercept or constant among the variables
t------ Time in period of years
ϵ----- Error terms within the variables
The expected outcome of the variables is; Money Supply positive (+) and Inflation Rate is negative (-).

4.0 RESULTS
4.1 Descriptive Statistics
Descriptive statistics are a set of techniques used to summarize and describe the key characteristics of a dataset. These statistics provide a snapshot of the data's central tendencies, variability, and distribution, helping researchers and analysts to better understand the data at hand.

4.1.1 Money Supply
Figure 5 Trend Analysis of Broad Money Growth

Broad money growth (annual %)

The figure above illustrates the growth of money supply in the Sierra Leonean economy. The data shows that broad money supply has experienced fluctuations with an overall increasing trend within the domestic economy. However, a notable decrease in the supply of broad money occurred during the years 2014 to 2017. This decline was attributed to twin shocks affecting the domestic economy, specifically the Ebola virus outbreak and a drop in international commodity prices.

4.1.2 Inflation Rates

Figure 6 Trend Analysis of Inflation


Inflation, GDP deflator (annual %)
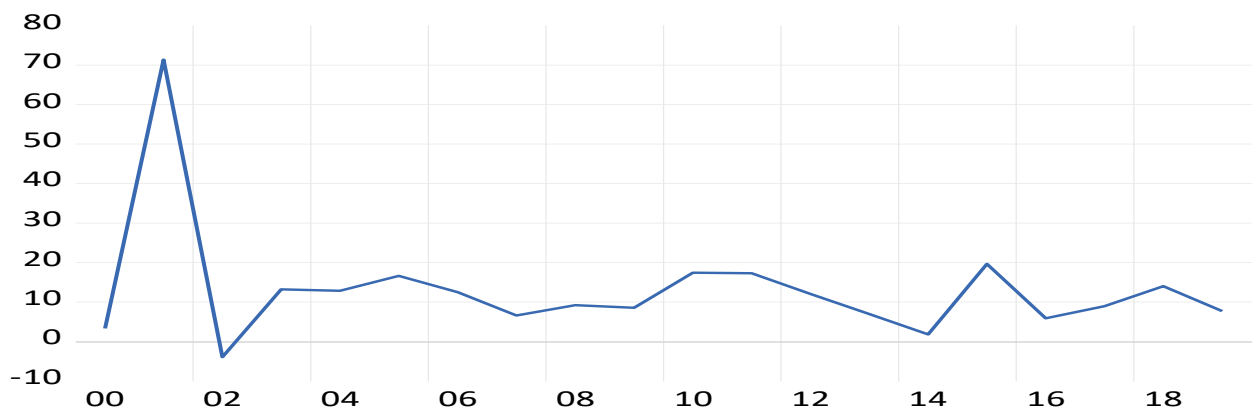
The figure above illustrates the inflationary trends in Sierra Leone from 2000 to 2020. The data indicates that Sierra Leone experienced a significant surge in inflation during the period from 2000 to 2001. This increase can be attributed to the outbreak of the civil war, which caused economic instability, leading to erratic price movements for domestic commodities. Additionally, ineffective monetary and fiscal policies further contributed to the inflationary pressures during this period.

However, following the conclusion of the civil war, Sierra Leone witnessed a sharp decline in the inflation rate, with inflation even turning negative for a certain period. Notably, in 2022, the inflation rate, as measured by the GDP deflator, stood at 21.5%. Throughout the 1973-2022 period, Sierra Leone's inflation rate (GDP deflator) exhibited substantial fluctuations, with a general downward trend, culminating in a rate of 21.5% in 2022.

Further detailing the inflation of the GDP deflator in Sierra Leone for select years, In 2020, the inflation rate was 10.91%. In 2019, there was deflation, with a rate of -45.02%. In 2018, the inflation rate was 14.01%. In 2017, it stood at 8.96%, reflecting a significant increase of 53.05%. This analysis provides insights into the inflationary dynamics in Sierra Leone during the specified period, highlighting the impact of the civil war, economic stabilization efforts, and subsequent trends in inflation rates.

4.1.3 Gross Domestic Product Per capita Growth
Figure 7 Trend Analysis of GDP per Capita

GDP per capita growth (annual %)
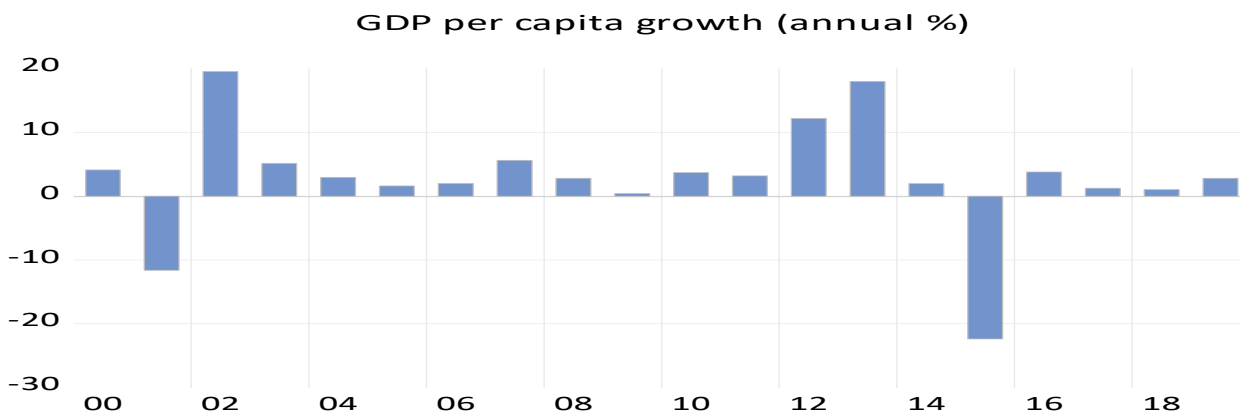
The figure above illustrates the growth rate in GDP per capita within the Sierra Leonean economy from 2000 to 2020. The data reveals several key trends and events that have shaped the country's economic landscape over this period. Sierra Leone's GDP per capita demonstrates a pattern of fluctuation with an overall upward trend. This upward trajectory is particularly noticeable from the year 2000 to 2013. A notable deviation from the increasing trend occurred during the period from 2014 to 2016. This decline in GDP per capita growth rate can be attributed to a twin shock experienced by the country—namely, the outbreak of the Ebola virus and a sharp drop in iron ore prices. Following the challenging years of 2014-2016, Sierra Leone's GDP per capita growth rate appears to have experienced a degree of recovery and subsequent fluctuations.

In more recent years, there has been a decline in GDP per capita growth. For instance, in 2022, Sierra Leone's GDP per capita was $461, representing an 8.57% decrease from the previous year. To provide further insight into Sierra Leone's economic performance, here are GDP per capita figures for select years:

2022: $461 (8.57% decline from 2021)
2021: $505 (2.27% increase from 2020)
2020: $493 (2.6% decline from 2019)
2019: $507 (2.51% decline from 2018)

These figures reflect the per-person economic output in Sierra Leone for the specified years, demonstrating changes in income and living standards. The observed fluctuations and significant events, such as the Ebola outbreak and commodity price shifts, have played a pivotal role in shaping Sierra Leone's economic growth during this period.

4.2 Multiple Linear Regression Method

Multiple Linear Regression is a statistical method used for modeling the relationship between a dependent variable (and target) and two or more independent variables (or predictors). It extends the simple linear regression, which deals with one dependent variable and one independent variable, to situations where multiple factors may influence the outcome. Multiple Linear Regression assumes that the relationship between the dependent variable and the independent variables is linear. Multiple Linear Regression is a powerful tool for analyzing complex relationships between multiple variables and making predictions. It is commonly used in fields such as economics, finance, social sciences, and various areas of science and engineering to understand and model real-world phenomena.

Table 1 Multiple Linear Regression Output

Dependent Variable: GDP_PER_CAPITA_GROWTH__ANNUAL___
Method: Least Squares
Date: 09/19/23   Time: 07:40
Sample: 2000 2019
Included observations: 20

Variable	Coefficient	Std. Error	t-Statistic	Prob.
BROAD_MONEY_GROWTH__ANNUAL___	0.243590	0.228468	1.066189	0.3012
INFLATION__GDP_DEFLATOR__ANNUA...	-0.370927	0.119996	-3.091167	0.0066
C	2.644176	4.893067	0.540392	0.5959

R-squared	0.360462	Mean dependent var	2.918094
Adjusted R-squared	0.285222	S.D. dependent var	8.806569
S.E. of regression	7.445475	Akaike info criterion	6.990571
Sum squared resid	942.3967	Schwarz criterion	7.139931
Log likelihood	-66.90571	Hannan-Quinn criter.	7.019728
F-statistic	4.790835	Durbin-Watson stat	1.482709
Prob(F-statistic)	0.022380		

The results of the least squares regression analysis based on economic theory provide valuable insights into the relationships between the variables studied in the context of Sierra Leone. Here's a summary of the findings and their implications: The coefficient of 0.243590 indicates that there is a positive relationship between broad money growth rate and GDP per capita

growth. However, the p-value of 0.3012 suggests that this relationship is not statistically significant. In other words, the data does not provide enough evidence to conclude that changes in broad money growth rate have a meaningful impact on GDP per capita growth in Sierra Leone.

The negative coefficient of -0.370927 indicates that there is a negative relationship between the GDP deflator-based inflation and GDP per capita growth. This coefficient is statistically significant, as indicated by the p-value of -0.0066. This implies that increases in inflation, as measured by the GDP deflator, are associated with decreases in GDP per capita growth in Sierra Leone.

The R-squared value of 0.360462 indicates that the independent variables (broad money growth rate, inflation, and GDP deflator-based inflation) collectively explain approximately 36% of the variability in GDP per capita growth. This implies that the model accounts for a moderate portion of the observed changes in GDP per capita growth, leaving a substantial portion unexplained. While the model provides some insights into the relationships, it's important to note that there are other factors not considered in the study that may influence GDP per capita growth in Sierra Leone. The unexplained portion of the dependent variable may be attributed to these omitted variables or other complex economic factors not accounted for in the model. The results suggest that inflation, especially as measured by the GDP deflator, has a significant negative impact on GDP per capita growth in Sierra Leone. However, the positive relationship between broad money growth rate and GDP per capita growth is not statistically significant, and the model does not account for all the factors influencing GDP per capita growth in the country. Further research and consideration of additional variables may provide a more comprehensive understanding of the economic dynamics in Sierra Leone.

4.3 Discussion of Findings

The findings from the study indicate that there is a positive relationship between broad money growth rate and GDP per capita growth in Sierra Leone, as evidenced by the coefficient of 0.243590. This suggests that, theoretically, an increase in broad money supply would correspond to an increase in GDP per capita within the Sierra Leonean economy. However, it's important to note that the p-value of 0.3012 is above the commonly used significance level of 0.05. This means that the observed relationship between broad money growth rate and GDP per capita growth is not statistically significant at the 5% significance level. In practical terms, this indicates that there is not enough statistical evidence to conclude that changes in broad money growth rate have a meaningful impact on GDP per capita growth in Sierra Leone based on the data available.

In simpler terms, while there appears to be a positive trend, the data does not provide strong enough support to establish a causal relationship between changes in broad money growth rate and GDP per capita growth in Sierra Leone. Other factors and variables not considered in the study may also play a significant role in influencing GDP per capita growth in the country. Therefore, the finding suggests that although there is a positive association, it is not statistically significant, and additional research and analysis may be needed to better understand the complex economic dynamics at play in Sierra Leone's economy.

The study findings indicate a negative relationship between GDP deflator-based inflation and GDP per capita growth in Sierra Leone. The coefficient of -0.370927 suggests that there is indeed a negative correlation: as GDP deflator-based inflation increases, GDP per capita growth tends to decrease. The statistical significance of this relationship is confirmed by the p-value of -0.0066, which is below the commonly used significance level of 0.05. This means that the observed negative association between GDP deflator-based inflation and GDP per capita growth is statistically significant. In practical terms, it implies that there is strong enough statistical evidence to conclude that increases in inflation, as measured by the GDP deflator, are linked to decreases in GDP per capita growth in Sierra Leone based on the available data.

In simpler terms, the findings suggest that higher inflation rates are associated with a proportionate decrease in GDP per capita within the Sierra Leonean economy. This underscores the importance of managing inflation to support economic growth and maintain the purchasing power and standard of living of the population. It's important for policymakers and economists to consider these findings when formulating economic policies and strategies to ensure stable economic growth and the well-being of the citizens of Sierra Leone.

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