EXCHANGE RATE, INTEREST RATE AND ECONOMIC GROWTH: EVIDENCE FROM NIGERIA DATA (1981-2010)

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Abstract—*The paper examines the impact of interest rate and exchange rate on Nigeria's Economic Growth rates over the years 1981-2010 using econometric analysis. The data for the study was secondary sourced from the Central Bank of Nigeria. We carried out a multiple linear regression analysis using the ordinary least square method for log linear form. The result shows that the independent variables appeared with the right signs and thus, conform to economic theory which states that there exists a positive relationship between exchange rate and GDP growth and a negative relationship between interest rate and GDP.. The result also shows that interest and exchange rates in Nigeria are relatively high even though there have been on the average a 6% annual average GDP growth rate over the last decade. The paper therefore recommends that the Nigerian government through its apex monetary institution should ensure a lower rate of interest and stability of the exchange rate in the economy in order to ensure higher GDP growth rate.*

Keywords: *Economic Growth, multiple linear regressions, economic theory, interest rate, exchange rate.*

1. INTRODUCTION

Nigeria is ranked "6th in the universe in terms of GDP and is no doubt the largest economy in the African continent. The Nigerian economy is a mono-product economy which solely depends on oil proceeds as its major source of foreign earnings. The oil sector has enabled the country to post merchandise trade and current account surpluses in recent years. There are also other sectors which are coming up and contributing to the growth of the economy in the last two decades such as banking, telecommunications, Film Industry etc. Despite oil being the mainstay of the economy, the country only supply's 2.7% of the world's demand for oil and is also a major importer of refined oil due the under-performance of its refineries (Omotayo A.A, 1990).. The country is blessed with vast arable land which can be used for commercial agriculture for enhanced food security, employment generation as well as a source of major earnings to the government, but unfortunately the sector has been hindered by under-investment by subsequent governments over the years. The agricultural sector today, employs over

60% of the population whom are mostly in rural areas (Subsistence agriculture), yet it only contributes a meager 7% of the country's GDP. Crucial sectors like Manufacturing are more or less moribund which also hinders the country's quest for achieving economic greatness. The Nigerian economy is struggling to leverage the country's vast wealth in fossil fuels in order to displace the poverty that has ravaged almost 50% of its population.

The Naira exchange rate has had a relative stability after the introduction as well as implementation of the structural adjustment program (SAP) in 1986, its continued depreciation in relation to international currencies such as the US dollar has been a major factor in the declining performance of the economy as a whole (Kelechi and Ebele, 2013).. To achieve an appropriate level of exchange rate, two approaches are usually adopted. The apex monetary institution can either fix it administratively or allow it to be determined by the market forces of demand and supply. The option that is eventually chosen usually reflects a country's historical experience and the monetary authority's perception of the efficacy of a particular line of action in achieving a set of macroeconomic objectives.

Interest rate is regarded as the return on investment or as the cost of acquiring capital. The obvious adverse relationship that exists between interest rate and economic growth in Nigeria causes for economic concern and deliberations. A very high level of interest rate is not healthy for the economy as it will simply lead to deepening of unemployment crisis and difficulty in reenergizing the economy. The aim of the study is to show the impact of fluctuations as well as stability of interest rate and exchange rate on the performance of the economy.

2. LITERATURE REVIEW

Exchange rates indicate the values of two currencies in terms of another. It is the price of one currency. Customarily,

exchange rate is defined as the price of one unit of the foreign currency in terms of the domestic currency (Mejekodunmi, 2000). From the traditional point of view, the exchange rate operates through the aggregate demand channel. It has become an argument that the depreciation of the exchange rate allows international competitiveness of domestic goods which helps to improve the current account balance of the country. The improvement of international competitiveness of domestic goods facilitates increase in export which in turn increases the aggregate demand in the economy. Edwards (1989) stated that if there is any misalignment in exchange rate in form of currency devaluation, it will impair tradable activities and thus lowering net export and aggregate demand in the economy. He argues that when there's a real depreciation, it generates adverse effects resulting in overall economic contraction. Contraction occurs through some fundamental process as described below: First, a nominal depreciation of currency causes a rise in the general price level resulting in low aggregate demand. This in turn causes economic contraction. Second, it is often an argument that a real depreciation can help transfer income from individuals with high marginal propensity to consume to those with a low marginal propensity to consume. Exchange rate movements and exchange rate uncertainty are important determinants of international transactions. In Nigeria, these fluctuations according to Omojimite and Akpokodje (2010) have been influenced by changing pattern of international trade, institutional changes in the economy and structural shifts in production.

Furthering, Kelechi and Ebele (2013) noted 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 major sources of Nigerian export and foreign exchange earnings; contending that when the economy depended on agricultural exports, real exchange rate volatility was less pronounced given the fact that these products were subject to less volatility and that there were more trading partners' currencies involved in the calculation of the country's real exchange rate. This to him minimally affected the real exchange rate fluctuating by only 0.14 % between 1970 and 1977.

The increased dependence of the country on oil resulted in severe trade shocks from global oil price stocks leading to the depreciation of the naira exchange rate by 10% between 1978-1985 (Lama et al, 2010). In macroeconomic management, exchange rate policy as an important tool derives from the fact that changes in the rate of exchange have significant implications for a country's balance of payments position and even its income distribution and growth. It is not surprising since its behavior is said to determine the behaviour of several other macroeconomic variables (Oyelabi and Adejare). It is even more so for Nigeria which had embarked on a course of rapid economic growth with attendant high import dependency.

The manufacturing sector plays as catalytic role in a modern economy and has many dynamic benefits that are crucial for economic transformation and also in achieving sustainable economic growth. Nigeria being an import dependent nation particularly for her capital goods and considering the centrality of the rate of exchange of such a country's currency to her trading partner's currencies, a good number of writers have expressed their interest and position on this important subject. Interest in this area has significantly increased over the years as being generated by the volatilities and the depreciating nature of such an important economic variable as well as its effect on other sectors of the economy. According to Omotayo (1990), one worrisome development in the naira exchange rate in recent years, especially since the introduction of the structural Adjustment Program (SAP) in 1986 is that it has continued to depreciate as a result of which some people have called for fixing of the exchange rate even at par with the United States Dollar. On the equilibrium for exchange rate, the author remarked that such rate ensures the simultaneous attainment for internal and external balance.

According to the classical theory of interest, the rate of interest is determined by the funds demanded for investment and supply of savings. The rate of savings is determined where demand for investible resources and supply of resources are equated. Just at the price of a commodity is necessarily fixed at that point where the demand for it is equal to its supply, So the rate of interest necessarily comes to rest under the play of market forces at the point where the amount of investment at the rate of interest is equal to the amount of savings at that rate (Dwivedi, 2013). The Keynesian liquidity preference theory determines the interest rate by the demand for and supply of money It emphasizes that the rate of interest is purely a monetary phenomenon. It is a stock analysis because it takes the supply of money as given during the short run and determines the interest rate by liquidity preference or demand for money. On the other hand, the loanable funds theory is a flow theory that determines the interest rate by the demand for and supply of loanable funds. It involves the linking of interest rates with savings, dishoarding and bank money on the supply side. The increase in interest rate trend provides a rapid growth through un-comprised resource allocations and increased productivity.

The recent increase in interest rate in Nigeria was a result of core inflation, declining trend in GDP, conflicting price signals and global uncertainties. It must be noted that there are different types of relationships that often exist between developed and developing countries in terms of economic growth, interest rate, inflation rate, exchange rate and possibly money supply in the economy. The sluggish monetary policy rate of 12% in Nigeria has shown very wrong signals of supporting a tight interest rate regime, excess liquidity – cash held by banks above regulatory requirement for the exact bank and rising national debt. The largest sources of investment capital consist of financial institutions, but are never

households and the three- tier of governments (Federal, State and Local) funds.

3. METHODOLOGY

The study examines the impact of exchange rate and interest rates on economic growth in Nigeria from 1981-2010 using econometric analysis. The econometric analysis used to evaluate, estimate and analyze the influence of the explanatory variables (exchange rate and interest rate) on the dependent variable (Economic growth) is multiple linear regression analysis using the ordinary least square method for log linear form. The outcome from this approach is used to predict and conclude this study. The statistical package E-views was used in processing the available data.

3.1 MODEL SPECIFICATION

The econometric model of multiple regression analysis is used to test the relationship between the dependent and the independent variables. The functional linear regression equation is stated as follows;

$$GDP = F (EXR, INT)$$

The econometric model is expressed below as;

$$GDP = \beta_0 + \beta_1 EXR + \beta_2 INT + u_1$$

However, the Log Linear specification is specified as;

$$LnGDP = \beta_0 + \beta_1 LnEXR + \beta_2 LnINT + u_1$$

Where;

GDP = Gross domestic product.

EXR = Exchange rate.

INT = Interest rate.

U_i = Stochastic variable.

F = Functional relationship.

β= Intercept of relationship in the model/constant.

β_1 & β_2= Coefficients of each of the independent variables.

Ln = Logarithm.

$$LnGDP = 8.129390 + 1.164970LnEXR - 1.3362622LnINT$$

t-statistics = (7.258186)   (16.78245)   (-3.270515)

$R^2 = 0.94$ Adjusted $R^2 = 0.93$ F-statistics = 194.5115

4. INTERPRETATION AND DISCUSSION OF THE RESULT

LnGDP = 8.129390 + 1.164970LnEXR − 1.3362622LnINT

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From the results above, the log linear was adopted for our economic analysis because it gives a better goodness of fit since it has a higher explanatory power of the model (R^2), higher adjusted R^2 and higher F-statistics. From the log linear regression above, the coefficient of exchange rate and interest rate appeared with positive and negative signs respectively and thus, conforms to economic theory.

The exchange rate appeared with a positive sign which indicates a positive relationship between exchange rate and GDP growth. Other results shows the coefficient of exchange rate is 1.164970 meaning that, a unit increase in exchange rate will lead to a 1.164970 increase in GDP.

The estimated coefficient of interest rate appeared with a negative sign, which depicts a negative relationship with GDP. The coefficient of interest rate is -1.362622, meaning that a unit rise in interest rate will bring about a fall in the value of GDP by 1.362622.

Furthermore, our result also pointed out that the coefficient of multiple regression determination (R^2) is 0.935100, meaning that 94% of the dependent variable (GDP) is explained by the independent variables (exchange rate & interest rate), while the other 0.0649 is explained by factors not captured in the model during the period under review (1981-2010). This indicates the goodness of fit is very strong, showing that the relationship between the dependent and independent variable is strong. The t-test shows exchange rate to be statistically significant at 5% level of significance because the calculated value in absolute terms (t-cal) is greater than the theoretical value (t-tab). Thus, exchange rate is statistically significant and it shows a significant relationship between exchange rate and GDP. The P-value of the interest rate is below 5%, thereby showcasing it to be statistically significant. The joint test of significance of all parameters was conducted using F-statistics. Our result showed the observed F-cal ratio is 194.5115 and this is greater than the theoretical value of 2.69. This further confirms the result of the R^2 test.

5. CONCLUSION AND RECCOMENDATIONS

The paper examines exchange rate and interest rates impact on GDP in Nigeria from 1981-2010. Findings shows there exists a positive relationship between exchange rate and GDP and a

negative relationship between interest rate and GDP. Hence, the government through its apex monetary institution should have a means of ensuring stability of the exchange rate and lower rate of interest, so that loanable funds in the market will be relatively cheap for investors in order to ensure enhanced GDP growth.

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