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Effect of exchange rate on inflation rate in Nigeria during the period of (1986-2018)

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Abstract

This study examines the effect of exchange rate on inflation rate in Nigeria during the period of (1986-2018). The argument is that fluctuation in exchange rate adversely affects inflation in Nigeria. This is because Nigeria economy is highly dependent on import of inputs and capital goods. These are paid for in foreign exchange whose rate of exchange is unstable. Thus, this apparent fluctuation is bound to adversely affect activities in the sector that is dependent on external sources for its productive inputs. The methodology adopted for the study is empirical. The objectives of this study are; to evaluate the effect of exchange rate on interest rate in Nigeria, to evaluate the effect of exchange rate on real output in Nigeria, and to find the relationship between foreign exchange rate and inflation in Nigeria. The econometric tool of regression was used for the analysis. In the model that was used, gross domestic product growth, exchange rate, and interest rate were used as the explanatory variables. The result of the regression analysis shows that coefficients of the variables carried positive and negative signs. The study actually shows adverse and is all statistically significant in the final analysis. Some recommendations for policy were made based on the findings. Amongst others is the need to strengthen the link for inflation in Nigeria through local sourcing of raw materials thereby, reducing the reliance of the sector on import of inputs to reasonable level.

Keywords: Foreign exchange rate, exchange rate, inflation rate, Nigeria

Introduction

Background to the study

The history of foreign exchange began as far back in 1875 when the gold standard was informally created, guaranteeing the two way conversion of currency into a set amount of gold. 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 unit of currency. 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 Deutsch Mark, Japanese Yen, French Franc, Italian Lira and the Canadian Dollar (Akpan, 2004) ^[51]. Exchange rate determination varies from country to country and from one period to another. Many countries depending on the condition of their economy and also in respond to the changing exchange rate policy with the rest of the world used different exchange rate policy (Ojo 1990) ^[35]. Exchange rate fluctuations refer to the change in the rate of major international currencies relative to the naira over a given period of time as a result of several factors including manipulative operations of banks and changes in the policies of government. In Nigeria, these fluctuations according to Omojimito and Akpokodje (2013) have been influence by changing pattern of international trade, institutional changes in the economy, and structural shifts in the production. They note that the real exchange rate in Nigeria has been principally influenced by external shocks resulting from the vagaries of world price of agricultural commodities and oil price; both are main sources of Nigerian export and foreign exchange earnings.

The key element of structural adjustment program (SAP) was the free market determination of the naira exchange rate through an auction system. This was the beginning of the unstable exchange rate; the government had to establish the foreign exchange market (FEM) to stabilize the exchange rate depending on the state of balance of payments, the rate of inflation, Domestic liquidity and employment. Between 1986 and 2003, the federal Government experimented with different exchange rate policies without allowing any of

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them to make a remarkable impact in the economy before it was changed. This inconsistency in policies and lack of continuity in exchange rate policies aggregated unstable nature of the naira rate. (Gbosi, 1994)^[63].

Statement of the problem

In spite of the various reforms to the foreign market, the unabated and undirected fluctuations of the naira against other currency continue to give cause of concern especially to monetary authority and end-users of foreign exchange (David, *et al.*, 2010)^[20]. While some economists like Olafin, (2001)^[44], Odusola and Akinlo, (2001)^[32] attribute the naira fluctuations to wrong policy implementation occasioned by lack of harmony between monetary and fiscal policies, Aliyu (2011)^[4] and Asher (2012)^[55] are of the view that, movement in the external sector and the macroeconomics performance constitute the driving force behind the persistent fluctuation. This research work focuses on the determination of the effect of foreign exchange rate on inflation rates in Nigeria.

The concept of foreign exchange

According to Allen & Kenem (1980)^[68] foreign exchange is the price of a nation's currency in terms of another currency. They opine that an exchange rate has two components, the domestic currency and a foreign currency, and can be quoted either directly or indirectly. Tarnowski (2012) defines foreign exchange rate as the price of one currency expressed in terms of another currency. For example, if 1 Dollar buys 140 Naira, the exchange rates is 1.4 to 1. He writes that these changes have significant effects on the profits of multi-national corporations. Eichengreen (2003) in his book agrees that exchange rates changes also affect the value of foreign investments held by individual investors. For a Nigerian investor owing Japanese securities, a strengthening of the Naira relative to the Yen tends to reduce the value of the Japanese securities because the Yen value of the securities is worth fewer Naira.

Oladipupo (2011)^[72] views exchange rate as the price of one currency (the domestic currency) in terms of another (the foreign currency). He posits that exchange rate connects the price systems of two different countries making it possible for international trade to make direct comparison of traded goods. The foreign exchange market is where the buying and selling of different currencies take place (Agenor 1991). Odusola & Akinlo (2001)^[12, 32, 40] opine that exchange rate depreciation include higher import prices, external shocks and accentuates inflationary expectation. The opposite of weakening is strengthening or appreciating, which refers to a gain in the exchange value of a floating currency (Essien 2005)^[21]. Exchange rate fluctuation refers to a situation in which a country's actual exchange rate deviates from such an observable equilibrium. A country's exchange rate is said to be 'undervalued' when it depreciates more than its equilibrium, and 'overvalued' when it appreciates more than its equilibrium (Aliyu, 2008, Ajao 2013)^[5, 14].

The concept of inflation

From the perspective of exchange rate change, the discussion of inflation becomes relevant because of two major considerations. First, a change in the exchange rate is almost certain to cause a change in the domestic prices of tradable goods. Second, the prices of non-tradable goods are also likely to be affected because the non-tradable goods

often use tradable inputs and the demand switch generated by initial change in the exchange rate may not elicit corresponding supply response from the non-tradable sector to leave prices unchanged (Hossain, 2002)^[61].

Ojo, (2000)^[43] and Melberg (1992)^[28, 30] define inflation as a persistence rise in the general price level of broad spectrum of goods and services in a country over a long period of time. Hamilton (2001)^[24] and Piana (2001)^[46] view inflation as an economic situation when the increase in money supply is 'faster' than the new production of goods and services in the same economy. According to Essen (2002) inflation rate is measured as the percentage change in the price index (consumer price index, wholesale price index, producer price index etc).

The concept of inflation has been define as a persistence rise in the general price level of broad spectrum of goods and services in a country over a long period of time. Inflation has been intrinsically linked to money, as captured by the often heard maxim 'inflation is too much money chasing too few good' (Friedman, 1953)^[59]. According to Piana (2001)^[46], economists usually try to distinguish inflation from an economic phenomenon of a onetime increase in prices or when there are price increases in a narrow group of economic goods or services. Inflation is also defined as a persistent and appreciable rise in the general level of prices (Jhingan, 2002)^[65]. Ndidi (2013)^[70] posits that not every rise in the price level is termed inflation as such a rise must be constant, enduring and sustained. She further writes that the rise in price should have effect on almost every commodity and should not be transient. Inflation rate is measured as the percentage change in the price index (consumer price index, wholesale price index, producer price index etc.).

Theoretical Framework

The adverse consequences of inflationary pressure from exchange rate instability have been a serious concern for economists, monetary authorities and policy analyst. Owing to the fact that exchange rate and inflation rate are the major instruments for measuring economic performance (Onuoha, 2014)^[71]. Consequently, assessing link between exchange rate and inflation rate is very essential because the understanding of the relationship between the variables is a prerequisite for adoption of monetary policy by the Nigeria government. Sachs (1995)^[74] stresses that one of the most important and still unsettled, macroeconomic policy issues facing many government is the appropriate exchange rate policy in the course of disinflation. Many governments battling high inflation have attempted to use the exchange rate as a nominal anchor to bring about rapid price stability. Other countries have relied on tight monetary policy and a floating exchange rate. Also, much research has been devoted to explaining the macroeconomic effects of exchange rate regimes, and researchers differ in methodologies and opinions, which makes the issue controversial.

Structuralists¹ argue that the prices of tradable rise directly and the prices of non- tradable may also rise depending on the labor markets conditions and on institutional arrangements such as wage indexation when there is depreciation. Even if the price of non-tradable goods does not raise in response to wage increases but remains sticky downward devaluation may raise the general price level or its growth rate (Agenor 1991, Montiel 1997, Aghevli B.B. *et*

al., 1991, Krugman and Taylor 1987)^[12, 69, 50, 67]. Monetarist view is very different from that of the Structuralist's. They view inflation always and everywhere as a monetary phenomenon and argue that for sustained economic growth, macroeconomic stability is considered as a source of inflation as it affects income distribution significantly. An anticipated currency devaluation may increase the excess money supply and thereby inflation by lowering the demand for domestic currency (Hossain 2002)^[61]. There is still no agreed position of all the theories (Rodric, 2006, Aguirre *et al.*, 2005)^[48]. In reference with the highlights above, below are the following theories. For the purpose of this study the researcher adopts the theory of Purchasing Power Parity founded by Gustav Cassel in 1918 which focus on the inflation – exchange rate relationships. The theory holds that the nominal exchange rate between two currencies should be equal to the ratio of aggregate price levels between the two countries. PPP theory specifies a precise relationship between relative inflation rates of two countries and their exchange rate (Akpan, 2004)^[51]. Purchasing Power Parity theory suggests the equilibrium exchange rate will adjust by the same magnitude as the differential in inflation between two countries.

The effect of exchange rate movement on inflation has been widely discussed and numerous channels through which the effects of currency fluctuations are transmitted unto the domestic price level have been identified in the literature. Exchange rate movements can impact on domestic prices through direct and indirect channels, via their effect on aggregate supply and demand. The direct channel is due to the operation of one price based on Purchasing Power Parity (PPP). It postulated that exchange rate between two currencies is determined by relative movement in the price level of two countries. PPP states that price level between two countries are equal when expressed in the same currency at any period of time. Therefore if Purchasing Power Parity holds exchange rate fluctuations translate into proportional movement in the domestic price level; that is pass – through is equal to one. In a small open economy (an international price taker), a depreciation of the domestic currency will result in higher prices (both for finished goods and intermediate inputs), which will ultimately be transmitted to higher domestic prices. Exchange rate variation can also affect domestic prices through its indirect effect on aggregate demand. Abu Bakarr *et al.* (2012) is of the view that depreciation of the domestic exchange rate reduces the foreign price of domestic goods and services, and thereby increases foreign demand, resulting to an increase in net export and hence aggregate demand and real output. The increase in domestic demand and real income may bid up input price and hence causing workers to agitate for higher wages to maintain a real wage. The nominal wage increase may result to further increase.

Furthermore, depreciation may increase the domestic prices of imported goods and services and thereby, lead to expenditure switching in favor of domestic goods and services which will increase their demands and raising domestic prices.

The Effect of Exchange Rate on Output

According to Ahortor, (2012), the literature on the effect of exchange rate fluctuations on output has produced mixed results. The traditional views such as the elasticity, absorption and the Keynesian approaches assert that

devaluation have positive effect on output. The elasticity approach states that devaluation will improve the trade balance and hence output growth. In Keynesian approach, devaluation will increase the domestic price of foreign imports and reduce the foreign price of domestic exports. This will result to a decrease in imports and an increase in exports, thereby increasing net export, trade balance and output (Dornbusch, 2009)^[57]. The expansionary effect of devaluation on aggregate demand is thus believed to increase output and reduce unemployment (Krugman & Obstfeld, 2014)^[66]. In recent years, a growing literature argues that a depreciation of the domestic currency would have a contractionary effect on output. Currency depreciation increase the domestic currency cost of imported inputs and reduces the volume of imported inputs. Reduction in inputs implies insufficient inputs necessary for production. Thus, because of the lack of enough inputs and higher cost relative to the prices of their domestic final products, firms tend to produce less, which leads to a reduction in aggregate supply. In addition, increased prices of tradable goods caused by depreciation could ultimately result in an increase in the general price level, which will effect negatively on the real wage.

A depreciation (or devaluation) of the domestic currency may stimulate economic activity through the initial increase in the price of foreign goods relative to home goods. By increasing the international competitiveness of domestic industries, exchange rate depreciation diverts spending from foreign goods to domestic goods argued by Magda Kandil. Thus, depreciation may allow domestic output level to rise promoting spending for home products.

Marshall Lerner condition says that - 'Devaluation will improve the trade balance if the devaluing nation's demand elasticity for imports plus the foreign demand elasticity for the nation's exports exceed 1 (one).' If the Marshall-Lerner condition is not satisfied, currency depreciation could produce contraction. Hirseman (1949) points out this fact and conclude that currency depreciation from an initial trade deficit reduces real national income and may lead to a fall in aggregate demand.

1. Another limitation to our Foreign exchange management is due to our monolithic economic base. Nigerians rely heavily on oil as our major source of foreign exchange earnings. Before the advent of oil in Nigeria, the economy was doing quite well with Agricultural product such as Cocoa, Rubber, Cotton, Groundnut etc. driving the nation's foreign exchange earnings. This has changed drastically since the discovery of oil, the Agriculture sector has been neglected and foreign exchange earnings from that sector lost (Ojo 2000, Oloye 2016)^[43, 41].
2. Again, Nigeria has become an import-dependent nation because of the new found sudden wealth in oil. Nigerians now import virtually everything including consumer goods and luxury goods that the nation can easily do without.

I. Inflation

Countries with lower inflation rates tend to see an appreciation in the value of their currency. If inflation in Nigeria is relatively lower than elsewhere, then Nigeria exports will become more competitive and there will be an increase in demand for Naira to buy Nigerian goods.

II. Interest Rate

This is known as “hot money flows” and is an important short run factor in determining the value of a currency. Higher interest rates cause an appreciation while cutting interest rate tends to cause depreciation (Fan 2001).

- a. Nigerian exports are less competitive in the foreign markets.
- b. Nigeria has a monolithic economic base. We rely heavily on oil as our major sources of government revenue.
- c. Nigerians rely heavily on imported goods. And this causes balance of payment deficit.
- d. Nigeria struggles to attract enough capital inflows to finance a balance of payment deficit.
- e. Nigeria has an unstable political and low economic growth.
- f. Investors believe that the value of Nigerian currency will decrease more in the future.

Empirical Review of the Literature

Several empirical studies that have undertaken to identify the possible determinants of inflation in Nigeria and elsewhere have identified exchange rate as another inflation determining variable.

Evidence from a recent study in Nigeria to examine the link among depreciation, inflation and output revealed a mixed result of exchange rate depreciation on output-contractionary in the short term and expansionary in the intermediate and long term. These results tend to suggest that depreciation does not necessarily lead to output expansion, particularly in the short-run. Similar observations were found in a study conducted in Bangladesh context which entailed depreciation as a source of reduction in the cost of intermediation reducing interest rate and thereby easing credit constraint (Hossain & Ahmed, 2009)^[62].

Asogu, (1991)^[54] undertook an empirical investigation based on ten different specifications that covered monetary, structural and open economy aspects of inflation in Nigeria. Variables used in the regressions include money supply and its lagged value. Others are industrial production index, import price index, and the official exchange rate. The result of the estimations suggested that real output, especially industrial output, net exports, current money supply, domestic food prices and exchange rates changes, were the major determinants of inflation in Nigeria. The study therefore confirms the importance of structural character of the economy, open economy and monetary aspects of inflationary trend in Nigeria. Ndung'u (1993) estimated a six variable VAR model with the following- money supply, exchange rate index, domestic price levels, foreign price index, real output to explain the inflation movement in Kenya. He observed that the rate of inflation and exchange rate explained each other. Odusola and Akinola, (2001)^[32] examined output, inflation and exchange rate in Nigeria employing a structural VAR model, evidence from the estimations demonstrated the existence of mixed results in the impacts of exchange rate depreciations on output. Inflation was found to generate substantial destabilizing impacts on output, suggesting that monetary authority should play a critical role in providing environment for growth. The authors concluded that prices, parallel exchange rate and lending rate were important sources of fluctuations in the official exchange rate.

Oluwe, (2009) investigated the volatility of Naira/Dollar exchange rate 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. David, Umeh & Ameh, (2010)^[20] examined the effect of exchange rates fluctuations on Nigeria manufacturing industry. They employed multiple regression econometric tools which revealed a negative relationship between exchange rate volatility and manufacturing sector performance in Nigeria. B Imimole, & A Enoma, (2011)^[56] examined the impact of exchange rate depreciation on inflation in Nigeria (1986-2008). Using Auto Regressive Distributed Lag (ARDL) they found that exchange rate depreciation, money supply and real gross domestic product are the main determinants of inflation in Nigeria and that Naira depreciation is positive, and has significant long-run effect in Nigeria. They also found out that inflationary rate in Nigeria has a lagged cumulative effect. They concluded that although Naira depreciation is relevant in ensuring an improvement in the production of exportable commodity, it must not be relied upon as a potent measure for controlling inflation in Nigeria. Oladipupo, & Onotaniyohuwo, (2011)^[72] using Ordinary Least Square (OLS) investigated the impact of exchange rate on balance of payment in Nigeria between 1970- 2008. They found that exchange rate has a significant impact on the balance of payment position in Nigeria. They concluded that exchange rate depreciation can actually lead to improved balance of payments position if its fiscal discipline is improved. Akinbobola, (2012) using Vector Error Correction Mechanism (VECM) analyzed the dynamics of money supply, exchange rate and inflation in Nigeria. The empirical results confirms that in the long run, money supply and exchange rate have significant inverse effects on inflationary pressure, while real output growth and foreign price changes have direct effect on inflationary pressure.

A study to ascertain the existence (or not) of a relationship between Inflation and economic growth in Nigeria was carried out by Omoke (2010)^[73]. The study employed the co-integration and Granger causality test while Consumer price index (CPI) was used as a proxy for Inflation and the GDP as a perfect proxy for economic growth to examine the relationship. The result of the test showed that for the periods, 1970-2005, there was no co-integrating relationship between Inflation and economic growth for Nigeria data. The results showed the same at different lags. Unidirectional causality was seen running from Inflation to economic growth showing that Inflation indeed has an impact on growth.

In another study by Ayyoub, Chaudhry and Farooq (2011)^[53] a negative and significant inflation growth relationship is found to exist in the economy of Pakistan. The results of the study show that prevailing inflation is harmful to the GDP growth of the economy after a certain threshold level.

Summary of the Literature Review

The concept of the origin of money from the batter days for real money is the same concept that led to the introduction of foreign exchange; Exchange from the local currency to the foreign currency. Exchange rate therefore is the price of

one currency expressed in terms of another currency. Foreign exchange risks occur as a result of adverse movement in exchange rates. Exchange rate fluctuation means a constant change in the value of a country's currency in terms of another currency. Inflation is defined as an economic situation when the increase in money supply is faster than the production of goods and services in the same economy. Inflation rate is measured as a percentage change in the price index (consumer price index, wholesale price index, production price index). Interest rate, inflation, government debts, balance of payment, speculations, political and economic conditions among others are the macroeconomic factors responsible for exchange rate fluctuation in a given economy. A country with higher inflation rate tends to see depreciation in the value of their currency. Higher interest rates cause an appreciation in a country's currency.

Imimole, & Enoma (2011) [56] while examining the impact of exchange rate depreciation on inflation in Nigeria concluded that although Naira depreciation is relevant in ensuring an improvement in the production of exportable commodity, it must not be relied upon as a potent measure for controlling inflation in Nigeria. Finally, it was observed that there is no single indicator that explains exactly why a currency has fluctuation or predicts with certainty what its price will do. Instead, many factors related to demand and supply affect currency values, thus a more knowledge and understanding of market conditions and their implications for currency fluctuations leads to more accurate predictions.

Methodology

This study uses *ex-post facto* design and econometric tool (stationary test, co-integration test and ordinary least square technique) to analyze and interpret data relating to the objectives of the study.

Model Specification

In this study, the researcher will examine the effects of explanatory variables such as interest rate, real output proxy by gross domestic product and exchange rate on inflation rates in Nigeria. Exchange rate is included because from theory it is obvious that there is a relationship between exchange rates and inflation rates. Inflation rates position is made the endogenous variable while interest rates, gross domestic product and exchange rates are the explanatory variables. This could be stated mathematically as follows:

$$INF = f(INTRATE, GDP, EXRATE).$$

Where:

INF = Inflation

INTRATE = Interest rates

GDP = Gross Domestic Product

ERATE = Exchange rates

Chude, (2010) in his work specified his model thus

$$INFL = \beta_0 + \beta_1 LOGMS + \beta_2 LOGRGDP + \beta_4 LOGERATE + \mu.$$

The Model specified that inflation rate is significantly influenced by the Exchange Rate, real output proxy by (GDP) and Interest Rate are formulated as follows;

$$lnINFR = f(EXR, INR, GDP)$$

$$lnINFR = \beta_0 + \beta_1 LnEXR + \beta_2 LnINR + \beta_3 LnGDP$$

LnINFR = Inflation Rate

LnEXR = Exchange Rate

Ln INR = Interest Rate

LnGDP = Gross Domestic Product

β = intercept

$\beta_1 - \beta_3$ = Coefficient of the independent variables

Note: All variables are in their natural logarithm form.

Equation 3.1 implies that the increase or decrease in inflation rate is a function of interest rates, Exchange Rate, and Real Gross Domestic Product (RGDP).

Integrated Equation

$$\left[\eta_m \log Y_t = \alpha_0 + \sum_{i=1} \alpha_i \eta_m Z_i \right] - \left[\eta_m \log Y_{t-1} - \sum_{i=1} \beta X_{t-i} + v_{it} \right] \dots \dots \dots (3.2)$$

Where

$[\eta_m \log Y_t - \sum \beta X_{t-i}]$ is the linear combination of the co-integrated vectors,

$i=1$

X is a vector of the co-integrated variables.

Because equation (3.2) is true, the individual influence of the co integrated variables cannot be separated unless with an error correction mechanism through and error correction model.

The Error Correction Model Equation

$${}^p \left[\eta_m \log Y_t = \alpha_0 + \sum_{i=1} \alpha_i \eta_m Z_i - \lambda ECM_{t-1} + V_{2t} \right] \dots \dots \dots (3.3)$$

Where ECM is the error correction mechanism, $-\lambda$ is the magnitude of error corrected in each period specified in its a priori form so as to restore $\eta_m \log Y_t$ to equilibrium. This can be transformed to reflect the real terms for the effect of exchange rate fluctuation on inflation ECM specified below;

$$(\Delta INF)_t = \beta_0 + \beta_1 \sum_{c=1} \text{LOG} (\Delta INTRATE)_t + \beta_2 \sum_{e=1} (\Delta ERATE)_t + \beta_4 \sum (\text{RGDP})_t +$$

$${}_{F=1p} \beta_6 ECM_{t-1} \dots \dots \dots (3.4)$$

Equation 3.4 is our model for the objectives of the study.

The F-Test is used in testing the overall statistical significance of the variables in the model. It could be inferred from the F probability wherein the model is significant at 5% when probability is less than 0.05, or by comparing the F estimated with the F tabulated. The student t-test shows the significance of the coefficient of each independent variable, wherein an explanatory variable is said to be statistically significant at 5% when the t-value is greater than 1.96

Section IV

Data Presentation

The estimation will start by insuring that the variables in their behaviors conform to the assumption of the classical regression model. As a result, the time series properties of the data will be examined in order to avoid spurious results emanating from the non-stationary of the data series and to analyze the dynamic structure of the relationship. The correlation and multiple regression analysis of the Ordinary Least Square (OLS) is the estimation technique that is being

employed in this study to determine the effect of exchange rate on inflation rate in Nigeria.

Table 1: GDP growth rate, Exchange rate, Inflation rate and Interest rate in Nigeria from 1986- 2018

Table 2 shows that exchange rate has positive relationship with economic growth but not significant. This implies that exchange rate volatility contributes 6.03% to Gross Domestic Product. This result is in line with Akpan, (2008) [3] and Azeez *et al.*, (2012) [9] that exchange rate has a positive relationship with Nigeria economic growth. But interest rate and rate of inflation have inverse effect on economic growth. This implies that the higher the interest rate and rate of inflation the lower the level of Gross Domestic Product. This result conforms to Ashar (2012) that interest has negative relationship with economic growth but inflation rate result is not in line with the finding.

Table 1: Regression Result

Variable	Co-efficient	t-value	P
Constant	0.626	-1.411	0.170
Foreign Exchange Rate	0.645	3.554	0.001
Inflation Rate	0.160	0.940	0.356
Interest Rate	0.062	0.374	0.711
R ²	0.392		
Adjusted R ²	0.322		
F-value	5.589		
Probability	0,004		

The value of the intercept which is 0.626 shows, that the foreign exchange rate on inflation in Nigerian will experience a 0.626 increase when all other variables are not held constant. The estimate coefficients which are 0.645 {Exchange Rate} shows that a unit change in Foreign Exchange Rate will cause a 0.645% decrease in RGDP, 0.062 {Interest Rate} shows that a unit change in Interest Rate will cause a 0.62% increase in RGDP, 0.160 {Inflation Rate} shows that a unit change in Inflation Rate will cause a 0.160% decrease in RGDP. The result shows that foreign exchange rate has positive effect on fluctuation inflation in Nigeria and this result is in line with previous studies (Asher, 2012; Azeez *et al.*, 2012 and Obansa *et al.*, 2012) [7-9] that foreign exchange rate has positive impact on Real Gross Domestic Product.

Discussion of Findings

The original time series data were checked for stationarity. Fig 4.1 reveals non stationarity as shown below:

Source; Authors’ Eview Output.

Augmented Dicker- Fuller (ADF) tests on the series reveals the number of times the non-stationary time series are to be differenced to achieve stationarity. The results are presented in

Table 2: ADF Unit ROOT Test Result.

Variable	Test Critical values				
	1%	5%	10%	ADF	Status
Exchange rate	-3.5457	-2.9530	-2.7117	-3.780154	1(1)
Inflation rate	-4.6852	-3.8705	-3.7142	-6.876815	1(1)
Interest rate	-4.6752	-3.8565	-3.7120	-7.320612	1(1)
Real GDP	-4.7076	-3.8745	-3.7140	-4.580901	1(2)

Source: Author’s Eview output

In the above unit root test the null hypothesis of a unit root is H0: a = 0 versus the alternative: H1: a < 0. The ADF unit

root test result presented above confirms that stationarity was achieved for real GDP at the second difference while exchange rate, inflation rate and interest rate achieved stationarity at first difference. The null hypothesis of unit root was not rejected rather the variables, exchange rate, inflation rate and interest rate were differentiated at first difference while the variable, real GDP was differentiated at second difference.

References

- Allen MP. Model Specification in Regression Analysis. Springe International publishing London, 1997.
- Adams YK. Structural Disequilibrium and Inflation in Nigeria: A Theoretical and Empirical Analysis, Center for Economic Research on Africa, New Jersey, 2000.
- Akpan PL. Foreign Exchange Market and Economic Growth in Emerging Petroleum Based Economy; Evidence from Nigeria (1970-2003). African Economic and Business Review. 2008; 1(5):20-29.
- Aliyu SRU. Impact of Oil Price Shock and Exchange Rate Volatility on Economic Growth in Nigeria: An Empirical Investigation. Research Journal of International Studies. 2011; 3(2):100-110.
- Aliyu SUR. Exchange Rate Volatility and Export Trade in Nigeria; an Empirical Investigation. An MPRA paper No 13490, 2008.
- Ayagi IA. The Trapped Economy (A Non-ideological Strategy for Self-Reliance); Heinemann Educational Books (Nigeria) limited, Ibadan, 1990.
- Asher OJ. The Impact of Exchange Rate Fluctuation on the Nigerian Economic Growth (1980-2010). Unpublished B.sc Thesis of Caritas University Emene, Enugu State, Nigeria, 2012.
- Akpokodje G. Exchange Rate Volatility and External Trade: The Experience of Selected African Countries. In Adeolu Adenikinju, Dipo Busari and Sam Olofin (3rd edition) Applied Econometrics and Macroeconomic Modeling in Nigeria, 2009.
- Azeez BA, Kolapo FT, Ajayi LB. Effect of Exchange Rate Volatility on Micro Economic Performance in Nigeria; Inter Disciplinary Journal of Contemporary Research in Business. 2012; 1(6):75-88.
- Asinya *et al.* Exchange rate depreciation and government policy in Nigeria: an Empirical Evidence Journal of Business and Management. 2014; 2(6):40-49.
- Adenutsi DE, Ahorito RK. Remittances, Exchange Rate and Monetary Policy in Ghana. African Journal of Monetary and Integration. 2008; 4(3):90-105.
- Agenor C, Pierre R. Output, Devaluation and the Real Exchange Rate in Developing Countries, Weltwirtschaftliches archive. 1991; 1(7):1-23.
- Aigbokhan BE. The Naira Exchange Rate Depreciation and Domestic Inflation; The Indian Journal of Economics. 1991; 5(2):40-50.
- Ajao MG, Igbekoyi OE. Determinants of Real Exchange Rate Volatility in Nigeria; Academic Journal of Inter-disciplinary Studies MCSER – CEMAS – Sapireza University of Rome. 2013; 5(5):101-114.
- Babbie ER. The Practice of Social Research. Belmont, CA. Wadworth, Cengage, 2010.
- Canetti E, Greene J. A Monetary Growth and Exchangeable Rate Depreciation as Causes of Inflation

- in Africa Countries: An Empirical Analysis. IMF Working Paper, WP/02/177, 1999.
17. Chhiber A, Shafik NS. Does Devaluation Hurt Private Markets and Inflation in Africa; The case of Ghana. World Bank Working Paper, WP/05/427, 1990.
 18. Colander DC. The General Theory of Employment, Interest and Money. New York: Harcourt Brace Publishers, 1995.
 19. De Vaus DA. Research Design in Social Research. SAGE publication, London, 2001.
 20. David C, Umeh A. The Effect of Exchange Rate Fluctuation on Nigerian Manufacturing Sector. African Journal of Business Management. 2010; 2(1):171-183.
 21. Essien A. Exchange Rate Pass- Through to Inflation in Nigeria West African Journal of Monetary and Economic Integration Accra. 2005; 10(2):256-268.
 22. Eibadawi IA. Inflationary Process, Stabilization and Role of Public Expenditure in Uganda Mimeo, July, World Bank Washington D.C, 1990.
 23. Lu M, Zhang Z. Exchange Rate Reforms and its inflationary Consequences: An Empirical Analysis for China; Applied Economics. 2003; 35(2):189-99.
 24. Hamilton A. Exploding Inflation Zeal intelligence, 2001.
 25. Honohan P, Lane PR. Divergent Inflation Rates in EMU Economics Policy, International Journal of Academic Research in Economic and Management Sciences. 2003; 37(1):59-94.
 26. Honohan P, Lane PR. Exchange Rates and Inflation in EMU: An update Prepare as a Web Essay for Economic policy. International Journal of Academic Research in Economic and Management Sciences. 2004; 42(3):20-32.
 27. Jameela OY. Exchange Rate Changes and Output Performance in Nigeria. Journal of Social Science. 2010; 32(2):33-51.
 28. Merlberg HO. Inflation an Overview of theories and solutions, 1992. (www.geocities.com/hmelberg/papers/921201.htm)
 29. Moser GG. The Main Determination of Inflation in Nigeria Schwarz Bayesian Criterion Staff papers, IMF. 1995; 42(2):39-50.
 30. Melberg HO. Inflation an Overview of Theories and Solutions, 1992. (www.geocities.com/hmelberg/papers/921201.htm).
 31. Ngerebo AT. The Impact of Foreign Exchange Fluctuation on the Intermediation of Banks in Nigeria. African Journal of Business Management. 2012; 8(2):1-15.
 32. Odusola AF, Akinlo AE. Output Inflation and Exchange Rate in Developing Countries, an Application to Nigeria. 2001; 1(9):41-50.
 33. Omojimate BU, Akpokodje G. The Impact of Exchange Rate Reforms on Trade Performance in Nigeria; Journal of Social Sciences. 2010; 1(5):75-88.
 34. Obasike PL. Foreign Exchange Management in Nigeria: past, present and future Central Bank of Nigeria Economic and Financial Review, 1991; 2(1):171-183.
 35. Ojo MO. Management of Foreign Exchange under Nigeria Structural Adjustment Program; CBN Economic and Financial Review. 1990; 3(6):407-417.
 36. Olisadebe EU. Appraisal of Recent Exchange Rate Policy Measure in Nigeria; CBN Economic and Financial Review. 1991; 2(5):54-79.
 37. Oloye MI. Foreign Exchange Management in Nigeria: The Journey So Far Pyrex Journal of Business and Finance Management Research. 2016; 4(3):1-15.
 38. Umaru A, Anono Z. Effect of Inflation on the Growth and Development of the Nigeria Economy (An empirical Analysis) International Journal of Business and Social Science. 2012; 1(3):1-19.
 39. Odedokun MO. Dynamics of Inflation in Sub-Saharan Africa The Role of Foreign Inflation official and Parallel Market Exchange Rates and Monetary Growth; Dundee, Scotland University of Dundee, 1996.
 40. Odusola AF, Akinlo AE. Output, Inflation and Exchange Rate in Developing countries; An Application to Nigeria, The development Economies. 2001; 2(4):199-222.
 41. Oloye MI. Foreign Exchange Management in Nigeria; the Journey So Far. A Journal of Business and Finance Management; Pyrex publication. 2016; 2(2):12-17.
 42. Owosekun A, Odama JS. The Causes of Inflation in Nigeria: Some Empirical Evidence, (in) Onitiri HMA and Awosika K (ed). Proceedings of a National Conference NISERI badan, 1975.
 43. Ojo MO. The Role of the Autonomy of the Central Bank of Nigeria (CBN) in promoting macroeconomic stability Central Bank of Nigeria economic and financial review. 2000; 38(1):98-110.
 44. Olafin S. An Introduction to microeconomics Malthouse Social Science Series Malthouse Press Limited Lagos, 2001.
 45. Oyejide TA. Thoughts on Stability of Nigeria's Exchange Rate; The Nigeria Banker, 1989.
 46. Piana V. Exchange Rate; Economic Web Institute, 2001.
 47. Phelan, Wren. Exploring reliability in academic assessment. UNI. Office of Academic Assessment, 2004.
 48. Rodric D. The Real Exchange Rate and Economic Growth; Harvard University, Cambridge, 2006.
 49. Kallet RH. How to write the methods section of a research paper, 2004.
 50. Aghevli Bijan, Mohsin Khna S, Peter Montiel J. Exchange Rate Policy in Developing Countires: Some Analytical Issues, IMF Occasional Paper 78(Washington: International Monetary Fund), 1991.
 51. Akpan. The Water Quality of Some Tropical Freshwater Bodies in Uyo (Nigeria) Receiving Municipal Effluents, Slaughter-House Washings and Agricultural and Drainage. The Environmentalist, 2004, 24, 49-55.
<http://dx.doi.org/10.1023/B:ENVR.0000046346.93401.5c>
 52. Akpan EO, Atan JA. Effects of exchange rate movement on Economic growth in Nigeria CBN Journal for applied statistic, 2012, 1-14.
 53. Ayyoub Chaudhry and Farooq. Does Inflation Affect Economic Growth? The case of Pakistan. Pakistan Journal of Social Sciences (PJSS). 2011; 31(1):51-64.
 54. Asogu JO. An Econometric Analysis of the Nature and Causes of Inflation in Nigeria. CBN Econ. Financ. Rev. 1991; 29(3):239-253.
 55. Asher OJ. The Impact of Exchange rate Fluctuation on the Nigeria Economic Growth (1980 – 2010). Unpublished B.sc Thesis of Caritas University Emene, Enugu State, Nigeria, 2012.

56. Imimole B, Enoma A, Exchange Rate Depreciation and Inflation in Nigeria (1986–2008). Department of Economics, Ambrose Alli University, Ekpoma, Nigeria. *Business and Economics Journal*, Volume 2011: BEJ-28.
57. Dornbusch R. Monetary Policy under Exchange-Rate Flexibility. *Journal of International Economics*, 2009.
58. Essien. Exchange Rate Pass-Through to Inflation in Nigeria. *West African Journal of Monetary and Economic Intergration (First Half)*, Accra: West African Monetary Institute, 2002, 5(1).
59. Friedman M. The methodology of positive economics. In *Essays in Positive Economics*. Chicago: Chicago University Press [in Snowdon and Vane 1953- 1997.
60. Hirschman AO. Devaluation and the Trade Balance: A Note, *Review of Economics and Statistics*. 1949; 31(1):50-53.
61. Hossain A. Exchange Rate Responses to Inflation in Bangladesh, *International Monetary Fund (IMF)*, October 2002, IMF Working Paper No. 02/166, 2002.
62. Hossain M, Ahmed M. An Assessment of Exchange Rate Policy under Floating Regime in Bangladesh, *The Bangladesh Development Studies*, December, 2009, XXXII:4.
63. Gbosi. The exchange rate of the naira was relatively stable between 1973 and 1979 during the oil boom er, 1994, 70.
64. Gbosi A. Inflation, Unemployment and Monetary Policy, *International Journal of Manpower*. 2001; 22(4):393-405.
<https://doi.org/10.1108/ijm.2001.22.4.393.4>
65. Jhingan ML. *Macroeconomic Theory: 10th Edition*, Vrinda Publication Ltd. New Delhi, 2002.
66. Krugman RP, Obstfeld M. *International Economics: Theory and Policy*. Boston, U.S.A: Pearson Educational International, 2014.
67. Krugman, Taylor. *Macro Models for Developing Countries (New York: McGraw-Hill)*, 1987.
68. Kenen. *Exchange Rates, Domestic Prices, and the Adjustment Process: A Survey of Recent Evidence*, Occasional Papers 1(New York: Groups of Thirty), 1980.
69. Montiel PJ. *Exchange Rate Policy and Macroeconomic Management in ASEAN Countries. ÓMacroeconomic Issues Facing ASEAN Countries*. Washington, DC. IMF, 1997.
70. Ndidi Dania E. Determinants of inflation in Nigeria (1970-2010). Institute of Continuing Education (ICE), Benin, Edo State, Nigeria: *The Business &Management Review*, 2013, 3(2).
http://www.abrnr.com/myfile/conference_proceedings/Con_Pro_12315/13-dubai13.pdf.
71. Onuoha Ijeoma P. Impact of Exchange Rate Variation and Inflation on the Economic Growth of Nigeria: An Empirical Approach. Department of Business Education Ebonyi State College of Education, Ikwo, Ebonyi State, Nigeria. *Research Journal of Finance and Accounting* www.iiste.org, 2014.
72. Oladipupo AO, Onotaniyohuwo FO. Impact of exchange rate on balance of payment in Nigeria African research review: An international multidisciplinary Journal, Ethiopia. 2011; 5(4):73-88. www.afirrevjo.com.
73. Omoke. Money, Price and Output: A Causality Test for Nigeria. *American Journal of Scientific Research* ISSN 1456-223X, Euro Journals Publishing, Inc, 2010, 78-87.
74. Sachs, *Macroeconomics in the Global Economy (New York: Harvester Wheat sheaf)*, 1995.