The Impact of Exchange Rate on Inflation and Economic Growth in Liberia

Nathan Saah Harris, JR

ABSTRACT

This paper seeks to measure the impact of the Exchange rates on Inflation and Economic Growth in Liberia. The study uses (13) years of cross-exchange rate regime analysis in Liberia (2007-2019). The study used STATA 14 software program to run the time series data and used Ordinary Linear Square regression (OLS). The researcher also runs a VAR model to find the impulse response of the shock on Exchange rates to Inflation and Real GDP growth. The paper also introduces the Liberia Black market rate; the black market rate is usually higher than the official exchange rate on the markets. The study results show that our time series values for most of the variables are non-stationary in their level but became stationary at their percentage change, and the first difference, which is incorporated from the first degree in the regressions from 2007-2019. The researcher runs a separate regression on the Percentage change in the Real Exchange Rate and also percentage change in the Black market rate using Inflation and RGDP as our Dependent variables.

Keywords: exchange rate (ER), liberia black market rate (BMR), inflation, economic growth, central bank of liberia (CBL).

Classification: DDC Code: 823.914 LCC Code: PR6052.R246

Language: English

London
Journals Press

LJP Copyright ID: 573333
Print ISSN: 2515-5784
Online ISSN: 2515-5792

London Journal of Research in Humanities and Social Sciences

Volume 22 | Issue 15 | Compilation 1.0

The Impact of Exchange Rate on Inflation and Economic Growth in Liberia

NATHAN SAAH HARRIS, JR (BBA, MSc, Ph.D. Student)

ABSTRACT

This paper seeks to measure the impact of the Exchange rates on Inflation and Economic Growth in Liberia. The study uses (13) years of cross-exchange rate regime analysis in Liberia (2007-2019). The study used STATA 14 software program to run the time series data and used Ordinary Linear Square regression (OLS). The researcher also runs a VAR model to find the impulse response of the shock on Exchange rates to Inflation and Real GDP growth. The paper also introduces the Liberia Black market rate; and identify that the black market rate is usually higher than the official exchange rate on the markets. The study results show that our time series values for most of the variables are non-stationary in their level but became stationary at their percentage change, and the first difference, which is incorporated from the first degree in the regressions from 2007-2019. The paper runs a separate regression on the Percentage change in the Real Exchange Rate and also percentage change in the Black market rate using Inflation and RGDP as our Dependent variables. The results within this paper revealed a likelihood of a relationship between the variables in the long run. Therefore, the linear regression results indicate a significant positive impact from both percentage change within the official exchange rate and the black market rate changes on inflation but negatively affect Real GDP (economy growth). The estimates for the real GDP growth are significant at all levels. The study encourages the Government of Liberia to consider implementing foreign exchange rate regime management policies, which should focus on both the foreign sectors and the domestic balance of the economy. The Liberia government should also develop proper management of Liberia's foreign policy to achieve an adequate level of exportation in the future.

Keywords: exchange rate (er), liberia black market rate (bmr), inflation, economic growth, central bank of liberia (cbl).

CHAPTER ONE: INTRODUCTION

1.1 Introduction

This research paper captured the high Exchange Rate (ER) and the Black market rate from 2007-2019 within the Liberian economy and its impacts on Inflation and economic growth. Considering that, the Liberian economy is import-based; the percentage change in exchange rates is very important to this study. The research identifies some broadening implications, on the Liberian economy, with political instability that lasted for the past 14 years. The unconstitutional acts which have led to the overthrowing of President William R. Tolbert by President Samuel K. Doe started with the Liberia civil war that lasted for over fourteen years and also led to the killing of former President Samuel K Doe. The political instability of Liberia in the past has windswept much of its economy and infrastructures, and the Ebola virus outbreak in Liberia in 2014, which lasted for two years and that took almost over four thousand lives; the civil unrest has made Liberia reach an unacceptable stage of development. The paper considers these instabilities as one reason Liberia currently lacks a progressive monetary policy, structured financial market, and even more realistic structural National Development Plan (NDP). The evidence is that every president elected has his or her development plan. It is essential that the study looks at both the official exchange rate changes and the changes within the black market exchange rates in Liberia because these rates have caused both negative and positive impacts on economic growth and increased prices of goods and services (Inflation) in Liberia. The paper

considered both rates vital because Liberia's exchange rates have affected businesses, depreciating the country's currency, and increasing the prices of goods and services expensive due to the high exchange rate. The high level of exchange rate fluctuation in the Liberian economy has affected investments and economic activities, especially among business owners and even poor citizens. The high exchange rates have raised serious concern among stakeholders and economists within the Country.

The exchange rate is when one country's local currency is in exchange for another country's money. It's also considered the value of one nation's currency concerning another currency. The study established two different exchange rates in Liberia, the official rate, which is controlled by the Central Bank, and The Black market rate (unofficial) controlled by the business people or street sellers. The high exchange rates tern to affect the Liberian dollars on the Liberian market; this has encouraged import and discouraged export and over-dependence on imported goods. The paper also recognized the problems causing the high exchange rate: firstly, The Liberian economy is driven by United States dollars, and Prices are determined by the exchange rate on the Liberian markets. Inflation over time has continued to increase due to the high exchange rate within the Liberian economy. The abandonment of older denominations (money) within the economy and the printing of excess money by CBL have caused depreciation in domestic currency. Secondly, the Decrease in US dollar supply within the economy due to low investments and the Withdrawer of UNMIL also cause a decrease in the flow of US dollars in the Liberian economy. Thirdly, the lack of a manufacturing company to produce local goods and services consumed daily by Liberians makes the Country import more than its export. Most of the Country's consuming goods are mostly imported into the country. Goods and serves are bought and sold in US dollars, thus creating more demand for US dollars; which is encouraging more business people and citizens to hold dollars than local currency. Fourthly, due to the fluctuating nature of the exchange rates, people tend to keep money at home than at the bank, questioning the Financial sector's Safety and Soundness.

Liberia floating and high exchange rate started during the Ebola crisis; this crisis saw many investors leaving the Country because of fear. Since then, things have consistently continued to be difficult, and the exchange rate continues to increase on-a-daily-basis on the Liberian markets. The rate that is determined by the street money exchangers is referred to in this paper as the Black Market Exchange Rate. Their locations also determine their exchange rates.

The high exchange rate has continued to depreciate the domestic currency to the foreign currency; therefore, according to Ramakrishnan and Gupta-Kpoor (1999), currency depreciation leads to trade balance enhancement in the future, which is now happening. Bahmani-Oskooee et al. (1994) view said that the devaluation of exchange rates harms the trade balance. Samuelson et al. (2001) express that exchange rates are primarily unbalanced because they are very responsive to central banks' intervention, and monetary policy, which changes expectations in the future. Exchange rates also affected relative prices. With other scholars' views on this topic, it's imperative to note that it is complicated to understand the behaviors and how different exchange rate regimes affect economic activities with the lack of financial markets and structural foreign exchange markets. Commodity prices have been determined by the exchange rate on the Liberian markets; investors are afraid to invest more because the exchange rates rise and fall. According to the Central Bank of Liberia 2019 report about currency outside banking institutions, it accounted for 97.9%, up from 94.0% reported in December 2018. It has been proven that the rise in currency circulation was due to macroeconomic uncertainty that induced rapid drawdown on deposits also gives rise to Inflation and undermined economic growth. The Black market rates are operated mainly by legal and illegal business operators, and also play a significant role in the economy. The Black market exchange rate operators are all over the Country, in all Counties, communities, Towns, and major streets, providing services for lockers citizens. They occupied over

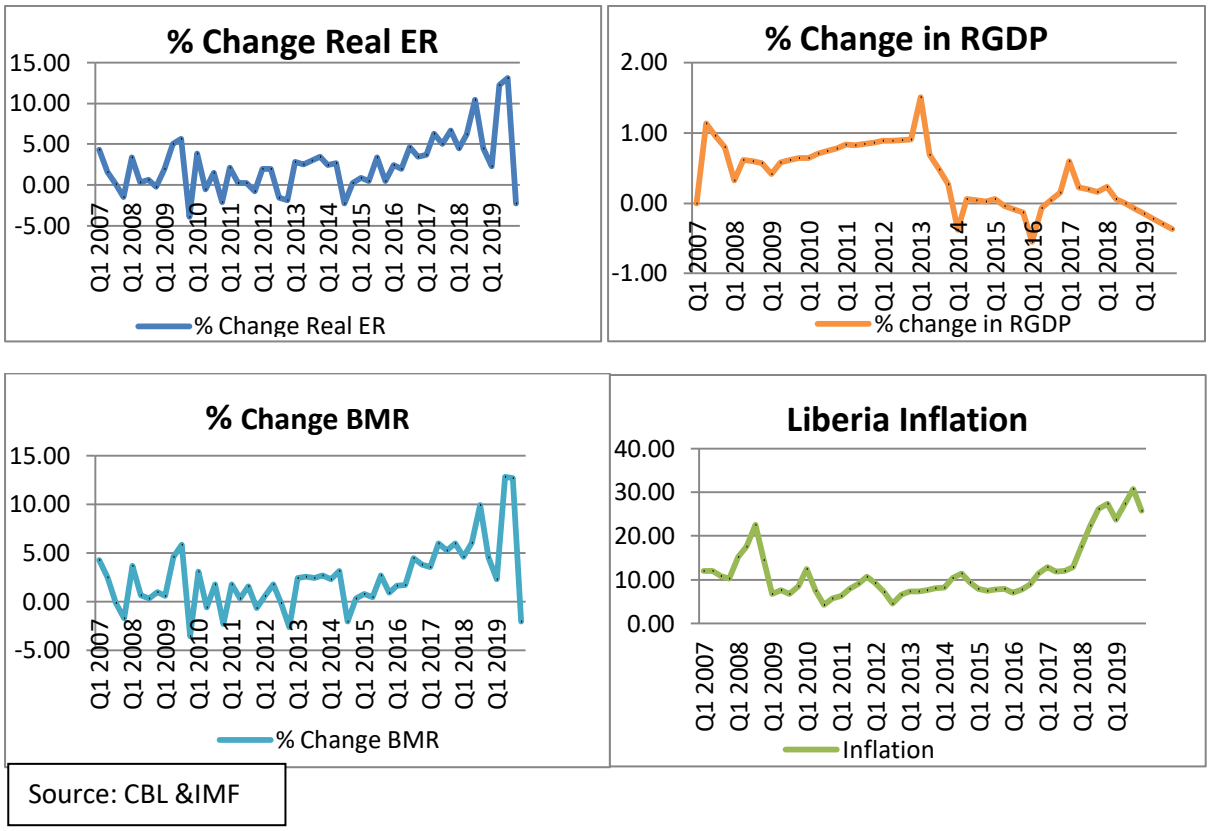
45% to 60% of the economy, providing foreign exchange services for all citizens. They determine their rate daily, and their rates are usually 2 – 4 digits higher than the Central Bank's official rate. At the same time, the official rate provided by the Central Bank is mostly used by government vendors and government employees.

Due to the black market rates, the business owner also tends to increase all their goods' prices, leading to a continuous increase in inflation and depreciation of the home currency. The study envisions measuring the black market rate determined by the market factors instead of government control with the official rate and examining if the market determent rate plays an essential role in our macroeconomic variables (Inflation and RGDP growth). And find out if the impact is more significant than the official rate.

This study focuses on measuring the impact of changes in rates on Inflation and Economic Growth in Liberia. The paper considers the effects of the percentage change from the Black market exchange rate on the Inflation and Economic Growth in the Country from 2007-2019. The results from the study show that most of the time series values for the variables are non-stationary in their level form but stationary at the percentage change and first differences, which are incorporated from the first degree from 2007-2019. The paper strives to bring Liberia's macroeconomic needs to the table and offers useful suggestions for Liberia's economic policies, monetary policies, and political frameworks. The results entail the official and the Black exchange rate positively impacting Inflation and a negative impact or influence on Liberia's economic growth. Notwithstanding, the researcher also realizes that if the agendas of government must focus on improving the lives of the poor by providing them with skills and opportunities; the government must first develop an inclusive financial approach of Reliable Fiscal Policy (RFP), Monetary Policy (MP) and establish a most rebuts Foreign exchange Rate policy (FERP) and focus on investing in Agriculture.

Table: 1 indicates the percentage change in the real exchange rate changes reached an all-time highest in the Country's history of 13.13% in Q3 2019 and the lowest of -3.93% in Q4 2009. This means that depreciation in the local currency faces its worst decline in 2019 and leads to inflation. The graph shows that Liberia's black market rate accounted for -3.51% in Q4 2009 as the lowest, while 12.89% has been accounted for as of Q2 2019 have the highest percentage change in the exchange rate on the black market in Liberia. In Liberia, inflation also reached an all-time highest in August of 30.70% percent and lowest in Q3 2010 of 4.23% percent. The percentage change in Real Goss Domestic Production (RGDP) has had its best performance in 2013 of Q2, recording 0.15 as the highest in RGDP and a decline of -0.005 in 2016 of Q1.

Graph 1 % change in Rates, RGDP, and value of Inflation (2007-2019)



Source: CBL &IMF

1.2 The Objectives of the Paper

The purpose of this paper is to measure or examine the relationships or impact of exchange rate changes on inflation and economic growth within Liberia. To examine the impact on exchange rates, the paper uses two types of rates in Liberia, the official exchange rate and the Black market exchange rate.

1.3 Hypothesis

Ho. That there is a positive impact or influence on the Exchange Rates on Inflation in Liberia.

Ho. That there is a negative impact or influence on Exchange Rates on economic growth in Liberia.

H_1. That there is a negative impact or influence on Exchange Rates on Inflation in Liberian.

H_1. That there is a positive impact or influence on Exchange Rates on economic growth in Liberia.

1.4 Significance

The Significance of this work is to measure and examine the relationship between exchange rate changes, inflation, and economic growth in Liberia for the past Thirteen (13) years (2007-2019). In so doing, it looks at the following factors:

- Firstly, it intends to examine the impact of the foreign exchange rate changes in correlation with inflations in Liberia and sort policy options towards achieving better fiscal and monetary policy stands, and contribute to the existing literature in finding solutions.
- Secondly, check the reality of the relationships that exist between exchange rate changes and Economic growth in Liberia. Check the existence of autocorrelation invalidating the stability of economic indicators.
- Lastly, to find a clear picture or reasons behind exchange rate changes in Liberia and examine the hypothetical and Empirical Relationship between Exchange Rate changes in Liberia on Inflation and Economic growth.

1.5 Contributions to the knowledge

This research on the Exchange Rates (ER) on Inflation and Economic Growth is very much important to many sectors in Liberia and will contribute to the following areas:

Firstly, The Central Bank of Liberia - The recommendation in this work is anticipated to be of excellent use to the Central Bank of Liberia, helping the authorities of the bank to make a gainful contribution in their present and future monetary policy decision-making. The paper will also help in making future regulations on foreign exchange rates, inflation, and economic growth in the Country. It will also give suggestions on how to tackle and solves some of the inflation of goods and services problems and how to get an unofficial street money exchanger (the black market exchange rate) off the street. The Central Bank has always faced serious issues with these street money exchangers; they have tried to get them off the street, but it has been difficult. Recommendations in this paper will path the way for new policy implementation to handle the Liberia black market exchange rate.

Secondly, Investors - This study will help investors get more information on the exchange rate, inflation, and economic growth, making it easy for them to make their best investment decisions in the future.

Thirdly, Commercial Banks and other non-banking institutions in Liberia - The paper would also immensely contribute to the financial institutions because it will give them ideas of the kinds of monetary and fiscal policies that the CBL and the Government of Liberia (GoL) will use in their interventions for the stability of the sectors. Liberia's banking sectors account for 80.0 percent of the financial system's total assets, and the largest subsector currently has nine commercial banks with 93 branches in 11 of its 15 counties. According to CBL reports, the non-banking financial sector is one of the sectors that has been relatively stable over the past few years and has a group of formal and informal financial services providers. The insurance sector in the non-banking financial sector is ranked second in size to its banking sectors.

Lastly, Researchers and Scholars - This study will also contribute or add knowledge to many students choosing this topic to develop on it. Also, Researchers will want to find out more about Liberia's exchange rate volatility, inflation, and economic growth in the near future. The researcher also believes that it will serve as a pathway for better research by many scholars. The research has also introduced a new variable in this field, "The Liberia black market rate." This variable will encourage more scholars to discuss it more since it is a practice in most African countries. The black market rate is the rate that is always determined by people in the black market and not by the Central Bank in the Country. The research also provides other Scholars or researchers with opportunities to further research the black market exchange rate in Africa and how it impacts the continent.

The structure of this paper is as follows: Chapter One (1) Introduction and Significance, Chapter Two (2) Literature Review, Chapter Three (3) Research approach, and Methodology, Chapter Four (4) Empirical Analysis/ Results, Chapter Five (5) Provide Concluding Remarks and Recommendations.

CHAPTER TWO: THE LITERATURE REVIEW

2.1 The Literature Review

This study's review contains various researchers' kinds of literature and the basis of their analysis on this topic "The impact of Exchange rates Changes on Inflation and Economic growth. It was difficult to find a comprehensive report on Liberia and other poor African nations facing Exchange Rate Volatility, Inflation, and Economic Growth problems. Notwithstanding, in writing this paper, the researcher review several other papers that directly connect to my research, like "Causal Effects and Dynamic Relationship between Exchange Rate Volatility and the Economics Development in Liberia" Gbatu et al., (2017). It has been argued that since the introduction of financial liberalization, most developing nations have been uncovered to sharp exchange rate fluctuation. The condition has made many economists do lots of research to find

out the impact of the exchange rate volatilities on trade flows Cho et al. (2002); Karemara et al. (2005); Soleymani et al. (2014; Wong (2017). Liberia's exchange rate volatility is associated with macroeconomic volatilities, especially within international trade, which leads to a decline in economic growth. Earlier research has shown that the relationship between exchange rate and economic growth, depends on additional control variables like financial development see Aghion et al. (2009), Ndambendia et al. (2011), also see (Jha 2003), and the exchange rate regime.

Liberia currently uses dual system currencies, which are: the Liberian dollar and the United States dollar. The Liberian markets are also a dollarized market Economy; this means that any one of the two currencies can directly trade. The disadvantage of this dual currency is that the USD is an international currency used in every Country worldwide. The paper established that more people are holding the dollars, and the holding of the dollar is raising the overall level of prices, stirring up the Inflation or exchange rate within the Liberia economy. In contrast, the Liberian dollar is only used in Liberia. In recent years, the exchange rate regime in Liberia has been mainly controlled by the black market rate. The Black market rate is a rate that is not controlled by the Central Bank of the country but determined by the street sellers (money exchangers) where most of them are illegal currency exchangers.

According to the Mundell – Fleming model and theories, a rise in the Country's interest rate could, in the general point of view, lead to an increase in demand for the national assets and therefore cause its exchange rate to appreciate, which could reduce exports and increase imports for the nation (Romer 2012). Indeed, this paper has seemed a decrease in export and an increase in imports in Liberia. Liberia is an import-based country; it imports more and exports less.

The connection between the monetary policy, the interest rate, and the decision to keep the exchange rate floating or fixed are all factors of the low volatile rates of a nation against other countries. Mundell and Fleming's point was about how inflation might lead to a more fixed exchange rate.

Research has shown an appreciation in the exchange rate can have a similar effect on a rise in the interest rate for economic activities and reducing it, notwithstanding an appreciation of the exchange rate, lowers the interest rate needed to generate the aggregate demand and can sometimes be used as a tool to increase demand without general movements in the interest rate Romer, (2012).

2.2 The Exchange Rates Volatility

The Exchange rates are also national currency quotations to foreign currency. It is considered a multiplier or a ratio. The instability of exchange rates describes uncertainty in international business, both in financial assets and non-financial. Volatilities are considered instability, and uncertainty, which measures risk, financial assets or non-financial assets, portfolio, and risk management on option pricing. The Exchange rate in Liberia is a major concern for the government, policymakers, investors, managers, shareholders, and economists. According to (Grier and Mark, 2010), many external factors have influenced the regular changes in supply and demand. According to Dufour (2010), "Foreign exchange volatility is the sensitivity of changes in the real domestic currency value of assets, liabilities, or operating income to unexpected changes in exchange rates." The exchange rate is a critical microeconomic factor that affects the real economy and international trade; notwithstanding, any increase in exchange rate volatility discourages firms from creating jobs Belke et al. (2003). According to (Tavlas 2003), a currency peg helps stabilize the exchange rate between two countries and provides long-term business planning that positively affects new predictability of exchange rates between countries. The researcher noted that, since Liberia has a dual currency system, which is also one of the Country's main problems, Liberia will be more necessary to implement a currency peg with the United States since its currency is linked with the United States dollars. The exchange rate can either be fixed or floating. When exchange rates

are floating, their value rises up and down in larger swings than if it was fixed; and it tends to be challenging to predict the value of the rate (Calven & Renhart 2002). Studies have shown that there is much uncertainty associated with floating exchange rates; notwithstanding, many nations usually choose to peg their exchange rate and adopt a fixed exchange rate regime. The one currency system by the European countries is an excellent example of the adaptation of fixed currency.

2.3 The Exchange rates and Inflation

Mishken (2008) describes Inflation as indicates of the general level of all prices in goods and services rising and subsequently pushing power is reducing. The Central Bank of Liberia has attempted for the past period under review to stop inflation and keep the economy and prices at a minimum level. Still, it has been difficult for the period under consideration. The continuous increase in inflation rations and depreciation of the Liberian dollars has caused significant concerns both domestically and internationally, which even cause the IMF and World Bank interventions.

Inflation has caused the adaption of new monetary policy frameworks to help reduce inflation at a minimum level, and over the past seven months, the rates have been at LD197/ US$1.00. According to (Akofio-Sowah 2009), said: “inflation is the percentage change in the local currency import prices resulting from a one percent change in the exchange rates between the importing and exporting country.” Inflation in Liberia can be categorized into two factors: the demand for foreign currency and the supply of foreign currency to the economy by the regulatory authorities. The impact of high inflation on the Liberian economy as a whole is very dangerous. Moreover, there is a huge demand for foreign currency as the main import base. Foreign currency is needed by business owners to satisfy and meet their business's survivability.

In recent years, international finance and economics have been troubled by the impact and changes in exchange rates and cash flows, and Corporations' returns (Bergen 2010). Black and Tarassova (2000) disclose that the Bretton Woods system's fall in the mid-1970s saw corporations’ worldwide view the exchange rate as a vital risk indicator. They consider the impact on domestic and international corporations and trade as an exposure. The exposure to foreign exchange rate fluctuation impacts the value of fixed payoffs, net assets, and the firm's real assets (Bergen 2010).

The exchange rate regime has played a virtual role in Liberia's slow or decline in its economic growth for the past years. The exchange rate volatility of Liberia is from two angles: the external dimension which is determined by global or international prices like oil, gas, etc., which are predominately imported into the Country, and the internal dimension, which is the demand for foreign currency to meet the country import demand. Inflation is usually the main monetary policy that policymakers use to combat exchange rate fluctuation and also as a means to stabilize the exchange rate Calven Reinheart (2002).

2.4 Exchange rate and Economic growth

Many economists have argued in time past that a flexible exchange rate increases trade uncertainty and, at some point, reduces trade volumes as it exposes importers to higher risks from fluctuation. See Rornell et al. (2000) opine that flexible exchange rates encourage fiscal discipline by allowing the effects of unsound fiscal policies to instantly manifest the movements within the exchange rates and price levels. The hard exchange-rate pegs promote trade openness and economic integrations Rose (, 2000); Frankel et al. (, 2002). While in 1994 (Hank and Schuler) also argue that a hard exchange-rate peg improves financial institutions and sounder budgetary management as the government loses power to print money to finance expenditure. Volatility is the persistent fluctuations in exchange rates, and the study has shown that it has a massive effect on developing economies. Covering past years, most research has demonstrated the impact of exchange rate fluctuation, especially on imports (Assery and Peel, 1991; Wang and Barrett, 2007; Arize et al., 2004). According to these researchers, there is a negative or positive impact of exchange

rate fluctuations on employment and growth Belke et al. (2003), Kaas et al. (2004); on inflation, Danjuma et al. (2013); on growth Mundell (, 1995); Levy-Yeyati et al. (2002); Danne (2006); Holland et al. (2011) and Economics activities (Adewuyi and Akpokodje (2006); Kandil (2004).

The impact of exchange rate volatility may show a discrepancy within sectors because there are different degrees of international trade openness, various industry, and different use of long-term contracts (Maskus 1986). The theory of exchange rates implies that it is more volatile in the short run than fundamentals, and the second theory states that the rate of volatility is based on speculation within the market. See Schnabl's (2009) study negatively affects many Asian and European nations' economic growth. Domestic currency in Liberia has been traditionally subjected to the negative impact of exogenous currency shocks. Exchange rates are highly volatile in the short run, and it is mainly due to political activities, variations in the demand monetary strategy, and changes in prospects. However, in the long run, it is determined by the relative price of the good in the nation (Samuelson and Nordhaus 2001). Early studies that have given a theory on economic growth and how the currency would affect the exchange rate are the "international monetary system the missing factor" (Mundell 1998). Mundell explains about the missing in that period where the international monetary arrangement also helps to find an answer which is a single currency. Mundell believes that a single currency would be a great help, especially to smaller nations that would greatly benefit from having a more exchange rate against other countries and increasing their economic growth in their nations.

In conclusion, the Exchange rate changes in many types of research have always negatively and positively impacted inflation and economic growth, most especially in developing nations which Liberia is no exception off. Exchange rates in Liberia are used to compare the prices of goods in all country locations. Fluctuations affect economic activities, growth, employment, investments, trade, and inflation. Liberia's case has always caused a negative impact on the economy by increasing unemployment, low investments, and hardship, especially for the poor, increasing prices of all goods and services, and devaluing the domestic or local currency, which has made many hold the United States dollars. The paper has found out that many researchers do not include the black market rate in their paper; forgetting to know that many African nations deal with both rates (the Black Market rate and the Official rate). The paper introduced a new variable on previous works' limitations, which is the black market rate. The study measures the black market rate determined by the market factors instead of government control with the official rate and examines if the market-determined rate plays an essential role in our macroeconomic variables (Inflation and GDP growth). And also find out if the impact is greater than the official rate.

CHAPTER THREE: RESEARCH APPROACH AND METHODOLOGY

3.1 Research Design

The Empirical findings or analyses in this study are based on data collected from the Central Bank of Liberia, World Bank, IMF database, and from business people in Liberia by using the Survey approach. The exchange figure was gathered from 2007-2019, and the research design used Secondary and Primary Types of Data. The type of data is considered secondary data because it is existing data that creditable institutions have provided.

3.2 Source

The source of this paper's data is from the Central Bank of Liberia (CBL), the International Monetary Fund (IMF), and the World Bank and Street money exchangers in Liberia. The Black Market Rates data were collected by conducting a survey and analysis on several Bureaus, Street exchangers, and some permanent business people who have good historical records and experiences on the black market rates in Liberia.

3.3 Data analysis

This research analysis is based on the Stata 14 software and uses a time-series regression approach for analyzing this paper for the 13 years of data.

3.4 Methodology or model

The methodologies in this paper are the following:

Inflation in model one is the dependent variable, whereas Real Exchange Rates changes, changes in Real GDP, Lending rate, Import to GDP ratio, US Inflation, and US Industrial Productions Index are independent variables. Model one is as follows:

Model One (1) can be stated explicitly as

$$Inf_t = \beta_o + \beta_1 lnER_t + \beta_2 lRGDP_t + \beta_3 LR_t + \beta_4 IM\text{-}GDPR_t + \beta_5 USINF_t + \beta_6 USIPI_t + \mathcal{E} \quad \text{------} \quad 1a$$

$$Inf_t = \beta_o + \beta_1 lnBMER_t + \beta_2 lnRGDP_t + \beta_3 LR_t + \beta_4 IM\text{-}GDPR_t + \beta_5 USINF_t + \beta_6 USIPI_t + \mathcal{E} \quad \text{------} \quad 1b$$

Where,

Inf = inflation

LnER = Percentage Change in real exchange rates

LnlRGDP = Percentage Change in Log of Real GDP

LR = Lending rates

IM-GDPR = Import to GDP ratio

USINF = US Inflation

USIPI = US Industrial Production Index

LnBMER = Percentage change within the black market exchange rate

T=time, β_o = Parameter intercept or constant, $\mathcal{E}$= stochastic error terms and

β_1 β_2 $\beta_3\beta_4\beta_5\beta_6$ = Parameter estimates

In model one (1b), we replace the real exchange rate changes with the black market exchange rate changes to find their separate impact on Inflation in Liberia.

Model Two (2)

In model Two (2), Y (lnReal GDP) is the dependent variable, whereas real exchange rate changes, Inflation, Lending rate, Import to GDP ratio, US inflation, and US Industrial Productions Index are independent variables.

Model 2 can be stated explicitly as

$$Y_t = \beta_o + \beta_1 lnER_t + \beta_2 INF_t + \beta_3 LR_t + \beta_4 IM\text{-}GDPR_t + \beta_5 USINF_t + \beta_6 USIPI_t + \mathcal{E} \quad \text{----------} \quad 2a$$

$$Y_t = \beta_o + \beta_1 lnBMER_t + \beta_2 INF_t + \beta_3 LR_t + \beta_4 IM\text{-}GDPR_t + \beta_5 USINF_t + \beta_6 USIPI_t + \mathcal{E} \quad \text{----------} \quad 2b$$

Where,

Y = (LnRGDP) Real GDP growth

LnER = Percentage change in real exchange rates

LR = Lending rates

IM-GDPR = Import to GDP ratio

USINF = US Inflation

USIPI = US Industrial Production Index

LnBMER = Percentage change in the black market exchange rate

T=time, β_o = Parameter intercept or constant, $\mathcal{E}$= stochastic error terms and

β_1 β_2 $\beta_3\beta_4\beta_5\beta_6$ = Parameter estimates.

Again, in model 2b, we replace the real exchange rate changes with the black market exchange rate changes to find their separate impact on Liberia's real GDP growth.

The black market rate is that rate in the Country that is controlled and determined by the street seller or currency exchangers. Their rate is usually greater than the Central bank rates; they are always two to four points greater than the CBL rate. Because we have two dependent variables: Inflation and Real GDP growth, we tend to run separate regressions to obtain separate analyses. T indicates that we are using time series for the study.

We seek an Ordinary Linear Square regression (OLS) method to identify how the exchange rate changes (Official Exchange rate) and the black market exchange rate impact Inflation and Economic Growth in Liberia. Additionally, we also run the VAR model to determine the Impulse responses to Real GDP growth and inflation.

3.5 VAR Model

The paper also runs a Vector Auto regression Model. The researcher aims to investigate or establish the causal relationship among the variables and simulate shocks to our variables or the system and trace out the impact of the shocks that cause on the endogenous variables. In running the VAR model, we establish two empirical models:

VAR model 1

In model one; we analyze the separate shocks on inflation from the real exchange rate changes with the black market exchange rate changes to find their separate impact or influence on Inflation in Liberia.

Model 1 stated as specified.....

$$\inf = \beta_o + \sum_{i=1}^{k} \beta_1 \inf_{-1} + \sum_{i=1}^{k} \beta_2 \Delta lner_{-1} + \sum_{i=1}^{k} \beta_3 \Delta lnblkmkt\_rate_{-1} + \mathcal{E}$$

VAR model 2

In model two, we also analyzed the separate shocks on RGDP growth from the real exchange rate changes with the black market exchange rate changes to find their separate impact or influence on Liberia's RGDP growth.

Model 2 stated as specified .....

$$\Delta lnRgdp = \beta_o + \sum_{i=1}^{k} \beta_1 \Delta lnRgdp_{-1} + \sum_{i=1}^{k} \beta_2 \Delta lner_{-1} + \sum_{i=1}^{k} \beta_3 \Delta lnblkmkt\_rate_{-1} + \mathcal{E}$$

Notes:

K = length of the lag

$\mathcal{E}$ = the error terms also called the impulses or the shocks
T= time, β_o = Parameter intercept or constant, and

β_1 β_2 β_3 = Parameter estimates

CHAPTER FOUR: THE EMPIRICAL ANALYSIS/ RESULTS

4.1 The Empirical Analysis/ Results

This part of the paper presents the results from our time series data regressions; this paper runs four separate time-series regressions from 2007-2019. To assess inflation's impact, we use inflation as our dependent variable in Table 3 and use all other variables as regressors, excluding the black market. In equation four, we replace the official exchange rate (ER) with the black market rate to estimate its impact on inflation. Table 5 used RGDP as our dependent variable, used the other variables as our regressor, and excluded the black market rate used in table 6 to replace ER.

4.2 Regressions

The research took into consideration, to runs some preliminary tests in order to have valid data. The tests conducted in this paper are the test for unit root, Autocorrelation test, and Heteroske-dasticity test.

4.2.1 Unit Root Test

The paper runs a test for unit root, which is essential for the time-series data to reduce structural beaks' risk (Frerreira, 2009). The Researcher runs the root test to find out if there is non-stationary, which would lead to spurious regression, and it does not show main reversion, and the data generation process of this series is not around zero. The Augmented Dickey-Fuller (Maddala & Wu, 1999) test indicates that if the data are non-stationary, they cannot be used for Hypothesis testing, prediction, or forecasting in our dataset. The researcher, therefore, run a spurious regression in this test and compare the result with the Dwaston estimate results and find out that our data was non-stationary because our R^2 was greater than the Dwaston result. And find the percentage change and first difference of the variables and finally found out that it was stationary, which we used to run the regressions. The Augmented Dickey-Fuller test results show that the unit-roots test was significant, and should reject the null hypothesis because there is a unit root in the model.

Table 1: A Test for Unit Root

Augmented Dickey-Fuller (ADF) Test							
		With Trend at level			Without trend at 1st Difference		
Variables	Observations	Test Statistic	Prob.	5% Critical	Test Statistic	Prob.	5% Critical
Liberia ER	50	-4.987	0.0002	-3.504	-3.790	0.0030	-2.933
Liberia Inflation	50	-2.087	0.5534	-3.500	-5.814	0.0000	-2.933
Liberia LGDP	49	-2.324	0.4205	-3.504	-1.472	0.5476	-2.933
Lending Rate	50	-3.023	0.1258	-3.500	-7.195	0.0000	-2.933
IM/GDP Ratio	50	-2.974	0.1396	-3.500	-3.274	0.0161	-2.933
US Inflation	50	-3.812	0.0160	-3.500	-6.474	0.0000	-2.933
US Indus Prod index	50	-4.304	0.0026	-3.500	-3.144	0.0234	-2.933
Liberia Black Market Rate	50	-5.031	0.0002	-3.504	-3.867	0.0023	-2.933

4.2.2 Autocorrelation Test

Test for Serial Correlation (Breusch-Godfrey LM test for autocorrelation)

Breusch-Godfrey LM test for autocorrelation			
lags(p)	chi2	df	Prob>Chi2
4	1 4.225	4	0.0066

Ho: no serial correlation

The diagnostic test for Serial Correlation of the residuals using the Breusch-Godfrey LM test for autocorrelation is shown in the above table to follow the decision-making rule as slated below whether the model is good or in line with economic criteria.

Null Hypothesis Ho: Residual no serial correlation (autocorrelated)

Alternative Hypothesis H1: Residuals are correlated (autocorrelated)

The Breusch-Godfrey LM autocorrelation test shows that we accept the null hypothesis and conclude that we do not have a serial correlation in the residuals. And our result also indicates that the model is in line with economic criteria.

4.2.3 Heteroskedasticity tests

The research conducts a heteroskedasticity test using Breusch-Pagan/Cook-Weisberg (LM) test to compute for heteroskedasticity. Since we are using OLS (Ordinary Least Square) and one of the assumptions of the OLS is that the model must be homoscedasticity; we use the Breusch-Pagan (B-P) LM test, we conclude that if the P-value <0.05, we Reject the null and say that there is significant evidence of heteroskedasticity.

Model 1

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity

```
Breusch-Pagan/ Cook-Weisberg test for hetroskedasticity
        Ho: Constant variance
        Variables: fitted values of Inflation
        Chi2(1) =      1.18
        Prob > chi2 =  0.2775
```

The diagnostic check for heteroskedasticity test in model one for residuals using the Breusch-Pagan / Cook-Weisberg test shown above and follows the decision-making rule stated below to determine whether the model is good and in line with economic criteria.

Null Hypothesis Ho: Residual are homoscedastic (constant variance)

Alternative Hypothesis H1: Residuals are heteroscedastic

London Journal of Research in Humanities and Social Sciences

The results from the test obtain a probability of 0.2775 or 27.75%; it is more than 5%. Therefore we accept the null hypothesis because residuals are homoscedastic (constant variance), and the model is in line with economic criteria.

Model 2

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity

```
Breusch-Pagan/ Cook-Weisberg test for hetroskedasticity
        Ho: Constant variance
        Variables: fitted values of ChangeRGDP
        Chi2(1)      =      1.78
        Prob > chi2 = 0.1824
```

The diagnostic check for heteroskedasticity test in model one for residuals using the Breusch-Pagan / Cook-Weisberg test shown above and follows the decision-making rule stated below to determine whether the model is good and in line with economic criteria.

Null Hypothesis Ho: Residual are homoscedastic (constant variance)

Alternative Hypothesis H1: Residuals are heteroscedastic

The results from the test obtain a probability of 0.1824 or 18.24%; it is more than 5%. Therefore we cannot reject the null hypothesis because our residuals are homoscedastic (constant variance), and the model is in line with economic criteria.

Table 1: Definition of variables

Variables	Definition	Expected sign in the regression
Liberia Inflation	Liberia's inflation is the overall increase in the price level of goods and services in the Liberian market for a period of time. Inflation in this paper is one of the Dependent variables	
Liberia ER	Exchange rates changes are the percentage change in current unit per the United States dollars taken from the Central Bank of Liberia and the International Monetary Fund (2019)	-/+
Liberia RGDP	The Real GDP is the measure of the country's GDP from one fiscal year to another, and it is also the value of the current year divided by last year's value of GDP per capita. The real GDP is one of the dependent variables in this paper.	
Lending Rate	The Lending rate is the interest charged on money by a financial institution to another.	-/+
IM/GDP Ratio	The Import-to-GDP ratio is the indicator of the relative importance of international imports in the economy.	-/+
US Inflation	US Inflation is the increase in all the prices level in the US market over a period of time.	-/+
US Indus Prod index	The US (IPI) is an economic indicator that the Federal Reserve Board of the United States of America publishes and measures the nation's real production output.	+/-
Liberia Black Market Rate	Liberia's Black Market Rate is the rate that is not controlled by the Central Bank but by street money exchangers, most of which are unofficial (illegal) operators.	-/+

4.3 Regression Results

The explanatory returns

Table 2 the time-series regression approach to the Exchange rate changes tests. The average risk for the rates is just our average value of the explanatory variables in this study. The average value of Inflation in Liberia is 11.977% per quarter. This is very large from economic growth and investment perspective, but it has a marginal 12.9603 standard errors. The average percentage change in the real exchange rate is 0.023% per quarter, and the Standard errors are 4.977 (tmn). The average percentage change in RGDP of 0.002% per quarter (t = 7.141). The average change in the Black Market rate in Liberia is 0.023%, with a standard error of 5.132.

The Maximum official exchange rate change in Liberia in 2019 was 0.123, while the Maximum Black Market rate in the same year was 0.121, which is the main determinant of prices in the Country. The Maximum Inflation in 2019 was 30.696, while the percentage change in the Real GDP Maximum was 0.007 in 2013.

The Minimum changes in Liberia's official exchange rate in 2009 were -0.04, while the Minimum Black Market rate was -0.036 in 2009. The Minimum Inflation was 2010 at 4.321 while the Real GDP Minimum was -0.003 in 2016.

Table 2: Summary Statistics

Summary statistics for the Quarterly dependent and all explanatory variables (in percent) from Q1 2007-Q4 2019 of The Impact of Exchange Rates Changes on Inflation and Economic Growth in Liberia, paper with 52 observations.

	inf	Ch_ er	Ch_ lgdp	lending_ rate	import_g dp_ratio	us_inf	us_ipi	Ch_blkmk t_rate
Mean	11.977	0.023	0.002	13.678	0.135	1.979	101.65 9	0.023
Std. Dev	6.664	0.033	0.002	0.677	0.025	0.372	5.607	0.032
t(mn) Std Error	12.9603	4.977	7.141	145.692	38.94	38.3623	130.78 9	5.132
Minimum	4.231	-0.04	-0.003	12.444	0.91	0.65	87.598	-0.036
Maximum	30.696	0.123	0.007	15.243	0.197	2.54	110.32 5	0.121
Observations	52	51	51	52	52	52	52	51

Notes: inf = Inflation, Ch_er = % change in real exchange rate; Ch_lgdp = % change in real GDP; lending_rate =lending rate; import_gdp_ratio = import to gdp ratio; us_inf= US inflation; us_ipi=US industrial production index, Ch_blkmakt_rate = % change in black market rate.

In Table: 3, report the results on the dependent variable (Inflation). This result implies that the percentage change within the official exchange rate coefficient is 0.337. The result shows that there'll be a 0.337% increase in Inflation in Liberia for any increase in Exchange Rate changes, holding all other variables constant. (However, it does not subject to what value you hold the other variables constant because we are using a linear model). This is significantly different from 0. It means that anytime the Liberia dollar weakens against the major currencies (US dollar), it reduces the value of the Liberia dollar which increased the general prices of goods and services in the Country. This is how a weak Liberian dollar or depreciation leads to Inflation in the Country. While the Real Gross Domestic Product change has a coefficient of -0.227, meaning every percentage decrease in Real GDP will approximately lead to a 0.227

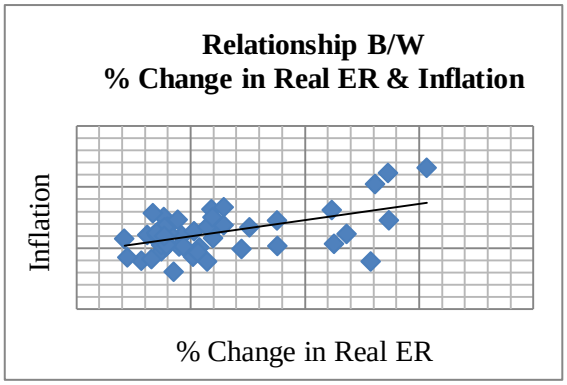
reduction in the Liberia Inflation rate holding other variables constant. Notwithstanding, it is not significant at 5%.

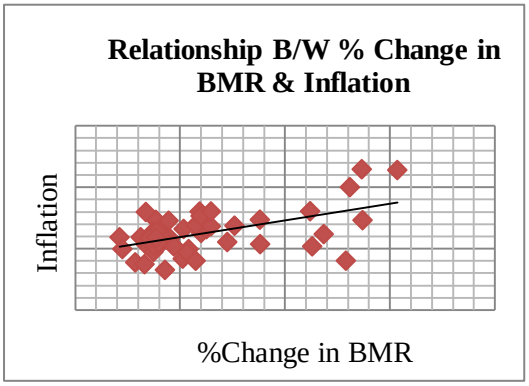
The paper replaces changes within the official exchange rate with the black market rate changes. It indicates that the percentage change in Liberia's black market rate coefficient is 0.347. Hence, for every increase in the Black market rate, there'll be an additional 0.347% increase in inflation within the economy. It is statistically significant to inflation. The Magnitude of the impact of the Black market exchange rate on inflation is very high because it is not under the regulations of the Central Bank of Liberia. It means that whenever the Liberia dollar is weaken against the US dollar, it reduces the value of the Liberia dollar, and this lead to an increase in the inflationary rate in the Country. The percentage change in the RGDP coefficient is -0.270. For each percentage decrease in the real gross domestic product, we have a tendency to expect a 0.270 decrease in inflation. However, it is not statistically significant to inflation. (*See table 3 below*).

Table 3: Regression on Dependent variable (Inflation) and its regressor's Real exchange rate and Black market exchange rate and other explanatory variables from Q1 2007- Q4 2019

	Real Exchange rate		Black Market Exchange rate	
dinf	Coef.	St.Err.	Coef.	St.Err.
Change_er	0.337 (3.33)***	0.101		
Chblkmkt_rate			0.347 (3.39)***	0.102
changeRGDP	-0.227 (-0.16)	1.458	-0.270 (-0.19)	1.444
dlending_rate	0.011 (0.70)	0.015	0.009 (0.59)	0.015
dimport_gdp_ratio	-1.787 (-4.21)***	0.424	-1.740 (-4.13)***	0.421
dus_inf	0.040 (3.77)***	0.011	0.042 (4.01)***	0.011
dlus_ipi	-0.822 (-1.27)	0.649	-0.814 (-1.26)	0.646
Constant	0.004 (-0.76)	0.005	0.004 (0.79)	0.005
R-squared	0.523		0.527	
F-test	8.048		8.167	
Akaike crit. (AIC)	-242.129		-242.585	
SD dependent var	0.029		0.029	
Number of obs	51.000		51.000	
Prob > F	0.000		0.000	
Bayesian crit. (BIC)	-228.669		-229.062	

Notes: dinf = Inflation, Change_er = % change in real exchange rate; ChangeRGDP = % change in real GDP; dlending_rate =lending rate; dimport_gdp_ratio = import to gdp ratio; dus_inf= US inflation; dlus_lipi=US industrial production index. The figures in the parenthesis ( ) represent the T-statistics and Significant at 1% = ***; significant at 5% = **; significant at 10% level = *.





The results from table three imply a positive impact from each change in percentage within the official exchange rate and changes within the black market rate on inflation. The purchasing power of citizens might drop if the trends of those indicators remain the same. Because inflation is that rate that indicates the overall prices of goods and services and rises subsequently, purchasing power starts to reduce Mishken (2008). The rates that are considered an unexpected movement within the economy need to be maintained at a lower level. The study implies that official exchange rate fluctuations can also lead to inflation in prices.

In Table 4, the research used RGDP as the dependent variable and used all other variables as explanatory variables. The results show that the Liberia exchange rate is statistically significant at all levels, and it exerts a negative impact on real GDP growth. The result in table four implies that a percentage increase in Liberia's exchange rate change is associated with a -0.025 decrease in Real GDP growth. It means that as the Liberia dollar depreciates against the major currencies it spurs inflation in the Country and an increase in Inflation as the result of weak currency results in an increase in interest rates (the cost of borrowing) and this makes it difficult for business and individuals, to obtain capital in expanding their business and in the long run affect the real GDP growth negatively. This explained how the mechanism of exchange rate changes impacts the real GDP growth in Liberia. While Inflation in Liberia has a coefficient of 0.015, meaning for every unit of increase in inflation, approximately 0.015% increase in the Real GDP growth in Liberia considering other variables constant. However, the result implies that it is not significant at a 5% level.

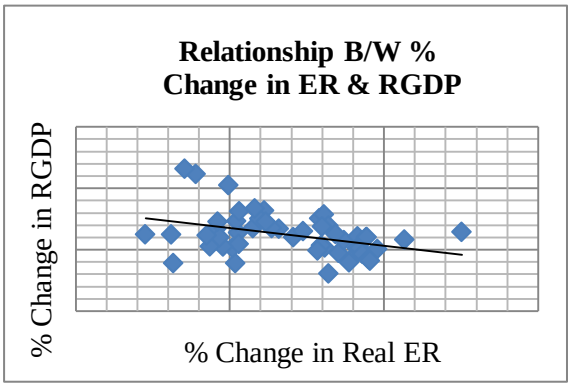
The paper is concerned to find out the separate impact with exchanges from both the Official and the Black markets, the researcher replaces the percentage change in real exchange rate changes with the black market rate changes, and it indicates that, if the black market exchange rate changes (increase or depreciate) by 1 percent, then GDP growth is predicted to decrease by 0.025. This means that as the Liberian dollar depreciates against the US currencies it spurs inflation and finally leads to an increase in the cost of borrowing in the country. These mechanisms affect GDP growth negatively. And it is significant to RGDP at 1%. The inflation coefficient is 0.016. Thus, indicating a 0.016 positive impact on real GDP, and it is not significant at all levels. (*See table 4 below*).

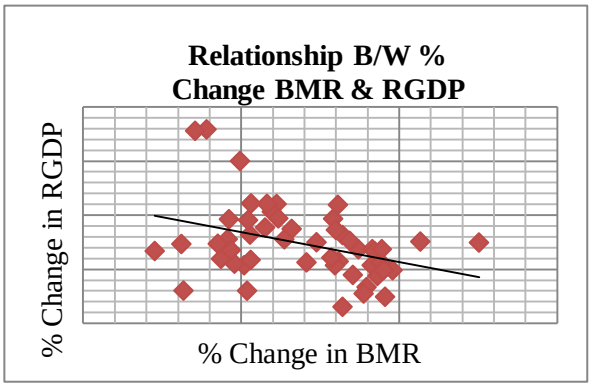
Table 4: Regression on Dependent variable (ChangeRGDP) and its regressor's real exchange rate and Black market exchange rate and other explanatory variables from Q1 2007- Q4 2019

	Real Exchange rate		Black Market Exchange rate	
changeRGDP	Coef.	St.Err.	Coef.	St.Err.
change_er	-0.025 (-3.51)***	0.007		

chblkmkt_rate			-0.025 (-3.56)***	0.007
dinf	0.015 (1.16)	0.013	0.016 (1.19)	0.013
dlending_rate	-0.002 (-1.83)*	0.001	-0.002 (-1.67)	0.001
import_gdp_ratio	0.037 (3.01)***	0.012	0.037 (3.06)***	0.012
dus_inf	-0.001 (-1.04)	0.001	-0.001 (-1.26)	0.001
dlus_ipi	0.007 (0.17)	0.038	0.009 (0.23)	0.037
Constant	-0.003 (-1.38)	0.002	-0.003 (-1.42)	0.002
R-squared	0.302		0.293	
F-test	8.417		8.649	
Akaike crit. (AIC)	-480.971		-480.315	
Number of obs	51.000		51.000	
Prob > F	0.000		0.000	
Bayesian crit. (BIC)	-467.449		-466.793	

Notes: changeRGDP = % change in real GDP; change_er = % change in real exchange rate; dinf = Inflation, dlending_rate =lending rate; import_gdp_ratio = import to gdp ratio; dus_inf= US inflation; dlus_ipi=US industrial production index. The figures in the parenthesis ( ) shows the T-statistics and Significant at 1% = ***; significant at 5% = **; significant at 10% = *.





The regression results from table 4 in this study imply that there is a negative impact from both the changes in the Black market rate and the changes within the official exchange rate to RGDP. Dollar (1992) analyzed 95 developing countries from 1976-1985, showing a negative relationship between the variables. Bosworth et al. (1995) also use 88 developed and industrial nations for 1960-1992. Results show negative effects on output growth by slowing the factors of production on growth or economic growth. Schanabl's (2009) result shows a negative influence on volatilities on many Asian and European nations' economic growth. Therefore, the impacts of exchange rate volatilities may vary across countries. A higher exchange rate may lead

to lower growth in nations with smaller or no financial markets (Aghion et al.).

VAR Model results

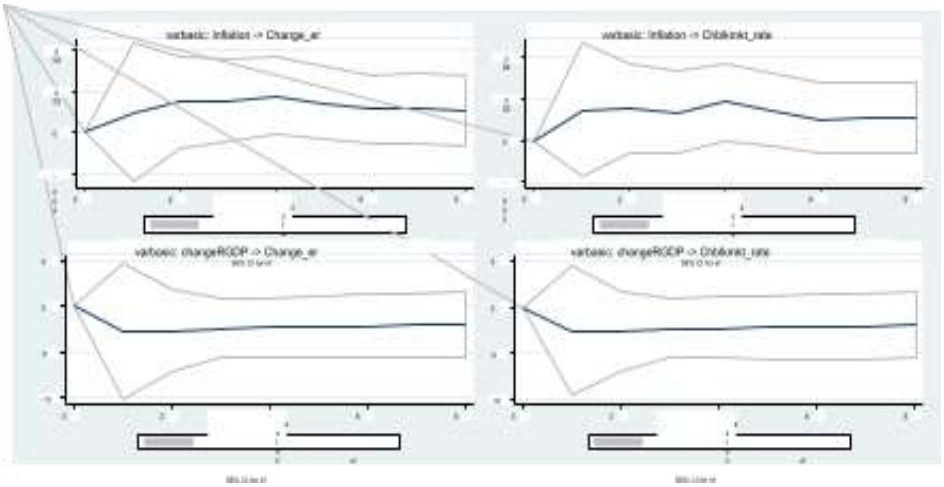
The VAR Model result implies that the response of a one standard deviation shock to a percentage change within the official exchange rate leads to an increase in inflation. The response of the shock to Inflation starts to increase from period 0-period 4 in the short run and guardedly starts to decline from period 4 to period 8 in the long run.

The response of the shock to percentage change within the black market exchange rate has a positive shock to inflation in both the short-run and long-run. The shock to inflation from the black market rate changes from period 0 to period 1 experienced an upward movement and started to drop at period 2 and again at 6 begin an upward movement to period 4 and finally begin declining at Period 4 to Period 8 in the long run.

Hence, if this increase continues to extend within the percentage change within the black market rate, and with no intervention from the Central Bank of Liberia to correct this imbalance, the financial institution (Central Bank) will lose management of the rate thereby making the home currency depreciate due to the unofficial activities from the black market exchange rate and persistently lead to higher inflation on the Liberian economy.

An increase in both the percentage change within the office and the black market exchange rate in the country means that Liberia's goods are getting more expensive than its relative competitors. Therefore, people in the Country can get more foreign goods (imports) for an equivalent amount of domestic goods. This is an indication of an increase in the general prices as a result of a rise in the percentage change in both exchange rates.

The response of standard deviation shock exchange changes has created a decline in RGDP growth in the Country between periods 0 to period 1 and begin a bit stable from period 1 to period 2 and started experiencing an upward movement from period 2 to period 8 in both exchange rate changes. Notwithstanding, Real GDP growth in the short-run and long-run will experience a negative response to shock to percentage changes to exchange rates. This black market rate usually arises when foreign currency exchanges take place at an unofficial (or illegal) exchange rate. An increase in the black market rate will cause Liberia's Central Bank to lose control of the exchange rate (Depreciation). The Central Bank of Liberia needs to correct the imbalance of excess demand or supply of dollars to local currency. Furthermore, these unofficial activities taking place in the black market direct the nation's resources in erroneous directions and bring about a decrease in real GDP growth.



Graph: VAR and Impulse Response Function (IRFs)

CHAPTER FIVE: CONCLUSION & RECOMMENDATION

5.1 Conclusions

Liberia should consider making some policies about the exchange rate fluctuation by implementing a single currency in the Country. The paper has also investigated the many reasons that have led the Country to reach this level, which it took into consideration the civil crisis that lasted for over 14 years, the Ebola virus in 2014, which lead to approximately 4,000 people losing their lives to the virus in Liberia and the most recent COVID-19 which is taking the world making bigger economy collapse. It is about time that economists in the country and stakeholders, including the World Bank, the International Monetary Fund, the National Legislature, and other meaningful citizens, start emerging to find a suitable solution to the many economic problems. The lack of a manufacturing company to produce local goods and services consumed on a daily basis by Liberians makes the Country import more than its export. Most consumer goods are mostly imported into the country, and these goods and services are bought and sold in US dollars, thus devaluing the Liberian dollars. The Safety and Soundness of the financial sectors will continually question if people continue to keep money at home. The dual currency situation has devalued the local currency where individuals and businesses have non-confidence in using the Liberian dollars. The study concludes that the Country's economy and financial sectors can prosper when more importance is placed on controlling the Country's exchange rate system and adding value to the use of the local currency.

Finally, this study revealed a positive relationship or impact between the Exchange rate and Inflation in both the short-run and the long run. Simultaneously, there is also a negative relationship or effects of the exchange rate changes on economic growth in the short-run and long run**.** And the impact of both the real exchange rate changes and the black market exchanges are almost the same.

5.2 Recommendations

- The paper also recommends that the Country should implement a currency peg with the United States of America since it links its currency to the United States dollars. The pegging of the Liberian dollar to the United States dollars will help stabilize the country's exchange rates and help eliminate the black market rate in the Country.
- And the Central Bank of Liberia should put in place the infusing of the local currency's liquidity to maintain a low inflation volatility rate, which will help protect the purchasing power of the ordinary poor citizens of the Country.
- The paper advises that it is about time that the Country moves to a cashless economy, and the national government should take the lead to introduce an app system that will be used for transactions.
- Through the Central bank of Liberia, the leadership establishes a currency swap with its trading partners worldwide to address the need and demand for the importation of goods and services to foreign currency.
- The Central Bank of Liberia (CBL) should take into consideration targeting inflation. The targeting of inflation should be a monetary policy used by the authority to control the inflation rate and guide the real inflation rate level toward the targeted inflation rates.
- That the Central Bank of Liberia should reintroduce the US dollar optional to legal business houses to curtail the difficulties faced by business people in obtaining US dollars.
- And suppose the government must improve the lives of the poor by giving them skills and opportunities. In that case, they should consider developing an inclusive financial approach of reliable Fiscal Policy, Monetary Policy and establish a most rebuts Foreign Exchange Rate Policy (FERP), and focus on investing in Agriculture.

REFERENCES

1. Abimelech Paye Gbatu, Zhen Wang, Presley K. Wesseh Jr., Isaac Yak Repha Tutdel (2017) Causal Effects and Dynamic Relationship

between Exchange Rate Volatility and Economic Development in Liberia
2. Aghion, P., Bacchetta, P., R., & Rogoff, K. (2006). Exchange rate Volatility and Productivity Growth: The Role of Financial Development. SSRN Electronic Journal.
3. Arize, A., & Slottje, D. (2004). Exchange Rate Volatility and Foreign Trade: Evidence from Thirteen LDCs. Journal of Business and Economic Statistics 18, 10–17.
4. Bahmani-Oskooee, M., Alse, J. (1994), Short-run versus long-run effects of devaluation: Error correction modeling and cointegration. Eastern Economic Journal, 20(4), 453-464.
5. Barguellil (2018) - is based on the Annual Report on Exchange Arrangements and Exchange. Restrictions published by the International Monetary Fund (2014). Belke, A.H. and Setzer, R. "Exchange rate variability and labor Market performance in the Visegrad Countries," Economics of Planning 36 (2003): 153-175.
6. Belke, A.H. Kaas, L. and Setzer, R. "Exchange rate volatility and labor markets in the CEE countries," CEPR Discussion Paper No. 4802 (2004).
7. Calvo, Guillermo, and Reinhart, Carmen 2002: Fear of Floating. Quarterly Journal of Economics 117, 2, 379-408.
8. Central Bank of Liberia Annual Report 2019 p. 66/113
9. Cho, G., Sheldon, I. and McCorriston S. "Exchange rate uncertainty and agricultural trade," American Journal of Agricultural Economics 84 (2002): 931-942.
10. Cote, A. (2005). Exchange Rate Volatility and Trade: A Survey, Working Paper 94-5, Bank of Canada.
11. Dollar, D. "Outward-oriented developing economies really do grow more rapidly: Evidence from 95 LDCs, 1976-1985," Economic Development and Cultural Change 40 (1992): 523-544
12. Edwards, S. and Levy-Yeyati, E. "Flexible exchange rates as shock absorbers," European Economic Review 49 (2005): 2079-2105.
13. G. E. Saigbe Boley, (1983) the rise and fall of the First Republic, Prince Y. Johnson, (2003) the Rise and Fall of Samuel K Doe
14. Globe Afrique.com or Globe Afrique Liberia (January 5, 2020 edition)
15. Grier, K. & Mark, J. (2010). The Effects of Real and Nominal Uncertainty on Inflation and Output Growth: Some Garch-m Evidence. Journal of Applied Econometrics 15:1, 45–58.
16. International Finance Theory and Policy By Steven M. Suranovic
17. Jha, R. Macroeconomics for developing countries, Second Edition. London: Routledge, 2003.
18. Karemera, D., Koo, W., Smalls, G. and Whiteside, L. "Trade creation, diversion effects, and exchange rate volatility in the global meat trade, "Journal of Economic Integration 30 (2015): 240-268.
19. M Huchet-Bourdon (2011) OECD Publishing, rights@oecd.org or by fax 33 1 45 24 99 30 ... This study examines the impact of exchange rates and their volatility on trade flows in. China p. 6/2/20
20. Mundell, R. (1995). The international monetary system: the missing factors. Journal of Policy Modeling, 17(5), 479-492.
21. Mundell R.A. "Capital mobility and stabilization policy under fixed and flexible exchange rates," The Canadian Journal of Economics and Political Science 29 (1963): 475-485. Mundell, R.A. "A theory of optimum currency areas," American Economic Review 51 (1961): 657-665.
22. Ndambendia, H. and Al-Hayky, A. "Effective exchange rate volatility and Economic growth in Sub-Saharan Africa: Evidence from panel unit root and cointegration tests," The IUP Journal for Applied Finance 17 (2011): 85-94
23. Pazos, F. (1972).Chronic Inflation in Latin America, New York. Praeger Publishers.
24. Reyes, J. (2007). Exchange Rate Pass-through Effects and Inflation Targeting in Emerging Economies: What is the Relationship? Review of International Economics 15,3: 538-559.
25. Romer, D. (2012) Advance Macroeconomic (4th ed.) New York: McGraw-Hill Irwin.

26. Samuelson, P.A., Nordhaus, W.D. (2001), Macroeconomics. 17th ed. New York: McGraw-Hill Higher Education.
27. Stancik, J. (2007). Determinants of exchange rate volatility: the case of the new EU members, Czech journal of economics and finance, 57, no. 9-10.
28. Tegene, A. (1989): The Monetarist Explanation of Inflation; the Experience of Six Africa Countries. Journal of Economic studies Vol.16, No5, page5-18
29. www.cbl.lr (Central Bank of Liberia) (and Liberia Institute of Statistics and Geo-Information Services *Estimate)
30. www.imf.com (International Monetary Fund)
31. www.worldbank.com (World Bank)
32. https://tradingeconomics.com/liberia/inflation-cpi
33. https://www.compareremit.com/money-transfer-guide/key-factors-affecting-currency-exchange-rates
34. https://www.researchgate.net/publication/325790958_Exchange_Rate_Volatility_and_Economic_Growth.
35. https://fred.stlouisfed.org.