

Responsiveness of Exchange Rate on Economic Growth Evidence from Nigeria

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INTRODUCTION

The exchange rate of an economy has a crucial role to play as it directly affect all the macroeconomic variables such as: domestic price indicator, profitability of traded goods and services, allocation of resources and investment decisions, which explains why the monetary authorities and private sectors seek stability in these variables [1]. As a matter of fact, exchange rate fluctuations are now the bedrock for all economic activities globally, portraying exchange rate management as a major determinant of many countries economic policies [2]. Exchange rate is an essential macroeconomic variable for formulating economic policies in general and of economic reform programmes in particular in which these policies help accelerate the achievement of set macroeconomic goals [2],[3]. In Nigeria, these objectives include achieving and upholding price stability, balance of payment equilibrium, full employment, even distribution of income, economic growth and development. [4], points that economic growth connotes a sustained increase in a country's national income. When the GNP rises eventually, it depicts a growth in the economy [4]. Conversely, economic development refers to the structural and purposeful conversion of all the economic indicators from a low to a high level [5]. Exchange rate being the core of this current study may be described as the price of one currency in terms of another currency as buttressed by Fapetu, (2014) [6], this rate is an exceptional price which governments is interested in.

For instance, evidence from the literatures, depicts that the choice of the right exchange rate or maintaining relative stability is essential for both internal and external balance and economic growth in the long run [7]. While on, the contrary, inefficient management of the exchange rate causes distortion in the patterns of consumption and production as opined by[8]. Notably, excessive fluctuation in exchange rate creates uncertainty and risks for economic agents with destabilizing effects on the macro-economy. No wonder, the private sector operators are concerned about the exchange rate fluctuations because of its impacts on their portfolios and may result in capital gains or losses according to [9]. In line with the above, the study of Douglas and Jike (2005) noted that movements in the exchange rate are

known to have ripple effect on other economic variables such as interest rate, inflation rate, unemployment rate, terms of trade, and so on. This claim was corroborated by [10], where they pinpointed that exchange rate movement equally exerts effects on inflation, prices incentives, fiscal viability, and exports competitiveness, efficiency in resource allocation, international confidence and balance of payments equilibrium. All of these factors underscore the importance of exchange rate to the economic wellbeing of every country that deals in the international trade of goods and services [11].

STATEMENT OF THE PROBLEM

Exchange rate policies in developing countries are often sensitive and controversial, mainly because of the kind of structural transformation required, such as reducing imports or expanding non-oil exports, invariably imply a depreciation of the nominal exchange rate. Such domestic adjustments, due to their short-run impact on prices and demand, are perceived as damaging to the economy. Ironically, the distortions inherent in an overvalued exchange rate regime are hardly a subject of debate in developing economies that are dependent on imports for production and consumption [12]. There is no consensus in literature regarding the direction of impact that exchange rate has on economic development thereby creating a vacuum in knowledge. The need to provide answers to the growing debate motivated this study which is aimed at determining the response of exchange rate on economic growth in Nigeria, covering the period 1986 to 2015.

In particular, the issue of exchange rate management and macroeconomic performance in developing countries has been a major concern among other economic policies. The debate focuses on the degree of fluctuations in the exchange rate in the face of internal and external shocks. There appears a consensus view on the fact that devaluation or depreciation could boost domestic production through stimulating the net export component. This is evident through the increase in international competitiveness of domestic industries leading to the diversion of spending from foreign goods whose prices become high, to domestic goods. It is argued that the success of currency depreciation in promoting trade balance largely depends on switching demand in proper direction and amount as well as on the capacity of the home economy to meet the additional demand by supplying more goods. On the whole, exchange rate fluctuations are likely, in turn, to determine economic performance.

OBJECTIVES OF THE STUDY

The main objective of this study is to determine the responsiveness of exchange rate on the Nigerian economic growth. In line with the main objective, the specific objective of the study is to determine the response of exchange rate on economic growth in Nigeria.

RESEARCH QUESTIONS

Research question to the study is, to what extent economic growth impacted on exchange rate in Nigeria?

HYPOTHESIS OF THE STUDY

Based on the research objectives, the following hypothesis is formulated,

H_{o1} Economic growth does not have positive and significant impact on exchange growth in Nigeria.

SCOPE OF THE STUDY

The goal of this study is to investigate the response of economic growth on exchange rate in Nigeria. The study covers the period 1986-2015. The proxy for economic development is real gross domestic product (GDP). Official exchange rate is our proxy for exchange rate movement in Nigeria while interest rate (lending rate and inflation rate are the control variable)

EVOLUTION OF EXCHANGE RATE REGULATION IN NIGERIA

Nigeria is one of the or most pre-colonial African societies that practiced closed economy (autarky) based on peoples way of life. However the arrival of the white men aid to the liberation of closed economy. The issues associated with foreign exchange did not arise at the time due to the practices of trade by barter system. Even with foreign colonization and the use of currencies, foreign exchange market was not in existence since Nigeria never had national currency.

Foreign exchange market in Nigeria came about through the establishment of the national currency. The passing of exchange control act of 1962 (CBN 2010) after the independence was the first attempt to regulate the foreign exchange system in Nigeria. In so doing central bank of Nigeria was vested the jurisdiction or sovereignty to approve all application of the visible imports as well as certain investible item's apart repatriation of capital, profit and dividend where repatriation of capital, profit and dividend where previously the exclusive function of federal ministry of finance [13]. There are two major exchange rate policy in Nigeria independence in (1960).

THE CONCEPT OF EXCHANGE RATE

It remains a common emphasis that international trade flows is a primary determinants of exchange rates. This is due, in part, to the fact that governments maintained tight restrictions on international flows of financial capital. Oleka *et al.*, (2014) [14] posit that the role of exchange rate changes in eliminating international trade imbalances suggests that we should expect countries with current trade surpluses to have an appreciating currency, whereas countries with trade deficits should have depreciating currencies. Such exchange rate changes would lead to changes in international relative prices that would work to eliminate the trade imbalance. In recent years, it has become clear that the world does not work in the simple way just considered. For instance, with financial liberalization it appears the volume of international trade in financial assets now dwarfs trade in goods and services.

Moreover, we have seen some instances where countries with trade surpluses have depreciating currencies, whereas countries with trade deficits have appreciating currencies. Economists have responded to such real-world events by devising several alternative views of exchange rate determination [15]. These theories place a much greater emphasis on the role of the exchange rate as one of many prices in the worldwide market for financial assets. Modern exchange rate models emphasize financial-asset markets. Rather than the traditional view of exchange rates adjusting to equilibrate international trade in goods, the exchange rate is viewed as adjusting to equilibrate international trade in financial assets. Because goods prices adjust slowly relative to financial asset prices and financial assets are traded continuously each business day, the shift in emphasis from goods markets to asset markets has important implications [16]. Exchange rates will change every day or even every minute as supplies of and demands for financial assets of different nations change. An implication of the asset approach is that exchange rates should be much more variable than goods prices.

EXCHANGE RATE AND TRADE BALANCE

In recent time, there has been shift in emphasis away from exchange rate models that rely on international trade in goods to exchange rate models based on financial assets. However, there is still a useful role for trade flows in asset-approach models, since trade flows have implications for financial-asset flows [17]. If balance-of-trade deficits are financed by depleting domestic stocks of foreign currency, and trade surpluses are associated with increases in domestic holdings of foreign money, we can see the role for the trade account. If the exchange rate adjusts so that the stocks of domestic and foreign

money are willingly held, then the country with a trade surplus will be accumulating foreign currency. As holdings of foreign money increase relative to domestic money, the relative value of foreign money will fall, or the foreign currency will depreciate. Mohammed Yusoff, (2012)[18]. argue that although realized trade flows and the consequent changes in currency holdings will determine the current spot exchange rate, the expected future change in the spot rate will be affected by expectations regarding the future balance of trade and its implied currency holdings.

CONCEPT OF ECONOMIC GROWTH

According to Eze (2013) [17] economic development is described as a long-term expansion of the economy productive potential. Sustained economic growth shall have impacts on higher real living standards and reducing unemployment rate. Short term development is measured by the percentage change in real GDP annually. Palmer (2012) defined economic growth refers to an increase in the productive capacity of an economy as a result of which the economy is capable of producing additional quantities of goods and services. Normally the living standard is measured by the quantity of goods and services available thus economic growth is synonymous with enhance in the general living standard.

THEORETICAL REVIEW

In Nigeria, the exchange rate policy has undergone substantial transformation from the immediate. However, in spite of these different methods of determining exchange rate, a realistic exchange rate has not been found for naira because the existing exchange rate systems had continued to widen the gap between the official and the parallel markets and had failed to prevent disequilibrium in the foreign exchange market. It has also failed to ensure stability of the exchange rate as well as maintaining a favorable external reserve positions and consequently ensure external balances [16].

In addition, the various exchange rate systems in used in Nigeria had also failed to eliminate or reduce the incidence of capital flight and the power to correct the sky rocketing Naira exchange rate has been missing. Therefore, what an unfavorable movement in exchange rates meant is a movement in current exchange rates away from mint parities in the direction of specie-export points. This is a lower exchange value for Nigeria and this has been perceived by Nigerians to be the most dominating economic problem of the country [18]

Exchange rate in Nigeria is an important macroeconomic variable in the economy today because of its significance in international trade, economic stability, external balance and

competitiveness, which is done via the mechanism of the relative prices of foreign and local commodities, services and assets [17]. Exchange rate is an important economic measurement because it reflects the economic strength and competitiveness with other economies[18].

Most importantly, a country's economic objectives are the strong factors in determining the exchange rate of such country. The strength of a country's currency depends on a number of factors. These include the state of the economy in terms of its competitiveness and volume of its exports, the level of domestic production, and the quantum of foreign reserves. Where the importation of essential goods and services becomes costly, as a result of increase in prices of domestic goods, the purchasing power of the domestic currency reduces- a depreciation of the domestic currency. As a matter of fact, there exists a numerous body of theoretical and empirical research that suggested a more suitable exchange rate for developed and developing market economies (like Nigeria) and how exchange rate fluctuation affects Nigerian economic growth.

Exchange rate changes have pervasive impacts, with consequences for prices, wages, interest rates, level of production, and employment opportunities. After the Bretton Woods System collapsed, many countries have continued to witness incessant and ever increasing fluctuations in their exchange rates, particularly short term volatility has been on a crescendo sequel to the shift from fixed to flexible exchange rate in early 1970's and thereafter. High volatility and sudden changes in exchange rate is one of the obstacles for the success of macroeconomic policy. Forecasting nominal exchange rates is a difficult task especially in a flexible exchange rate arrangement [17]. Factors affecting exchange rate can be economic, political, and psychological and can also be a short run or long run phenomenon. Behavior of exchange rate can be captured through macro variables and/or micro variables. Policy makers and monetary authorities are always looking for feasibly solutions to reduce the fluctuation in currencies values.

EMPIRICAL REVIEW

A review of previous works on the relation between exchange rate and economic growth is necessary to understanding the various linkages between the two macroeconomic variables as well as the positions of other authors and researchers. For instance, Amassoma and (Eze, 2013)[17]. examined the Impact of Exchange Rate Fluctuation on the Nigerian Economic Growth using an annual data of forty-three (43) years covering the period (1970 - 2013). The study employed econometric techniques such as; Multiple Regression Model, Augmented Dickey Fuller (ADF) test, Johansen Cointegration test and the Error Correction

Model (ECM). Evidence from this study exhibited that there exists a positive but non-significant impact of exchange rate fluctuation on Nigerian economic growth in both the long run and short run. This result is attributed to the ability of the Nigerian government to effectively regulate some other important macroeconomic variables which can infuriate exchange rate which has thereby helped curtail the effects of exchange rate fluctuation during the study period.

Mohammed Yusoff, (2012) [18] investigated the effects of exchange rate fluctuation on economic growth of Nigeria. Using annual data for the period 1986-2012, the study employed the ordinary least square (OLS) technique, the Johansson co-integration test and the error correction mechanism (ECM) to examine the relationship between exchange rate and economic growth. The result suggests that there is no strong relationship between exchange rate and economic growth in Nigeria.

[14], investigated the impact of foreign exchange rate on the growth of Nigerian economy for the periods 2000 to 2014. Multiple regression models were used to analyze the data in order to establish a functional relationship between the dependent variable and independent variables. The analysis was done with the use of Statistical Package for Social Sciences (SPSS). The results revealed that there is variation on money supply and naira exchange rate; hence the monetary policy instruments were not efficacious in the attainment of price and exchange rate stability in Nigeria. Again, growths in money supply impact negatively on the economy as they breed inflation and there are significant relationships among M1, real exchange rate, unemployment rate and inflation rate.

Eze (2013), [17] investigated the effect of misalignment of real exchange rate on the output of the Nigeria industrial sector. The results showed that real exchange rate play a significant role in determining the industrial output and also in addition, availability of foreign exchange increase through contentious export drive from both oil and non-oil products will contribute tremendously to increase industrial output.

Eze and Okpala (2014), [15] tested the impact of the two basic exchange rate policies, namely, the fixed and flexible regimes, using the Chow test procedure to determine the structural stability of the relationship between exchange rate and output of goods and services during the two regimes. The estimated long run equation revealed that, apart from government expenditure (GEX), both exchange rate (EXR) and money supply (M2) were highly significant in the determination of Nigeria's economic growth performance. The adjusted R-square value of about 0.85 was considerably high implying that about 85% of

the variability in Nigeria's economic growth performance is determined by the regressors. The joint influence of the explanatory variables measured by the F-value of 76.19601 was also highly significant.

[14],[15], empirically examined the relationship existing among Exchange rate, Interest rate and economic growth in Nigerian economy over the period of 1970-2010. The study adopted vector auto-regression (VAR) technique, with specific emphasis on Impulse Response factor and the Forecast Error Variance Decomposition. The result indicated that Exchange rate had a stronger impact on Economic growth than Interest rate. Particularly, Interest rate impact was found to be positive but however declined as the time horizon increased. It had a little impact on Economic growth in the period of regulation than in the deregulation era. The conclusion arising from the study showed that Exchange rate liberalization was good to Nigerian Economy as it promotes Economic growth.

Inam and Umobong (2015)[4] analysed the relationship between exchange rate movements and economic growth in Nigeria using annual data spanning 1970-2011. The study employed the Ordinary Least Square (OLS) technique and the Granger Causality Test, the study revealed the existence of a positive and non-significant relationship between exchange rate and economic growth in Nigeria. The results also indicate that there is no causality between exchange rate and economic growth in Nigeria.

Inam and Umobong (2015)[4] investigated the effect of exchange rate movements on real output growth in Nigeria. Based on quarterly series for the period 1986 to 2010, the paper examines the possible direct and indirect relationship between exchange rates and GDP growth. The relationship is derived in two ways using a simultaneous equations model within a fully specified (but small) macroeconomic model. A Generalised Method of Moments (GMM) technique was explored. The estimation results suggested that there is no evidence of a strong direct relationship between changes in exchange rate and output growth. Onuorah and Osuji (2014)[11] Examined the relationship between exchange rate and economic growth in Nigeria, and adopted the Ordinary Least Square (OLS) method of estimation for data covering the period between 2000 and 2010. The results from the econometric analyses show that there is a short-run relationship between exchange rate, inflation rate, interest rate and GDP.

Fapetu and Olajide, (2014)[6],[9], examined foreign exchange management and the Nigeria economic growth from 1970 to 2012. The scope of the study is limited to Nigeria. The ordinary least square estimation techniques within the error correction model (ECM)

framework are employed in the study. The choice of the ECM is to enable it account for the explanatory potent of the regressions in both the short run and long run as well as ascertaining the dynamics of attaining long run equilibrium, an issue which is the key to studies related to macroeconomics variables one of which is the exchange rate. The Johansen-Joselius Co- Integration test is employed in this study, to test for the presence of a long run relationship between the dependent variable (exchange rate) and the independent variables. Mohammed Yusoff (2012)[18]. examined the impact of exchange rate on economic growth from 1986 to 2013. The correlation and regression analysis of the ordinary least square (OLS) were used to analyze the data. The result revealed that exchange rate has positive impact but non-significant with. This supports previous studies that developing countries are relatively better off in the choice of flexible exchange rate regimes. The result also indicated that interest rate and rate of inflation have negative impact on economic growth but non-significant.

RESEARCH METHODOLOGY

RESEARCH DESIGN

This study is purly based on historicial events, which entails events that had already takn place. Upon this premise, the research design for this study is *ex post-facto*. This is because the events we are studying had indeed taken place. This research design can also be referred to as comparative research, and may be applied in studies aimed at ascertaining cause-effect association between the explanatory variables and the explained variable (Mahmood, Ehsanullah, & Ahmed, 2011)[16]. To this end, we will be aided by published historical and verifiable data in estimating our respective models.

NATURE AND SOURCE OF DATA

The data for this study is basically of secondary source, and are collated from the Central Bank of Nigeria statistical bulletin, various years. The various data to be assembled include the real GDP, official exchange rates, interest rates (lending rates and the inflation rates). Annualised form of the data will be used in our diverse econometrical and statistical estimations.

DEPENDENT VARIABLES

The dependent variables in the study the official exchange rate (EXR)

INDEPENDENT VARIABLES AND CONTROL VARIABLE

The independent variables include is the Real gross domestic Product (RGDP), while the control variables are;

PRESENTATION AND ANALYSIS OF DATA

Data set for the study is presented below. The time series data which were collated from the Central Bank of Nigeria Statistical Bulletin 2005 covered the period 1986 to 2015.

Table 1: Data Presentation

Year	RGDP	INTR	EXR	INF
1986	134.60	12.00	2.0206	5.39
1987	193.13	19.20	4.0179	10.18
1988	263.29	17.60	4.5367	56.04
1989	382.26	24.60	7.3916	50.47
1990	472.65	27.70	8.0378	7.5
1991	545.67	20.80	9.9095	12.7
1992	875.34	31.20	17.2984	44.81
1993	1,089.68	36.09	22.0571	57.17
1994	1,399.70	21.00	21.8861	57.03
1995	2,907.36	20.79	21.8861	72.81
1996	4,032.30	20.86	21.8861	29.29
1997	4,189.25	23.32	22.8861	10.67
1998	3,989.45	21.34	22.8861	7.86
1999	4,679.21	27.19	92.6934	6.62
2000	6,713.57	21.55	102.1052	6.94
2001	6,895.20	21.34	111.9433	18.87
2002	7,795.76	30.19	120.9702	12.89
2003	9,913.52	22.88	129.3565	14.03
2004	11,411.07	20.82	133.5004	15.01
2005	14,610.88	19.49	132.147	17.85
2006	18,564.59	18.70	128.6516	8.24
2007	20,657.32	18.36	125.8331	5.38
2008	24,296.33	18.70	118.5669	11.6
2009	24,794.24	22.62	148.8802	12.5
2010	54,612.26	22.51	150.298	13.7
2011	62,980.40	22.42	153.8616	10.8
2012	71,713.94	24.65	157.4994	12.2
2013	80,092.56	24.94	157.3112	8.5
2014	89,043.62	24.86	159.6432	8

2015	94,144.96	16.85	193.28	9.55
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Source: CBN Statistical Bulletin, 2015.

RESULTS AND DISCUSIONS

Table 2: Descriptive Statistics

	EXR	RGDP	INF	INTR
Mean	83.44138	20779.80	20.48667	22.48516
Median	107.0243	6804.387	12.35000	21.44375
Maximum	193.2800	94144.96	72.81000	36.09000
Minimum	2.020600	134.6033	5.380000	12.00000
Std. Dev.	64.35973	29361.80	19.23867	4.695085
Skewness	-0.042687	1.468377	1.472253	0.751235
Kurtosis	1.353275	3.662164	3.702191	4.367331
Jarque-Bera	3.398738	11.32873	11.45398	5.158762
Probability	0.182799	0.113467	0.113257	0.075821
Sum	2503.241	623394.1	614.6000	674.5548
Sum Sq. Dev.	120123.1	2.50E+10	10733.67	639.2708
Observations	30	30	30	30

Source: Researcher's

Table 1 presents the descriptive statistics of the variables between 1986 and 2015. The results reveal that real GDP averaged N20779.80 billion between 1986 and 2015. RGDP was highest in 2015 at N94144.96 billion and lowest in 1986 at N134.6033 billion respectively. All the variables are normally distributed as explained by the p value of the Jarque-Bera statistics. This is a desirable outcome as the stability of the data is necessary for a reliable result.

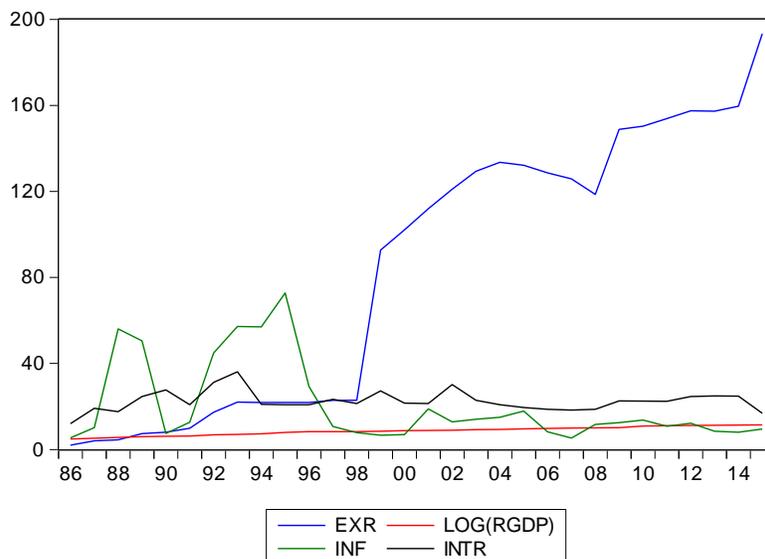


Figure1: Graphical representation of proxied variables

Table 3: Unit Root Test

Variable	ADF Test Statistic	5% Critical Value	Test for Unit Root	Durbin-Watson stat
EXR	-6.735428	-3.530924	1(1)	1.672654
Log(RGDP)	-6.836524	-3.530924	1(1)	1.983542
INF	-4.352103	-3.530924	1(1)	1.538291
INTR	-8.300835	-3.530924	1(1)	2.002457

Table 3 presents the Augmented Dickey-Fuller test for stationarity. The results show that all the series are stationary and therefore has no unit root. The stationarity of the variables were at first difference (or at order 1).

Table 4: Correlation Matrix

	EXR	LOG(RGDP)	INF	INTR
EXR	1.000000			
LOG(RGDP)	0.926917	1.000000		
INF	-0.507624	-0.423028	1.000000	
INTR	-0.059860	0.002422	0.236269	1.000000

Source: Researcher's Evies Results.

The above correlation results show that exchange rate has positive relationship with economic growth as proxies by the real GDP. Inflation rate and interest rate (lending rate) both have negative relationship with exchange rate.

Table 5: Regression Results

Dependent Variable: EXR				
Method: Least Squares				
Date: 04/19/17 Time: 16:39				
Sample: 1986 2015				
Included observations: 30				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-144.1015	30.50932	-4.723197	0.0001
LOG(RGDP)	28.55583	2.511892	11.36826	0.0000
INF	-0.440836	0.263851	-1.670776	0.1068
INTR	-0.422687	0.979660	-0.431463	0.6697
R-squared	0.876313	Mean dependent var		83.44138
Adjusted R-squared	0.862041	S.D. dependent var		64.35973
S.E. of regression	23.90502	Akaike info criterion		9.309620
Sum squared resid	14857.70	Schwarz criterion		9.496446
Log likelihood	-135.6443	Hannan-Quinn criter.		9.369387
F-statistic	61.4024	Durbin-Watson		1.6518

	9	stat		57
Prob(F-statistic)	0.00000			
	0			

Source: Researcher's Eviews Results.

Table 5 presents the regression results are modeled in equation (2). The results indicate that real GDP has positive and significant impact on economic growth whereas inflation rate and interest rate both have negative and non-significant impact on exchange rate. The results show that the entire result is significant as indicated by the F-statistic and there is no trait of autocorrelation as confirmed by the Durbin-Watson stat. The R^2 show that 88% of the changes in exchange rate were explained by the independent variable while the remaining 12% were due to other variables not included in the model.

DECISION RULE

Following the estimated results in table 4.3, we reject the null hypothesis and accept the alternate hypothesis that economic growth has positive and significant impact on exchange rate in Nigeria.

FINDINGS

- We found that economic growth has positive and significant impact on exchange rate in Nigeria. The correlation results showed that exchange rate has positive relationship with economic growth in Nigeria.
- Inflation rate has negative and non-significant impact on exchange rate in Nigeria.
- Interest rate has negative and significant impact on exchange rate in Nigeria.

RECOMMENDATIONS

Based on the findings, we recommend that the monetary authorities maintain a flexible and well guided exchange rate system. Foreign exchange must also be made available to the activity sectors of the economy like agriculture and the manufacturing sub-sectors. Interest rate should be lowered in other to reduce the cost of fund. Inflationary targeting policies should be put in place to reduce the inflationary level and maintain price stability.

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