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# Impact of Exchange Rate Variation and Inflation on the Economic Growth of Nigeria: An Empirical Approach.

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**Abstract**
The essence of this study is to empirically examine the impact of exchange rate variation and inflation on the economic growth of Nigeria. Ordinary Least Square method was adopted to analyze the time series properties of the variables under consideration so as to determine the trend of the variations using annual data set on real GDP and inflation rate spanning from 1980–2010. The objective of this study among others is to examine the effect of exchange rate variation and inflation on the economic growth of Nigeria. The data sources were mainly from a twenty three year financial indications of exchange rate variations and inflation. The data sources were mainly from CBN Statistical Bulletin (various issues), CBN Annual Report (various issues), International Monetary Fund and International Financial Statistics Year Book (various issues). The interest rate variations were measured by three years moving average of standard deviation of the nominal exchange rate. The empirical analysis revealed that export and import showed a positive relationship but not statistically significant at 3.4%.The coefficient of Exchange rate showed a positive relationship but is statistically significant at 3.4%. This implies a positive relationship between inflation and exchange rate. This is because an increase in the volatility of exchange rate will lead to increase in inflation. Only economic growth recorded a negative relationship. The study contends that while high rate of inflation and inconsistent exchange rates is detrimental to economic growth, moderate and stable inflation rate supplements returns to savers, enhances investment and therefore economic growth of a country. Base on strength of our findings, the researcher submits that macroeconomic policies aimed at enhancing sustainable economic development should not over concentrate at fighting inflation but should on other area of economic development such as factor input productivity and human capital development.
**Keyword:** Exchange Rate, Economic Growth, inflation rate, Exchange Rate Variation, Import, Export.

## 1. Introduction

Exchange rate policy has been identified as one of the endogenous factors that can affect the economic performance of a nation (Jameela, 2010). Exchange rate is the price of one country's currency in relation to another country. It is the required amount of units of currency that can buy another amount of units of currency. It is the price in which one currency is exchange for another. It measures the domestic worth of an economy; especially in terms of the currencies of most industrialized countries such as United States of America Dollars, British Pound Sterling, German Duetsche Mark, Japanese Yen, French Frank, Italian Lira and the Canadian Dollar (Akpan, 2004).In Nigeria, the management of the exchange rate is carried out by the central bank of Nigeria. Following the adoption of the structural adjustment program policy in 1986 in 1986, the country as moved from a pegged or rigid exchange rate regime to a more flexible regime (Azeez, et. al., 2012). In practice, no exchange rate is "clean or pure float", that is a situation where the exchange rate is left completely to be determined by the market forces of demand and supply but rather the prevailing system is the managed float whereby the monetary authorities intervene periodically in the foreign exchange market of a country in order to attain some strategic objectives (Mordi, 2006). Monetary policy has always been seen as a fundamental instrument over the years for the attainment of macroeconomic stability which is often seen as a prerequisite to achieving sustainable growth of output.

It follows that price (exchange rate) is associated with inflation which represents the persistent increase in the general price level of goods and services in a particular economic setting. Monetary policy has always been seen as a fundamental instrument over the years for the attainment of macroeconomic stability which is often seen as a prerequisite to achieving sustainable growth of output. Thus in the pursuit of macroeconomic stability, the monetary policy makers have often set targets on intermediate variables which include the exchange rate, growth off money supply and interest rate. Among these variables of monetary policy, the exchange rate is argued to have a greater influence on the economy through its effect on the value of domestic currency inflation, the external sectors, macroeconomic credibility, capital flows and stability. Increased exchange rate directly affects the prices of imported commodities and increase the price of imported goods and services contributes directly to increase in inflation. (CBN, 2008). Gbosi (2001) has identified three indices by which inflation is

 

measured. They include the whole sale price index, consumer price index and the gross domestic product deflator.

The adverse consequences of inflationary pressure from exchange rate instability have been a serious concern for economists, monetary theory authorities and policy analyst, owing to the fact that exchange rate and inflation rate are the major instruments for measuring economic performance. Consequently assessing link between monetary policy, exchange rate and inflation rate is very essential because the understanding of the relationship between these variables is a prerequisite for adoption of inflation targeting which the government of Nigeria has made a prime objective in the attainment of its macroeconomic objective. Exchange rate has to be right since it has a meaningful price that impacts on other prices. Where the volatility of exchange rate persists, the situation will be counterproductive in actualizing the goal of price stability. It impacts on inflation, money growth, income and exchange rate which its movement has remained the focal issue when examining the long term causes of inflation in an economy. Again factors like agricultural problems supply, rapid exchange rate depreciation and fragmentation between supply and demand in some sectors of the economy are recognized causes of inflation (Akpan 2004). Inflation is fundamentally a monetary phenomenon. This is because it is usually associated with a continuous and consistent rise in general price in an economy. In Nigeria economic system for instance, a significant problem that has always been at the fore is the astronomical inflationary trend and devaluation in the value of naira. The inflationary trend in the country has been a source of concern and this has had some unprecedented effect on the economic growth, import and export growth, money supply, exchange rate volatility and a general macro economic instability. Inflation has a linkage with exchange rate as well as movement of exchange rate. Thus inflation has been identified as one of the commonest manifestations of economic instability. It is usually associated with prices and pricing which leads to a disequilibrium between effective purchasing power and available output of goods and services.

A well known theory of inflation is that given by the Monetarists. The theory ascribes every inflationary condition to an excess of money supply over money demand. As a result, the only prescription given by the monetarists as an antidote to inflation is restrictive monetary policy. There is also a Cost Push Theory, the protagonists of which seek to explain inflation from the stand point of the supply side. According to them, inflation is a direct consequence of wage increase sequel to union pressure, wage being an important factor of production. Their analysis stems from the fact that increase in wage bid up increases the overall cost of production, which lead to increase in prices. The price rise in turn provokes labour into further agitation for wage increases. The process finally degenerates into an inflationary spiral. It follows that Cost Push theories prescribe wage freezes as the most effective measure to combat inflation. Finally there is a structural approach which explains inflation as the outcome of the reaction of one sector of the economy on other sectors. The argument maintained by Gbosi (2001) is that the various sectors of the economy do not overlap with one another. In sectors which are expanding and experiencing a boom will lead to rise in price. Since prices are generally sticky, they will not decline in the contractor sectors. At the end of the day, the general price level will rise culminating to inflation. From the foregoing analyses of the various theories of inflation, solutions to the problem of inflation include but not restricted to, using monetary and fiscal policies to restrain aggregate demand, increasing unemployment and thus minimize inflationary pressure and employing prices and income policies as a means of intervention in factor market to restrain rice and wage increases.

Thus in the pursuit of macroeconomic stability, the monetary policy makers have often set targets on intermediate variables which include the exchange rate, growth off money supply and interest rate. Among these variables of monetary policy, the exchange rate is argued to have a greater influence on the economy through its effect on the value of domestic currency inflation, the external sectors, macroeconomic credibility, capital flows and stability. Increased exchange rate directly affects the prices of imported commodities and increase the price of imported goods and services contributes directly to increase in inflation (CBN, 2008). Gbosi (2001) identified three indices by which inflation is measured. They include the whole sale price index, consumer price index and the gross domestic product deflator. The argument maintained by Gbosi (2001) is that the various sectors of the economy do not overlap with one another. In sectors which are expanding and experiencing a boom will lead to rise in price. Since prices are generally sticky, they will not decline in the contractor sectors. At the end of the day, the general price level will rise culminating to inflation. From the foregoing analyses of the various theories of inflation, solutions to the problem of inflation include but not restricted to, using monetary and fiscal policies to restrain aggregate demand, increasing unemployment and thus minimize inflationary pressure and employing prices and income policies as a means of intervention in factor market to restrain rise and wage increases.

 

The exchange rate as was been defined by Mordi, (2006) as the price of one currency in terms of another. The increase or decrease of real exchange rate indicates the strength or the weaknesses of the currency in relation to foreign currency, and it is a standard for illustrating the competitiveness of domestic industries in the world market (Razazadekarsalani et al., 2011). When there is deviation of this rate over a period of time from the benchmark or equilibrium, the exchange rate is said to be volatile. It also indicates that the misalignment of exchange rate has occurred where there is multiplicity of markets parallel with the official market. It is of a general belief that the appreciation of a currency expands imports and reduces exports while the depreciation of currency increases the cost of importation; thereby discourage import and encouraging export (Azeez, et. al., 2012). Risk averse investors invest in exports so as to worry less about the changes in the exchange rate and prevent sudden loss of revenue (Mamood and Ali, 2011).

Exchange rate management has been of a topical issue among academics and policy makers for a very long time now. This started predominantly when the gold standard collapsed in the 1930's and subsequent emergence of the Britton wood system of adjustment peg from the 1940's, through the espousal of flexible exchange rate given by the developing nations in the 1970's and carrying out reforms in the 1980's as well as the wake of the currency crises in the developing economies in the 1990's (Azeez et. al, 2012). Flexible exchange rate is accompanied by the fluctuations of exchange rate thus making it a major focus in the debate, due to its impact on business outcomes, as the nation's business partners would always prefer a more stable exchange rate to a volatile one. It has been recognized in previous studies that maintaining a relatively stable exchange rate is important in boosting the economic growth and development of a nation (Azeez et al., 2012). Exchange rate regime varies with the level financial development, though in the developed world, the choice of exchange rate regime stands as perhaps the most contentious aspect of macroeconomic policy (Calvo and Reinhart, 2002). Empirical evidence has shown that exchange rate system and on the other hand West African policy makers are chastised for not doing enough to stabilize their country's highly volatile currency. Empirical evidence has shown also that exchange rate volatility in turn is caused by both real and financial aggregate shocks (Calvo and Reinhart, 2002). Yet despite the perceived implication of exchange rate regime to long term growth and economic stability, the existing theoretical and empirical literatures in Africa and Nigeria in particular offers little guidance (Babatunde, et. al., 2010).

There is a wide spread contention that the volatility of exchange rates in developing nations is one of the main sources of economic instability around the world (Babatunde, et al., 2010). The impact of the global economies in emerging countries such as Nigeria is driven significantly by the swing in the currencies of the major economic powers of the world like the United States of America. In the recent years, the savings have been enormous, volatile and frequently unrelated to underlying fundamentals (Philippe et al., 2006). This has prompted monetary authorities in the developing countries that keep close trade ties with the developed nations to intervene on totally adhoc and episodic basis without any clear sense of sustainable equilibrium. Such exchange rate stability intervention mechanism typically comes too late to prevent severe currency misalignment and volatility. These imbalances in turn trigger off major economic distortions, protectionist trade pressure and inevitably sharp currency reversals (Philippe et al., 2006). Though, currency instability and volatility could only exist during exchange rate regime where the cross-country exchange rate is determined by the market forces of demand and supply. The liberalization of capital flows in developing countries over the last decades and the enormous increase in the scale and magnitude of cross border financial transaction have clearly increased the magnitude of exchange rate movements in most countries with under-developed capital market and where there is not yet a track record of consistently stable economic policies (Babatunde et al., 2010). Currency crises in emerging markets which have become more frequent in the last two decades have been of particular concern to developing countries and emerging economies.

## 2. Literature and Empirical Reviews

Despite the saturation of literatures with studies on exchange rate volatility, the lists are still very scanty with respect to developing countries. Bakoulas, et al., (2002) examined the impact of exchange rate fluctuations on the volume and variability of trade flows and they concluded that exchange rate volatility discourages expansion of volume of trade thereby reducing its benefits. Eichengreen and Lablang, (2003) carried out a research on twelve countries over a period of 120 years and found strong inverse relationship between exchange rate stability and economic growth. They concluded that the results of each estimates strongly depend on time period and the sample. Schnabel (2007) identified robust evidence through panel estimation that the exchange rate stability is associated with more growth in the European monetary unit (EMU) periphery. The evidence according to him is strong for emerging Europe which has moved to more stable environment. David et. al., (2010) examined the effects of exchange rate fluctuations on the Nigerian manufacturing industries. They employed a multiple

 

econometric tools which revealed a negative relationship between exchange rate volatility and the manufacturing performance. Jin (2008) carried out a comparative study of exchange rate stability and volatility and found out that the appreciation of the exchange rate increases the gross domestic product (GDP) in Russia while it reduces the gross domestic product (GDP) in Japan and China. Razazadekasalani et al., (2011) identified in Iran that during stagnation and low price period that the depreciation of currency have positive and significant effect on real GDP while depreciation of currency have significant effects on real GDP in high price period. Aliyu (2011) found out that appreciation of exchange rate exerts positive influence on real economic growth in Nigeria.

Carrera and Vuletin (2003) seek to analyze the relationship between exchange rate regimes and short term volatility of the effective real exchange rate. They tried to set out the relative importance of these links specifically by analyzing the exchange rate regimen influence on real exchange rate (RER) volatility using a dynamic panel date analysis. A sample of 92 countries for the period 1980-1999 was considered. The study revealed that other variables influences real exchange rate (RER) volatility and it also analyzed the persistence of shocks in real exchange rate (RER). The study further found evidence of more openness, acceleration in per capita Gross Domestic Product (GPD) growth, reduction and volatility. Evidence from the study also supports the view that the analysis of the dynamics of the exchange rate regime needs to differentiate between developing and developed countries.

Benita and Lauterbach (2007) studied the daily volatility of exchange rate between the United States of America dollar and 43 other currencies in 1990-2001. This study used several macroeconomic variables to proxy for the domestic economy uncertainty, wealth and openness to international markets as controls in the analysis. The main findings of the study were that exchange rate volatility was positively correlated with real domestic interest rate and with the degree of the central bank intervention. In the panel, the study finds positive correlation between exchange rate volatility, real interest rates and the intensity of the central bank intervention.

In Nigeria, studies have been conducted to estimate exchange volatility as was predicated in the studies of Akpokodje, 2009. Aliyu 2010, Aliyu 2009a, Aliyu 2009b, Ogunleye 2009, Olowe 2009, Yinusa and Akinlo 2008, Yinusa 2004 and Yinusa, 2004. Most of the studies in exchange rate volatility in Nigeria measure the impact of exchange rate volatility on trade balance with little attention to other macroeconomic variable shocks. Akpokodje (2009) explored the export and import effect of exchange rate volatility with specific reference to the non-communuate Finnaciere Africaine (Non-CFA) countries of Africa during the period 1986-2006. The study revealed a negative effect of exchange rate volatility on exports and imports in the selected African countries. The adverse effect of the exchange rate volatility in the sample countries found in the study suggests the need for policy interventions that will help minimize and where possible eradicate exchange rate volatility. Also Yinusa (2008) investigated the relationship between nominal exchange rate volatility and dollarization in Nigeria by applying Granger Causality Test for the period 1986-2003 using quarterly data. The study reported a bi-causality between them but the causality from dollarization to exchange rate volatility appears stronger and dominant. He however, concluded that policies that aim to reduce exchange rate volatility in Nigeria measures that specifically address the issue of dollarization. But the exact measure of exchange rate volatility in the study was not reported.

In the same vein, Ogunleye (2009) investigated the relationship between the exchange and foreign direct investment (FDI) inflows in sub-Saharan African countries using Nigeria and South Africa as case study. By endogenizing exchange rate volatility, the study used a two stage least square methodology. The study revealed that in Nigeria, that there is a statistically significant relationship between the variables; with exchange rate volatility retarding FDI inflows and FDI inflows increasing exchange rate volatility. It was revealed by the study that this relationship is however weak for South Africa. The possible reason been adduced by the study is the sound capital inflows management policy in for South Africa reserve bank.

Further attempts were made by Aliyu (2009a) and he employed standard deviation measure of exchange rate volatility based on quarterly observations and further assessed that impact of exchange rate volatility on non-oil flows in Nigeria between 1986-2006. Empirical results of the study revealed that exchange rate volatility decreased non- oil exports in Nigeria. In another study, Aliyu (2009b) examined the impact of oil price shock and exchange rate volatility on economic growth in Nigeria, and measuring exchange rate volatility as the consumer price index based on real exchange rate approach. But he failed to examine the degree and persistency of exchange rate volatility using standard econometrics. However, among these entire studies on the macroeconomic effects of exchange rate volatility in Nigeria over the past three decades, it is only the study of Olowe (2009) that was able to investigate the volatility of Naira/dollar exchange rates in Nigeria using several variants of Generalized Auto-regressive conditional Heteroscedasticity (GARCH) models. He used monthly data over the period January 1970- December 2007 and found out that all the GARCH family models indicated that volatility is persistent and he reported evidence for fixed exchange rate and management float rate regime.

 

## 3. Methodology and Research Design

This study adopts a quasi-experimental research design. This research design is useful considering the fact that the researcher intends to analyze a time series data spanning from 1980 to 2010. This design, however, relates to the setting up of a particular type of an experiment or other study in which one has little or no control over the allocation of the treatments or other factor being studied. The key difference in this empirical approach is the lack of random assignment. Another unique element often involved in this experimentation method is the use of time series analysis. However, the first part of creating a quasi experimental design is to identify the variables. The quasi independent variable will be the x-variable, the variable that is manipulated in order to affect a dependent variable. X-variable is generally a grouping variable with different levels. Grouping, here, means two or more variables fused together to form independent variables. The predictable outcome is the y-variable. In a time series analysis (as applied in this study), the dependent variable is observed over time for any changes that may take place. One of the merits of this design is that it minimizes threat to external validity as natural environments do not suffer the same problem of artificiality as compared to a well controlled laboratory setting. Finally, this design is efficient in longitudinal research that involves longer time periods which can be followed up in different environments.

### 3.1 Data Sources and Requirements

The data set for this study constitute the annual data spanning from 1980 through 2010. The selection of this period was informed by the era of exchange rate volatility and adverse effect of inflation on the Nigerian economy. However, the data employed are mainly secondary data was obtained from various sources such as the CBN Statistical Bulletin (Various Issues) CBN Financial and Banking Indicators (Various Issues), World Bank Development Report (Various Issues). Other relevant materials were gotten from the reviewed literatures of studies done by scholars in this area of study. The variables under consideration include the official exchange rate (OEXR) and this constitutes the dependent variable. The independent variables are the inflation (INFLA) and Gross Domestic Product (GDP) .The official exchange rate values and the values for the independent variable were obtained from the CBN Statistical Bulletin, various years.

The objective of this study is to examine the impact of exchange rate variation and inflation on the economic growth of Nigeria. Ordinary Least Square method was adopted to analyze the time series properties of the variables under consideration so as to determine the trend of the variations using annual data set on real GDP and inflation rate spanning from 1980– 2010. The OLS method is adopted in order to guard against bias as well as obtain the exact association of variables measured. The equation is logged because the log linear form permits a direct estimation and interpretation of the associated coefficient of the model. The data sources were mainly from a ten year financial indications of exchange rate variations and inflation and the data were mainly from CBN Statistical Bulletin (various issues),. The interest rate variations were measured by three years moving average of standard deviation of the nominal exchange rate.

### 3.2 Model Specification

The empirical analysis of the impact of exchange rate variation on inflation in the economic growth of Nigeria is often accomplished using regression analysis which can be explicitly or implicitly stated based on a theoretical framework of endogenous models (King and Levine, 2004).

Thus, the level of impact of exchange rate and inflation on the economic growth of Nigeria is assumed to be influenced by several variables as ‘y’ which represents the official exchange rate and ‘x’ which include among others, inflation (INFLA), Export (EXP), Import (IMP) and Gross Domestic Product (GDP) .If these assumptions are right, then a multiple linear regression analysis could be adopted and specified thus;

$$Y = f(x) \quad \ldots\ldots (1)$$

Where;

Y is the dependent variable and is represented as the proxy for the official exchange rate

X is the independent variable, and a vector of factors arising from the Nigerian economic environment.

More specifically, equation (1) could be written in a non stochastic implicit form as;

$$OEXR = f(INFLA, IMP, EXP\ GDP,) \quad \ldots\ldots (2)$$

 

Where;

OEXR = Official Exchange Rate

IMP = Import

EXP = Export

GDP = Gross Domestic Product

Therefore, we could rewrite equation (2) in its stochastic explicit form based on the above functional relation as:

$OEXR= b_0+b_1INFLA+b_2 IMP+ b_3 EXP\ b4+b5\ GDP + e_t$ ……..... (3)

Where;

All variables are as previously defined

$b_0$ is the regression constant

$b_1$, $b_2$, $b_3$ and $b_4$ are the parameter coefficients; and

$e_t$ is the stochastic error term.

Transforming equation (3) to the natural logarithm, we obtain:

$OEXR1= b_0+b_1\ InINFLA+b_2\ InIMP+ b_3\ InEXP + b4\ InGDP + e_t$…… (4)

Where;

InOEXR is the natural logarithm of the dependent variable; and

InINFLA, InIMP, InEXP and InGDP are the natural logarithm of the independent variables.

Thus, the transformed log linear equation (4) will be estimated using the Ordinary Least Square (OLS) regression method. The use of the log-linear method improves the validity of the estimates. This method also reduces, if not completely removes the heteroscedasticity errors, which may result from unscaled magnitudes on both sides of the equation (Amadi and Osaro, 2000). There is a functional relationship between official exchange rate and inflation, official exchange rate and selected macroeconomic variables. This relationship that was stated in Equation (2) above can also be expressed in another log linear form.

Econometrically, this equation can also be stated in a log linear form thus,

$OEXR =ao+a1LINFLA+a2LIMP+ a3LEXP, + a4LGDP +e_t$……..... (5)

Where,

$e_t$ = Stochastic error term

a0 to $a_4$ = Parameter estimates.

OEXR = Official Exchange Rate

LINFLA= Log of Inflation Rate

LIMP = Log of Import

LEXP = Log of Export

LGDP = Log of Gross Domestic Product

 

The reason behind the above equation is that official exchange rate is presented as a dependent variable while the independent variable are INFLA, IMP, EXP and GDP indicates the functional relationship between official exchange rate and selected macroeconomic variables.

**Inflation Equation**

The model of estimation for inflation is as follows:

(a) VOEXR = f(GDP, IMP, EXP, INFLA)…….……..……...(6)
(b) INFLA =f(GDP, IMP, EXP, VOEXR)…...…….…….……..(7)

Econometrically, these equations can be stated as follows:

(c) OEXR = a0 + a1 LGDP + a2 LIMP + a3LEXP +a4 LINFLA + et ……..….(8)
(d) INFLA = a0 + a1LGDP + a2LIMP +a3LEXP + a4LVOEXR + et ...…..…….(9)

Where:

LGDP = Log of Gross Domestic Product

LIMP = Log of Import

LEXP = Log of Export

LVOEXR = Log of Official Exchange Rate Variation

Therefore, it is pertinent to state that there exists a functional relationship between the exchange rate volatility and the rate of inflation because they both impact significantly on the Nigerian macroeconomic environment.

**4. Data Presentation and Analysis.**

**Table 1. Pattern and Trends of Exchange Rate and Selected Macroeconomic Variables.**

| Years | Exchange Rate | Inflation % | Growth in GDP % | Export (N'm) | Import (N'm) |
|---|---|---|---|---|---|
| 1980 | 0.5464 | 9.9 | 5.3 | 14186.7 | 9095.6 |
| 1981 | 0.61 | 20.9 | -8.4 | 11023.3 | 12830.6 |
| 1982 | 0.6729 | 7.7 | -0.3 | 8206.4 | 10770.5 |
| 1983 | 0.7241 | 23.2 | -5.4 | 7502.5 | 8903.7 |
| 1984 | 0.7649 | 39.6 | -5.1 | 9088.0 | 7178.3 |
| 1985 | 0.5938 | 5.5 | 9.4 | 11720.8 | 7062.6 |
| 1986 | 2.0206 | 5.4 | 3.1 | 8920.6 | 5983.6 |
| 1987 | 4.0179 | 10.2 | -0.5 | 30360.6 | 17861.7 |
| 1988 | 7.3916 | 38.3 | 9.9 | 31192.8 | 21445.7 |
| 1989 | 8.0378 | 40.9 | 7.4 | 57971.2 | 30860.2 |
| 1990 | 0.9095 | 7.5 | 8.2 | 109886.1 | 45717.9 |
| 1991 | 17.2984 | 13.0 | 4.7 | 121535.4 | 87020.2 |
| 1992 | 22.0511 | 44.5 | 3.0 | 207266.0 | 145911.4 |
| 1993 | 22. 0511 | 54.2 | 2. 3 | 218770.1 | 166100.4 |
| 1994 | 21.8861 | 57 | 1.3 | 206059.2 | 162788.8 |
| 1995 | 84.575 | 72.8 | 2.2 | 950661.4 | 755127.7 |
| 1996 | 79.6 | 29.2 | 3.4 | 1309543.4 | 562626.6 |
| 1997 | 74.625 | 6.2 | 3.8 | 1241662.7 | 848370.8 |
| 1998 | 84.3679 | 10.0 | 3.9 | 751856.7 | 939018.2 |
| 1999 | 92.5284 | 6.6 | 3.9 | 1189006.5 | 939028.6 |
| 2000 | 109.55 | 6.9 | 3.6 | 2887400.3 | 986827.8 |

 

| | | | | | |
|---|---|---|---|---|---|
| 2001 | 112.4864 | 8.9 | 3.8 | 2899886.2 | 988846.6 |
| 2002 | 126.4 | 12.9 | 4.2 | 2929864.6 | 999888.8 |
| 2003 | 135.467 | 14. 0 | 4.4 | 2889846.7 | 1956110.4 |
| 2004 | 133.5004 | 55.0 | 3.4 | -128126.i | 329316.3 |
| 2005 | 132.142 | 17.9 | 4.2 | -1513291.0 | 414706.6 |
| 2006 | 128.7 | 8.2 | 4.5 | 2223439.7 | 476748.7 |
| 2007 | 125.8 | 5.4 | 4.9 | 1157313.2 | 526845.1 |
| 2008 | 118.5 | 11.6 | 5.4 | 406788.3 | 566759.6 |
| 2009 | 148.9 | 11.5 | 5.7 | 23.88698 | 685937.3 |
| 2010 | 150.3 | 13.7 | 6.2 | 6.64885.4 | 720504.6 |

**Sources:** CBN Statistical Bulletin, CBN Financial and Banking Indicators, World Bank Development Report (Various Issues).

A cursory look at the exchange rate regimes indicates that exchange rate as applicable in Nigeria has dual mechanism, which is fixed and flexible exchange rate. The period 1960 to 1986, though not fully captured in the table witnessed a period of fixed exchange rate system. The instability of the system persevered and this to a very large extent inhibited the system from actualizing its objectives and this led to a reversal of the policy in 1986. The flexible exchange rate system continued till 1994 when the flexible exchange rate system was reintroduced. Table 1 further revealed a reduction of inflation rate in 1993 to 54.2% and 60.7% in 1997. In 2002 to 2010, some remarkable fluctuations were observed in exchange rate in conjunction with other variables such as the rate of import, the rate of export and growth in Gross Domestic Product (GDP). A general study of the figures indicates cases of instability in the macroeconomic variables.

**Table 2. Profile of Exchange Rate and Inflation Rate in Nigeria.**

| Years | Official Exchange Rate Market | Parallel Market (Black Market) | Parallel Market Premium | Inflation Rate. |
|---|---|---|---|---|
| 1993 | 22.1 | 36.1 | 14. 0 | 54.2 |
| 1994 | 21.96 | 0.8 | 38.9 | 57. 0 |
| 1995 | 82.3 | 83.5 | 1.2 | 72.8 |
| 1996 | 81.5 | 83.1 | 1.6 | 29.3 |
| 1997 | 81.9 | 84.9 | 2.99 | 8.5 |
| 1998 | 84.4 | 87.9 | 3.5 | 10. 0 |
| 1999 | 92.1 | 99.2 | 7.1 | 6.6 |
| 2000 | 102.1 | 111.1 | 9. 0 | 6.9 |
| 2001 | 111.9 | 132.6 | 18.5 | 18.9 |
| 2002 | 107. 0 | 121.7 | 13.8 | 12.9 |
| 2003 | 109. 0 | 127.2 | 16.2 | 15.9 |
| 2004 | 108.3 | 124.5 | 15. 0 | 14.4 |

Sources: CBN statistical bulletin (Various issues).

Table 2 reveals that from year 1993 to 1995, the Parallel market premium was 14. 0, 38.9 and 1.2, while 1996 to 2004 recorded 1.6, 2.99, 3.5, 7.1, 9.0, 9.0, 18.5, 13.8, 16.2 and 15.0 respectively. The high rate of inflationary trend for the various years and the extent of the fluctuations characterize the Nigeria Exchange rate system. The above fluctuation to a very large extent reveals a very big gap existing between official exchange rate and the black market.

**Table 3. The Impact of Variation of Exchange Rate (Vexchr) and Inflation.**

Dependent Variable: (INFLA)

Method: Ordinary Least Squares

Sample (adjusted): 1980- 2010

 

Included observations: 12 after adjusting endpoints

Convergence achievement after 5 iterations

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 33.7875 | 63.4163 | 2.532788 | (.599) |
| ΔLGDP | -2.90529 | 5.18621 | -.560195 | (.580) |
| ΔIMP | . 017767 | 1.63076 | . 010895 | (.991) |
| ΔDXP | . 054903 | 1.63076 | . 057916 | (.954) |
| ΔLMS | 1.41947 | .947989 | 2.444397 | (.660) |
| ΔVOEXR | 7.61360 | 3.19415 | 2.23282 | (.034) |

| | | | |
|---|---|---|---|
| R-squared | 0.162156 | Mean of Dependent variable | 20.8719 |
| Adjusted R-squared | .162156 | S.D of Dependent variable | 17.8991 |
| Std.E.of regression | 16.3837 | Jacque – Bera test | 25.5023 |
| Sum squared resid. | 6979.06 | Ramsey's RESET | .052905 |
| Variance of residuals | 268.425 | Schwartz Criterion | 141.962 |
| Log likelihood | -131.565 | F-Statistic | 2.19994 |
| Durbin-Watson stat. | 1.37131 | Probability (F-Statistic) | (.085) |
| LM heteroscedasticity test | | .054878 | |

Source: E-views Computer result.

From the analysis drawn above, one can easily infer that the exchange rate volatility and inflation impacts directly on the Nigerian economy. This is because the coefficient of exchange rate volatility is positive and the t-value is also significant at 5 percent. This reveals a positive relationship between the exchange rate and inflation. It further shows that an increase in exchange rate volatility will certainly lead to a corresponding increase in the rate of inflation in an economy. The inflation equation is directly linked with the implications of changes in exchange rate on the macroeconomic environment with particular reference to inflation. The equation regresses inflation on economic growth (GDP), import, export and exchange rate volatility. The coefficient of regression for economic growth which is represented by the nation's gross domestic product (GDP) has a negative sign. The implication of the negative sign being that there exists a negative relationship between inflation and the gross domestic product n the Nigerian economy. The coefficient of export on the other hand exhibits a positive sign. This to a very large extent reveals that there is a direct positive relationship between inflation and the exportation of goods and services in Nigeria. Export and inflation have a very close relationship hence a positive relationship between export and inflation is established.

The coefficient of import also has a positive sign as well. This implies that an increase in the volume of goods imported into country will reverberate to a proportionate increase in the rate of inflation at the same time. This agrees with the apriori economic expectation and indicates that the result is not statistically significant at 5 percent. Exchange rate variation implies an increase in prices of goods and services (inflation). This invariably means that exchange rate variation impacts inflation in this study. The exchange rate variation coefficient indicated a positive sign and the t-value is significant at 3.4 percent. This implies a positive relationship between inflation and exchange rate. This means that an increase in exchange rate will definitely lead to an increase in the rate of inflation in an economy.

 

## 5. Summary and Conclusions

There are so many policy implications that arose from this study. Certain among them are that exchange rate volatility and inflation affects both the economic growth (GDP), the level of import and export in the Nigeria macroeconomic environment. It demonstrates the need for a monetary policy framework that complements the already existing policy. On the whole, this study provided an empirical estimate of the relationship between the exchange rate, inflation and economic growth. The empirical results show that there is a direct and positive relationship between inflation, exchange rate, import and export as well as the gross domestic product in Nigeria. This is because in view of exchange rate variations, export and import of goods and services will be associated with inflation as the volatility leads to upward and downward trend in prices. The regression result also demonstrates exchange rate and the gross domestic product are significantly co-integrated. In the long run, the exchange rate and the gross domestic product may drift apart, but in the short run, their relationship is strong and direct. The study maintained that in view of the adverse implication of inflation on the economy, stability of exchange rate should be pursued vigorously so as to cub the unprecedented and adverse effect of inflation in the overall economy.

## 6. Recommendations

Having reviewed the impact of exchange rate variation and inflation on the economic growth of Nigeria, the researcher would like to recommend based on the findings that there is need to improve on the existing exchange rate management framework and structures in Nigeria. This can influence the level of economic growth, but only on the context of the broad economic reform involving complementary monetary policy. To this end, the government's monetary policies and regimes should address these incessant and recurrent issues so that the benefit associated with exchange rate stability and inflation rate reduction can be harnessed in the Nigerian economy. The study therefore contends that while high rate of inflation and inconsistent exchange rates is detrimental to economic growth, moderate and stable inflation rate supplements returns to savers, enhances investment and therefore economic growth of a country. Base on strength of our findings, the researcher submits that macroeconomic policies aimed at enhancing sustainable economic development should not over concentrate at fighting inflation but should on other area of economic development such as factor input productivity and human capital development.

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