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The Impact of Exchange Rate Volatility on the Performance of Ghana's Economy

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Abstract: This research investigates the impact of the volatility of Ghana's three major trading currencies on the economy using quarterly data from 2009 to 2021. Analysis was carried out using regression technique. Multiple Regression analysis was run after conducting a unit root and co-integration tests. The study concludes that a positive and significant relationship exists between foreign exchange rate movement and economic performance especially with the US Dollar and the pound sterling. It can be concluded that the devaluation that results from the increase in the exchange rate has an expansionary effect on the GDP. A depreciation of local currency decreases the prices of domestic goods while, at the same time, makes the prices of goods from abroad much more expensive. Thus, a depreciation of the exchange rate firstly increases the volume of net export and then the growth rate of the economy. The outcome of the study would serve as a guide to policymakers, such as the government and the central bank to adopt the best policies that would support the growth of the economy.

Key words: Foreign exchange, Volatility, GDP, Currency depreciation, Co-integration

1.1 Introduction

The foreign-exchange value of the Ghanaian cedi has fluctuated widely since fixed exchange rates were abandoned and flexible rates were adopted in June1978 under which the exchange rate for the cedi in terms of the US dollar was to be adjusted to reflect the underlying economic, financial and balance of payments situation. The variation in exchange rates under the regime of flexible (floating) rates has been a matter of concern to policymakers because of its impact on the economy. The trend toward exchange rate flexibility, according to Duttagupta, Fernandez, and Karacadag (2004), is likely to continue for a variety of reasons. Rigid exchange rate regimes appear to be more crisis-prone than flexible regimes. Some countries that do not implement sound macroeconomic policies will be forced to adopt more flexible regimes. Others will increase exchange rate flexibility to minimize the risks associated with economic and financial integration with the rest of the world. According to Addae et. Al. (2014),the current high volatility being experienced in the foreign currency market in Ghana, makes it riskier for foreign exchange transactions.

The following reports by the central bank of Ghana underscore the volatile performance of the Ghana Cedi against the country's major trading currencies in the years 2018 and 2019 respectively, which makes this study necessary.

"The foreign exchange market experienced some volatility during the year under review, …. For the first four months of the year, the Ghana cedi performed strongly against the major trading currencies. It appreciated by 0.2 per cent against the US dollar and depreciated by lower rates against the pound sterling and the euro when compared to the preceding year. However, by September 2018, the Ghana cedi had lost 7.6 per cent of its value against the US dollar. In the last quarter, the pace of depreciation slowed, with the cedi depreciating cumulatively by 8.4 per cent against the U.S. dollar at the end of 2018, compared to 4.9 per cent in 2017. Against the pound sterling, the cedi depreciated by 3.3 per cent compared to 12.9 per cent in the previous year. Similarly, the cedi depreciated against the euro by 3.9 per cent compared to 16.2 per cent in 2017. The depreciation rates against the pound sterling and the euro in 2018 were the lowest recorded since 2013".

"The foreign exchange market in Ghana experienced some volatility in 2019……. The build-up of demand pressures in the first two months of the year led to a weakening of the cedi against the major trading currencies. Cumulatively, the cedi depreciated against the US dollar by 6.9 per cent, the pound by 8.2 per cent and the euro by 6.2 per cent…… In March, the cedi appreciated against the US dollar by 1.8 per cent, and against the pound and the euro by 3.8 per cent and 3.0 per cent, respectively. By the end of the first half of the year, however, the cedi had depreciated cumulatively by 8.4 per cent against the US dollar, 7.6 per cent against the pound and 7.9 per cent against the euro…. By the end of the review year, the cedi had depreciated cumulatively by 12.9 per cent against the US dollar, 15.7 per cent against the pound and 11.2 per cent against the euro.

Policymakers and other economic agents that are involved in the financial market and commerce are very interested in the exchange rate volatility and how it affects revenue generation. The exchange rate policy has been an important component of the economic stabilization policy of the central bank of Ghana aimed at improving economic growth. Firms use volatility models in their estimation of risks and as inputs when they evaluate prices. The policymakers on the other hand use the information about how the factors impact the exchange rate volatility so that the most appropriate policy can be conducted (Bauwens and Sucarrat, 2005).Currency movements can be sudden and large. A common definition of exchange rate risk relates to the effect of unexpected exchange rate changes on the value of the firm. In particular, it is defined as the possible direct loss (as a result of an unhedged exposure) or indirect loss in the firm's cash flows, assets and liabilities, net profit and, in turn, its stock market value from an exchange rate move (Papaioanno(2006). Globalisation has introduced to all nations of the world the importance of foreign exchange risk. Foreign exchange exposure refers to the degree to which a firm is affected by such changes and its measures take one of two forms. Either they can involve changes in real economic values or they can involve hedging strategies. The importance of examining the effect currency fluctuation has on an economy cannot be overemphasized, particularly, given this era of global financial integration.

According to Jebuni, Sowa and Tutu, (1991),Ghana has an import-constrained economy. The country's foreign exchange earnings are dependent on the export of a few primary products—basically cocoa, gold and timber. Most development activities hinge on the availability of imports. In such an import-constrained economy, exchange rate policies are very important in the performance of the economy. Even though this observation was made about 30 years ago not much has changed about the Ghanaian economy despite the attempt to encourage the export of what it calls nontraditional exports. The economy is still predominantly dependent on imports. Even though inflation volatility is recognized as a major source of economic instability, there is a perception that the exchange rate fluctuation is becoming a greater threat to the economic development of Ghana and most developing countries. Again, in Ghana, according to Alagidede and Ibrahim (2016), the advent of the Financial Sector Adjustment Programme (FINSAP), introduced major reforms in the financial sector including the

jettison of the fixed exchange rates in favour of the free-floating regime in the 1980s. Among others, this transition was done under the premise that flexible exchange rates would curb the boom–and–bust syndrome as well as turn the country towards a trajectory of growth with the growth-enhancing effect emanating from the exchange rate pass-through on consumer prices, terms of trade, trade volumes and investments.

The exchange rate by definition is the price of foreign currency in terms of the domestic currency. It can be rigidly fixed or freely determined by the market forces, that is, the demand for and the supply of foreign exchange. However, according to Pearce (1983), a country has a choice of three major exchange-rate policies-flexible, fixed, or managed-which are distinguished by the extent to which the government, usually through its central bank, intervenes in the foreign exchange market to affect the exchange rate of its currency. According to Pearce (1983), if a country adopts a flexible (floating) exchange-rate policy, its central bank does not participate in the foreign exchange market. Instead, the price of the country's currency relative to foreign currencies is determined by supply and demand in the foreign exchange market. The supply comes from holders of domestic currency that need foreign currency to buy foreign goods and services (imports) or assets denominated in foreign currencies. The demand comes from foreigners that want to buy domestic goods and services (exports) or assets denominated in the domestic currency. Under this policy, again according to Pearce (1983), the exchange rate moves to keep the amount of currency demanded just equal to the amount supplied.

An increase in the demand for (supply of) domestic currency, arising, say, from an increase in demand for domestic (foreign) goods by foreigners (domestic residents), causes an immediate appreciation (depreciation) in the exchange rate. The exchange rate, then, reflects the activities of private economic agents or foreign central banks but not the direct actions of the domestic central bank. Again, Pearce (1983), observes that if a country adopts a fixed-exchange-rate policy, its government or central bank is active in the foreign exchange market, buying or selling the country's currency when its exchange rate starts to deviate from the fixed or pegged value. If there is an excess demand for the country's currency at the fixed rate, the central bank must satisfy the excess demand by buying foreign exchange-that is, by supplying its currency-to keep the exchange rate from rising. If there is an excess supply of the country's currency, the central bank must purchase its currency to prevent the exchange rate from falling. This is done by supplying foreign exchange.

Hence, shifts in the private supply of domestic currency, or shifts in the private demand for the currency, cause fluctuations in the central bank's holdings of foreign exchange rather than fluctuations in the exchange rate. If a country adopts a managed exchange-rate policy, its central bank participates in the foreign exchange market when it decides a movement in its exchange rate is undesirable. There is no formal commitment to defend a specific exchange rate. Under a managed exchange-rate policy, as explained by Pearce (1983), the effect of a shift in the supply of domestic currency, or the demand for it, is uncertain. If the central bank wants the exchange rate change that would result from the shift, it takes no action and the exchange rate is allowed to move to its new equilibrium value. If the central bank does not want the change, it enters the market to keep the rate constant. If the central bank merely wants to smooth the movement in the exchange rate, as is often the case, it buys or sells just enough currency for the exchange rate to adjust slowly to its new equilibrium value.

With this explanation, a rise in the exchange rate means that foreign currency has become more expensive and therefore corresponds to a weakening or depreciation of the domestic currency. Similarly, a fall in the exchange rate corresponds to an appreciation of the domestic currency. A higher real

exchange rate implies that foreign goods have become more expensive relative to domestic goods. Both domestic residents and foreigners are therefore likely to increase their purchases of domestic goods relative to foreign ones. The reverse is the case when the country experiences a lower real exchange rate.

Foreign exchange risk management has become increasingly important since the abolishment of the fixed exchange rate system of Bretton Woods in 1971 when it was replaced by a floating rates system in which the price of currencies is determined by the supply and demand of money and can be said to contribute to currency fluctuations (Abor,2005).Exchange rate volatility can also have indirect effects on economic growth through its impact on the key determinants of economic activity, such as trade flows, investment, and employment. Therefore, an increase in exchange rate volatility may discourage firms from creating jobs (Belke and Setzer 2003).

Exchange-rate management, the use of official policies to influence the exchange rate that emerges in the foreign-exchange market, takes three principal forms. First, the monetary authorities may intervene by buying and selling, currencies in the foreign exchange market. Such intervention may or may not be sterilized. Second, the monetary authorities may use monetary policy to stabilize the long-run real exchange rate without associated reserve movements. Third, the monetary authorities may use capital controls as a means of stabilizing simultaneously the exchange rate and the volume of money. Less important methods of managing exchange rates include the use of fiscal policy, administrative controls over imports and exports, special inducements to foreign central banks to hold reserves in a particular currency, and various devices intended to alter levels of official reserves without intervening or borrowing. (Argy, 1982).

The (gradual) shift in the exchange rate management in Ghana took place between 1983 and 1992 from a rigidly fixed to a flexible exchange rate regime. The rigidly fixed exchange rate regime Ghana had pursued before 1983 led to a substantial overvaluation of the cedi, especially in the late 1970s and early 1980s when inflation hovered around 140 percent. The hope was that the new flexible exchange rate regime would adjust the exchange rate somewhat automatic thereby maintaining the external competitiveness of the economy. In addition, a flexible exchange rate regime would eliminate the need for politically risky and difficult devaluations (Duttagupta, Fernandez and Karacadag,2004).

This paper seeks to examine the effect of fluctuations in the exchange rate, as a result of the adoption of the flexible exchange rate system on the economy of Ghana. In particular, it addresses itself the effect of changes in the exchange rate on the growth of the economy. To find out whether the change in the exchange rate policy has had any impact on GDP growth in Ghana this work has become imperative. This will help identify strategies for improving GDP growth and also presents an opportunity to make an appreciable original contribution to knowledge. The study is also very relevant because the exchange rate policy and trade liberalization have been an integral preoccupation of various governments of Ghana since the IMF Economic Recovery Programme of 1983. This current study also covers purely the flexible exchange rate period, that is 2009 to 2021.

The main research objective is to determine the effect of macroeconomic volatility due to fluctuations in the exchange rate on the Ghanaian economy. Specifically, this research investigates the extent to which the volatility of each of the three major trading currencies impacts the economy of Ghana. The study relied on secondary data for the analysis from the year 2009 to 2021. Analysis was carried out using regression technique. Regression analysis was run using the Multiple Regression method after conducting a unit root and co-integration tests.

1.2 Significance of the Study

The outcome of the study would serve as a guide to policymakers, such as the government and the central bank to adopt the best policies that would support the growth of the economy. An analysis of exchange rate volatility and its effect on the economy would help to formulate the right macroeconomic and development policies in developing economies.

This investigation is carried out using data on the three most traded currencies in Ghana, which are the United States dollar, the British pound sterling and the Euro. Gross Domestic Product is used in this research as a measure of economic sector growth.

2.1Theoretical Framework and Empirical Evidence

Theoretically, the variable of the exchange rate is expected to have a positive relationship with the GDP variable. The higher the exchange rate, the higher the level of output (Morina,et. al., 2020).According to Ogawa (1987), however, theories of exchange rates determination have changed since the exchange rate system shifted to the floating rates system. Traditional theories, developed during the period of fixed exchange rates, including the elasticity approach and the absorption approach, focused mainly on the real sector. However, especially in the current period of floating exchange rates, the monetary sector is another important element determining the exchange rate.

Although both speculation and central bank intervention are believed to increase exchange rate volatility, dealers believe that both speculation and central bank intervention are contributing so that exchange rates are moving toward their long-run values. In other words, although speculation is seen as increasing volatility in the short term, it is also seen as the mean of aligning exchange rates with fundamentals and as a provider of market liquidity. Speculation which is the purchase (sale) of foreign exchange for the sole purpose of profiting from an expected fall (rise) in the domestic exchange rate is often said to account for much of the volatility of exchange rates. Volatility, then, is seen as stemming from the actions of speculators rather than from changes in the factors determining the equilibrium exchange rate. One such view assumes that a fall (rise) in the exchange rate leads speculators to think a further decline (increase) is imminent and prompts sales (purchases) of the domestic currency in the foreign exchange market that drive its price down (up) further.

According to economic theory, the depreciation of a country's currency will be beneficial to its export as the price of the exported goods become relatively lower in the international market. On the other hand, the price of imported goods becomes relatively high making imported goods expensive. Demburg and McDougall (1980), define the exchange rate as the domestic price of foreign currency which can be determined either administratively or by the market forces of demand and supply of currencies through imports and exports respectively in the exchange rate market. The importance of this definition is that it focuses on the concept of price as a nature of the exchange rate. Bartov and Bodnar (1994) opine that the long-term impact of exchange rate movements is difficult to ascertain, hedging effectiveness for future cash flows is, however, doubtful.

Jhinghan (2003) states that the demand for a country's currency is an important determinant of the exchange rate. Manta (1999), also posits that if the demand for a country's currency is high, it will lead to exchange rate appreciation and vice-versa. According to Pearce (1983) factors that are generally thought to influence exchange rates. include a country's inflation rate, real economic growth rate,

interest rates relative to the rest of the world, and private speculation. Theories of the exchange rate differ because of the assumptions they make about the importance of these factors. If domestic inflation exceeds that of a country's trading partners, the demand for domestic goods falls, the demand for foreign goods rises, and the exchange rate of the home currency falls. Another factor affecting trade flows-and thus supplies of and demands of the home currency in the foreign-exchange market-is the growth rate of domestic real income relative to the rest of the world. With all else held constant, high domestic real growth is thought to weaken a currency's exchange rate because increases in domestic real income raise the demand for imports and hence the demand for foreign currency relative to the available supply. A rise in interest rates that makes domestic assets more attractive to investors (at home and abroad) can cause a capital inflow leading to an appreciation in the exchange rate.

Hamphreyand Lawker (1977). Dombusch (1980) also postulate that prominent among the competing theories of exchange rate determination in a regime of floating exchange rate, which emerged as the dominant exchange rate model at the start of the recent float in the 1970s is the monetary approach. This approach rests on the view that the exchange rate between two national currencies is determined by their respective national money supplies and demands and the effects on their general price levels.

2.2 Economic Variables

Even though there have been a number of studies on the effect of the volatility of the macro economy as proxied by other variables, not much has been done on the impact of the exchange rate on the economy, especially in Sub-Saharan Africa. Not much work has been carried out on the predictive effect of exchange rate movement on economic growth, especially in developing economies. This present research, hence, comes to model exchange rate changes and their impact on economic growth using quarterly data of GDP as a proxy.Theoretical and empirical evidence concerning the impact of exchange rate volatility on growth is mixed. On how exchange rate volatility impacts growth, Dollar (1992) found a negative relationship between growth and exchange rate volatility in a sample of 95 developing countries. A study by Bosworth, Collins and Chen (1996) shows that real exchange rate volatility reduces growth by lowering total factor productivity. Kandil (2004) argues that depending on the degree of openness, exchange rate volatility and depreciation, in particular, hurt economic performance by contracting.

However, a study by Aslam and Malik (2013) which is focused on exploring whether and to what extent foreign exchange rates affect the economic performance as measured by the stock market returns found positive and significant relationship between variable. They found out that a change in foreign exchange rate has impact on Japan (a developed country) market return for long run, but in Pakistan (a developing country) found negative and insignificant relationship between foreign exchange rate and Market return; that is there is no effect of change in foreign exchange rate on stock prices in the long run. Ngerebo (2012) examines the relationship between exchange rate fluctuation and commercial banks intermediation index using annual average exchange rate as independent variable while Commercial Banks Intermediation Index (CBII) represented the dependent variable on Nigeria. The study found that there is a positive relationship between foreign exchange fluctuation and CBII. In their research work on Ghana, Jebuni et al. (1994), investigated the relationship between exchange rates policies and macroeconomic aggregates in Ghana. They estimated the link between the GDP and exchange rate and discovered that real devaluation had an expansionary effect on GDP. Real devaluation had a positive effect on both imports and exports. Ghana being an import-dependent economy, the inflow of external resources will be expected to have a positive relationship between

imports and devaluation. Accompanying capital inflow led to the growth in imports and the growth of GDP was positively influenced by the imports.

Again, a study by Adjei (2019) on Ghana primarily seeks to examine the effect of exchange rate volatility on economic growth in Ghana using five variables, which include Exchange rate volatility and Trade Openness, GDP per capita and Physical capital stock and Human capital stock which are different from the ones used in this current research. The investigation covers the period between 1983 and 2010. The conclusion drawn by Adjei was that exchange rate volatility exerted significant negative effect on economic growth during the period both in the short and long run. The work of Alagidede and Ibrahim (2016) confirms that excessive volatility is found to be detrimental to economic growth; however, this is only up to a point as growth-enhancing effect can also emanate from innovation, and more efficient resource allocation. The works done by Aliyu (2009) and Adeniran (2014), however, point out that an increase in the level of actual exchange rate volatility exerts a positive impact on real economic growth in Nigeria.

2.2.1 Gross Domestic Product

The gross domestic product (GDP) is one of the primary indicators used to gauge the health of a country's economy. Theoretically, the variable of the exchange rate is expected to have a positive relationship with the GDP variable. The higher the exchange rate, the higher the level of output.According to Said and Tumin (2011),GDP growth is a measure of the economic activity of a country. Higher economic growth improves the quality of assets. Previous study has revealed that a low-volatility exchange rate is associated with higher economic growth, at least in the short term (Gosh, Gulder and Wolf, 2002). However, Edwards and Levy-Yeyati (2003) claim that a pegged exchange rate is definitely positively linked to economic growth, but that it may result in a slower long-run growth path. According to an article by Eichengreen and Leblang (2003), while lower exchange rate volatility makes it simpler to cut budget deficits and encourage economic growth, nations with the strongest economic growth have the most exchange rate volatility.

2.2.2 Exchange Rate

In the goods market, a positive shock to the exchange rate of the domestic currency (an unexpected appreciation) will make exports more expensive and imports less expensive. As a result, the competition from foreign markets will decrease the demand for domestic products, decreasing domestic output and price. An exchange rate appreciation is expected to cause a slower growth of real GDP because of a fall in net exports (reduced injection) and a rise in the demand for imports (an increased leakage in the circular flow). Thus, a higher exchange rate can have a negative multiplier effect on the economy. A study by Alagidede and Ibrahim (2016) suggests that as long as a floating exchange rate regime prevails, shocks to the exchange rate can be self-correcting. Studies by Molana and Osei-Assibey (2010) acknowledge that there is sufficient indication that exchange rate volatility can have significant real effects which are mitigated by price level stability even though the accumulated evidence is not conclusive. While flexible exchange rates facilitate stabilisation, exchange rate fluctuations can cause real volatility. This gives policy importance to the causal relationship between exchange rate depreciation and its volatility. An exchange rate may be expected to become more volatile when the underlying currency loses value (Molana & Osei-Assibey, 2010). The exchange regime may have an impact on developments in financial markets and asset prices.

2.2.3 Volatility

Volatility is defined as an unobservable or latent variable, deterministic or stochastic. There have however been studies that try to make the exchange rate volatility an observable variable, with varied results (Bauwens and Sucarrat, 2005). Exchange rate volatility is directly influenced by several macro variables, such as demand and supply for goods, services and investments, different growth and inflation rates in different countries, changes in relative rates of return and so forth. Exchange rate volatility is defined as the risk associated with unexpected movements in the exchange rate.

2.2.4 Market Capitalisation

Market capitalization refers to the total value of all a company's shares of stock. It refers to how much a company is worth as determined by the stock market. It is defined as the total market value of all outstanding shares. It is calculated by multiplying the price of a stock by its total number of outstanding shares. Kumar ((2014) opines that Capital formation is an integral part of economic growth and development and plays an important role in the economic theory of production and distribution. It is assumed that capital accumulation with a positive correlation and additions to the stock of capital can facilitate faster rate of growth. Traditionally growth rate depends upon growth of industrial, agriculture and service sector but stock market is also one of the major sectors for capital formation and has straight impact on the economy across the world.

2.2.5Treasury Bill Rate

A Treasury bill (T-Bills) is a short-term investment product (from 91 to 365 days) backed by the Bank of Ghana on behalf of the Government. Treasury bills are one of the safest forms of investment because they are backed by the Ghana Government and are considered risk-free. It is generally regarded as an indicator of the interest rate policy being pursued by the government and a benchmark for the rates charged by commercial banks. The benchmark 91-day rate was used in this research.

2.3Conceptual Framework

Addae et. al. (2014) investigated the exchange rate sensitivity of some listed banks on the Ghana Stock Exchange (GSE) between 2005 and 2010adopting both quantitative and qualitative approaches. Econometric models were employed to deal with both the exchange rate sensitivities and to ascertain the exchange rate exposure of the Banks. Following the work of Addaeet al., (2014), and adopting multiple regression technique, the study settled on three currencies namely; the US Dollar, the UK Pound, and the European Euro. These, according to them are the three major trading currencies in Ghana and are therefore deemed appropriate to effectively help achieve the purpose of research into the foreign exchange in Ghana. These three currencies were chosen as exchange rate proxies for the Ghana Cedi in this research study. Abradu-Otoo and Walley (2019) also confirm the importance of these currencies in Ghana's trading activities by indicating that in terms of trade exposure, the evidence show that Ghana has become more exposed to the US, UK, and the Euro area, its major trading partners. For instance, goods exported to the US, UK, and Euro area increased from 18.3percent of GDP in 2006 to 34.1percent of GDP in 2014, before declining to 26.1percent of GDP in 2016. Trade openness, defined as total trade as percent of GDP rose from 51percent of GDP in 2006 to 75.5percent of GDP in 2012, before falling to 56.4percent of GDP in 2016.

Also, according to Miller and Reuer (1994), because other macroeconomic variables co-vary with exchange rate movements which in reality or as is being witnessed presently in the Ghanaian context,

failure to include them in exposure could result in exaggerated estimates of the proportion of variance in stock returns (GDP in this research) attributable to foreign currency movements. Hence, in addition to estimating the exposure model, they also specified a model of corporate exposure equation that controlled for percentage changes in macroeconomic indicators (interest rates) by using the 90-day Treasury bill rate as a proxy and returns to the overall stock market portfolio. The model has been slightly modified in this research to include market capitalization as one of the macroeconomic indicators. Data for the current research were collected mainly from secondary sources. Data on GDP growth was obtained from Statistical Service Department (Accra) while exchange rate data was obtained from the central bank of Ghana.Therefore, following the works of Addae, Nyarko-Baasi and Tetteh (2014), this paper adopts the model below:

$$GDP = \beta_0 + \beta_{1i}USD_t + \beta_{2i}UKP_t + \beta_{3i}EURO_t + \beta_{4i}Rm_t + \beta_{5i}r_t + \lambda_i + U_{it}$$

Where GDP is Gross Domestic Product,$\beta_0$the constant term, $\beta_{1.....}Bn$ =The coefficients/sensitivities of the explanatory variables, *USD* =Percentage change in the US dollar in relation to the Ghana cedi at time t, UKP_t= Percentage change in the UK pound in relation to the Ghana cedi at time t, $EURO_t$= Percentage change in the Euro in relation to the Ghana cedi at time t, Rm_t = Overall market capitalization return in quarter t,r_t= Percentage change in the interest rate at time t λ_i = unobservable individual time effect and, U_{it} = The error term. The ratio of Market capitalization to GDP is used in this research.

3.1 Results and Discussion of Findings

The primary objective of data analysis is to give meaningful information about the investigated phenomenon to facilitate usable analysis, as well as to process and present data to facilitate forming conclusions. This paper used GDP as proxy for economic performance and dollar, pound, Euro, market capitalization and 91days T bill as independent variables. Multiple regression model technique was employed in estimating the impact of independent variables on the economic performance (GDP).

3.2 Descriptive Statistics

Table 4.1 provides an overview of the descriptive statistics for the dependent and independent variables. The variables are categorized as performance measurement, dollars, pounds, euros, market capitalization and 91-day Treasury bills. The data's descriptive statistics include mean, standard deviation, minimum, median, maximum, Standard Deviation, and observation.

On average, Ghana achieved a GDP of 10.49%, with a maximum of 11.69% and a minimum of 8.95%, respectively. The mean value of the dollar rate was 1.10%, with a maximum of 1.77% and a minimum of 0.19%. The mean value of the GBP rate was 1.4%, with a maximum value of 2.07% and a minimum of 0.59%. The Euro rate obtained an average value of 1.31%, the maximum value was 1.95%, and the minimum value was 1.96%. The 91-day T-bill obtained a mean value of 2.83%, a maximum of 3.25%, and a minimum value of 2.23% whiles the market capitalization has a mean of 5.91%, a maximum of 6.94% and a minimum of 3.23%. The Market capitalization and the 91-day T-bill have the highest average values, followed by the GBP rate and the Euro rate. This means that Market capitalization and the 91-day T-bill impact the Ghanaian economy more than the other indicators.

The mean values of all the variables are lower than their medians except Treasury bill rate meaning that all the variables except Treasury bill are skewed to the left. The maximum and minimum values for each

respective data on the variables are quite close to their respective means hence the variables show a low level of fluctuations from the mean. The standard deviations of the variables are high thus suggesting that the data points are scattered over a wide range of values. The middle point of the data sets defined by the median for the GDP, dollar, GBP, Euro, T bill and MC/GDP are 10.68, 1.32, 1.64, 1.42, 2.69 and 6.07 respectively. The sample selected for the study has 51 observations. The central tendency defined by the mean of the GDP is about 10.49 billion Ghana Cedis for the selected period. The mean values for the dollar, GBP, Euro, T Bill rate and MC/GPD for the selected period is around 1.10, 1.46, 1.31, 2.83 and 5.91 respectively.

Table 4.1: Results of Descriptive Statistics

	GDP	DOLLAR	GBP	EURO	91DTBLL	MC/GDP
Mean	10.49276	1.101960	1.460521	1.309986	2.831346	5.913824
Median	10.68185	1.322955	1.647985	1.423446	2.691243	6.079848
Maximum	11.69010	1.769224	2.074303	1.955054	3.253857	6.948516
Minimum	8.945880	0.194003	0.590505	0.677424	2.239645	3.239819
Std. Dev.	0.839869	0.530379	0.471037	0.450279	0.309790	0.768848
Skewness	-0.302383	-0.300483	-0.399529	-0.214527	0.040267	-1.521339
Kurtosis	1.679251	1.513615	1.596251	1.512245	1.508106	6.420343
Observations	51	51	51	51	51	51

3.3 The Correlation Analysis

The correlation analysis was conducted to determine the strength of the relationship between the variables. The independent variables have either a weak positive or negative correlation among themselves, according to the correlation table (Table 4.2), with the exception of the 91-day T-bill, which has a negative correlation with the other independent variables. In general, a correlation more than 0.8 is considered strong, but a correlation less than 0.5 is considered poor.

Table 4.2:Result of Correlation Matrix

	GDP	DOLLAR	GBP	EURO	91DTBLL	MC/GDP
GDP	1.000000	0.983327	0.978751	0.981540	-0.239079	-0.644449
DOLLAR	0.983327	1.000000	0.982997	0.986180	-0.182930	-0.639439
GBP	0.978751	0.982997	1.000000	0.985436	-0.118408	-0.611260
EURO	0.981540	0.986180	0.985436	1.000000	-0.160949	-0.651963
91DAY	-0.239079	-0.182930	-0.118408	-0.160949	1.000000	0.341113
MC/GDP	-0.644449	-0.639439	-0.611260	-0.651963	0.341113	1.000000

3.4 Unit Root Test Results

The unit root results are conducted on the variables stated in the models in order to avoid spurious regression results. The test results help in determining the short run and long run relationships among the variables. The Augmented Dickey-Fuller (ADF) Test was conducted to check stationarity in the variables.

From Table 4.3, the probability values of the variables are higher than 5% at level hence we fail to reject the null hypothesis that the variables have unit root. From Table 4.4 the probability values of the variables at first difference are lower than 5%, therefore we reject the null hypothesis of the variables having unit roots. The Augmented Dickey-Fuller Test shows that all the variables in the model have unit roots. The variables are not stationary at levels but are stationary at first difference.

Table 4.3 Result of Augmented Dickey- Fuller (ADF) Stationarity Tests

	ADF Test Statistics	Test Critical Value at 5%	*P - Value
GDP	1.486369	2.921175	0.5323
DOLLAR	1.189608	2.921175	0.6720
GBP	1.389228	2.921175	0.5802
EURO	0.359069	2.921175	0.9080
91DTBILL	1.683741	2.921175	0.4332
MC/GDP	1.844875	2.921175	0.3549

Mackinnon (1996) one-sided p-values

Table 4.4 Result of Augmented Dickey- Fuller (ADF) Stationarity Tests 1st Difference

	ADF Test Statistics	Test Critical Value at 5%	*P - Value
GDP	7.296471	2.922449	0.0000
DOLLAR	8.749654	2.922449	0.0000
GBP	7.348602	2.926622	0.0000
EURO	6.438714	2.922449	0.0001
91DTBILL	5.217587	2.922449	0.0000
MC/GDP	6.804594	2.922449	0.0000

Mackinnon (1996) one-sided p-values

3.5 The Result of the Regression Analysis

The estimated results, including the coefficient values of the explanatory variables and the impact of each variable on the dependent variable, are presented in Table 4.5. With a coefficient value of 0.49 and a P-value of 0.0334, the computed model indicates that the dollar rate has a positive and statistically significant impact on the economy at 5% significant level. This indicates that a one-unit rise in the dollar rate would lead to a 49% improvement in economic performance.

With a coefficient value of 0.712 and a P-value of 0.0078, the association between the GBP and GDP in the table was statistically significant. This implies that a one-unit increase in GBP would result in a 71.2% gain in GDP, which is a substantial improvement in economic performance. The results reveal that the Euro has a positive but insignificant correlation with GDP. With a coefficient value of -0.253 and a P-value of 0.0002, the estimated relationship between 91-day T-bills and economic performance is statistically significant and negative. This means that if the value of the 91-day Treasury bill goes down

by one unit, the economy will grow by 23.7%. Finally, with a coefficient value of 0.007 and a P value of 0.813, market capitalization has a positive but insignificant relationship with GDP.

Table 4.5: Result of the Impact of Explanatory Variables on Economic Performance (GDP)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	8.923443	0.262863	33.94709	0.0000
DOLLAR	0.495798	0.225941	2.194367	0.0334
GBP	0.712340	0.255899	2.783674	0.0078
EURO	0.500949	0.287599	1.741833	0.0884
91DAY	-0.253933	0.063637	-3.990311	0.0002
MC/GDP	0.007662	0.032225	0.237773	0.8131
R-squared	0.980389	Durbin-Watson stat		1.275569
Adjusted R-squared	0.978210			

4Conclusion and Recommendations

Given the analysis and findings discussed, the study concludes that a positive and significant relationship exists between foreign exchange rate movement and economic performance supporting the findings of Aliyu (2009), and Adeniran (2014) on Nigeria, and Edwards and Levy-Yeyati (2003) and Eichengreen and Leblong (2003). Economic growth can be achieved if more investors find doing business in Ghana attractive as a result of a fall in the cost of production and also when prices of Ghanaian products become cheap compared to similar products outside. A depreciation of local currency decreases the prices of domestic goods while, at the same time, makes the prices of goods from abroad much more expensive. Thus, a depreciation of the exchange rate firstly increases the volume of net export and then the growth rate of the economy.

From these results it can be concluded that the devaluation that results from the increase in the exchange rate has an expansionary effect on the GDP. The depreciation of the domestic currency is as a result of excess demand for foreign exchange which leads to increased volume of financial services including lending by banks in the areas of foreign operations. The appreciation of currency expands imports and reduces export while depreciation increases cost of importation thereby discouraging import and encouraging export. The general price level is affected by exchange rate depreciation as it increases the demand for the country's products. Despite this, the study suggests that goods produced in Ghana should be competitive in terms of quality and government implement policies that are directed towards the patronization of locally produced goods.

Again, when the local currency depreciates, it is expected that foreign remittances and for that matter savings and investments from citizens of that country living abroad would increase. According to Addison (2004), the growth effect of remittances in receiving economies is likely to lead to an increase in savings and subsequently investment. Migrant workers' remittances come in as a component of foreign savings and as such complements national savings by increasing the total pool of resources available for investment.

In Ghana, Addison observes, migrants also send money down for the purpose of setting up small-scale business on their behalf. Aside from the income it generates employment opportunities are created for the youth in the respective localities. Also, remittances have been increasing more than proportionately compared to GDP and exports earnings. The impact of remittances on Ghana's economy is therefore an important area for further research to affirm its role.

REFERENCES

Abradu-Otoo, P. and Walley, B. J. (2019). The Effect of External Conditions on the Economy of Ghana. Bank of Ghana Working Paper.

Abor, J. (2005), "Managing foreign exchange risk among Ghanaian firms", Journal of Risk Finance, Vol. 6, No. 4, pp. 306-18.

Addae, A. A., Nyarko-Bassi, M. and Tetteh, M. (2014). Effect of Exchange Rate Movements on Ghanaian Banks. Journal of Functional Analysis.

Addison, E. K. Y. (2004) The Macroeconomic Impact of Remittances. Conference on Migration and Development in Ghana.

Adjei E. (2019). Exchange rate volatility and Economic growth in Ghana International Journal of Business and Social Science Vol. 10 • No. 4 • April 2019 doi:10.30845/ijbss.v10n4p13

Adu, G. and Mensah, T. J. (2013). An Empirical Analysis of Exchange Rate Dynamics and Pass-Through Effects on Domestic Prices in Ghana. Ghanaian Journal of Economics, Vol. 1,

Alagidede P. and Ibrahim, M. (2016). On the causes and effects of exchange rate volatility on economic growth: Evidence from Ghana.

Aliyu, S.U.R. (2009). Impact of oil price shock and exchange rate volatility on economic growth in Nigeria: An empirical investigation.

Argy V. (1982) Exchange-Rate Management in Theory and Practice; Princeton Studies in International Finance.

Aslam,Z. and Malik, Q. A. (2013). Exchange Rate and Economic Performance - A Comparative Study of Developed and Developing Countries. IOSR Journal of Business and Management (IOSR-JBM) e-ISSN: 2278-487X. Volume 8, Issue 1 (Jan. - Feb. 2013), PP 116-121 www.iosrjournals.org.

Bank of Ghana Annual Report 2018 and 2019.

Bartov, E. and Bodnar, G.M. (1994) Firm Valuation, Earnings Expectations, and the Exchange-Rate Exposure Effect. The journal of Finance, 49, 1755-1785. https://doi.org/10.1111/j.1540-6261.1994.tb04780.x.

Bauwens, L. and Sucarrat, G. (2005). General to specific modelling of exchange rate volatility; A forecast evolution, 13 December

Belke, A. and Setzer, R (2003). Exchange Rate Volatility and Employment Growth:Empirical Evidence from CEE Economies. Paper Prepared for the "First Annual Conference of Euro-Latin Study Network on Integration and Trade der American Development Bank, November 6 -7. Barcelona

Bosworth, B. P., Collins, S, M., and Chen, Y., (1996). Accounting for Differences in Economic Growth. In: Kohsaka, A., Ohno, K. (Eds.). (1996), Structural Adjustment and Economic Reform: East Asia, Latin America, and Central and Eastern Europe, Tokyo: Institute of Developing Economies.

Colander, D. C. (1995). Macroeconomics, 2rd Edition. Chicago: Richard D. Irwin Inc.

Dernburg, T.F. and D.M. Mcdougall (1980). Macro-economic: 6th Edition. Japan: McGraw-Hil1.

Dollar, D. (1992). Outward Oriented Economies Do Grow More Rapidly: Evidence from 95 LDCs, 1976-1985. Economic Development and Cultural Change 9 (40-3), pp 523-544. http://dx.doi.org/10.1086/451959.

Dornbusch, R. (1980). Exchange Rate Economics: Where Do We Stand? Brookings Papers on Economic Activity, 1, 143-94.

Duttagupta, Fernandez, and Karacadag (2004). From Fixed to Float: Operational Aspects of Moving Toward Exchange Rate Flexibility IMF Working Paper Monetary and Financial Systems Department.

Edwards, S. and Levy-Yeyati, E. (2003) Flexible Exchange Rates as Shock Absorbers, NBER Working Paper.

Eichengreen, B and Leblang, D. (2003) Exchange Rates and Cohesion: Historical Perspectives and Political-Economy Considerations. Journal of Common Market Studies 41, 797–822

Ghosh, A., Gulde, A-M and Wolf, H. (2003) Exchange Rate Regimes: Choices and Consequences Cambridge, Massachusetts: MIT Press.

Humphrey, T. and Lawler T. 1977). Factors Determining Exchange Rates: A Simple Model and Empirical Tests. Federal Reserve Bank of Richmond Economic Review May/June, 10-15.

Jebuni C. D., Sowa N. K., and Tutu, K.A (1991).Exchange rate policy and macroeconomic performance in Ghana AERC Research Paper 6 Initiatives Publishers, Nairobi September.

Jebuni, C. D., Oduro, A. D., & Tutu, K. A. (1994). Trade and payments regime and the balance of payments in Ghana. World Development, 22(8), 1161-1173. doi:10.1016/0305-750x(94)90083-3

Jhingan, M. L. (2003). The economics of development and planning (36th Ed). Delhi, a global perspective initiative working paper 32 (Mercatus Center).

Kandil, M. (2004). Exchange Rate Fluctuations and Economic Activity in Developing Countries: Theory and Evidence. Journal of Economic Development 29(1), pp 85-108.

Kumar, N. (2014). Estimation of Market Capitalization and Economic Growth in India.

Levy, M. D. (1987). Corporate Profits and the US Dollar Exchange Rate, *Business Econometrics,* 22, 31-36.

Ling, T. H; Fayman, A. and Casey, K. M. ().Bank Profitability: The Impact of Foreign Currency Fluctuations

Molana, H., Osei-Assibey, K. (2010), Inflation uncertainty, exchange rate depreciation, and volatility: Evidence from Ghana, Mozambique, and Tanzania, Dundee Discussion Papers in Economics No 246, University of Dundee.

Morina, F, Hysa, E., Ergün, U,Panait M. and Voica, M. C. Voica (2020) The Effect of Exchange Rate Volatility on Economic Growth: Case of the CEE Countries *Journal of Risk and Financial Management.*

MillerK.D. and ReuerJ. J. (1994).Firm Strategy and Economic Exposure to Foreign Exchange Rate Movements.

Ngerebo T. A. (2012). The impact of foreign exchange fluctuation on the intermediation of banks in Nigeria (1970 – 2004.) African Journal of Business Management Vol. 6(11), pp. 3872-3879.

Ogawa. E (1987). Theories of Exchange Rates Determination: A Review Hitotsubashi Journal of Commerce and Management 22 (1987) pp. 27-54.

Papaioannou, M. (2006) Exchange Rate Risk Measurement and Management: Issues and Approaches for Firms; IMF Working Paper; Monetary and Capital Markets

Pearce, D. K. (1983) Economic Review

Slavin, S. L. (2009). Macroeconomics 9th Edition. The McGraw-Hill Irwin, New York.