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**Impact of Currency Devaluation on Economic Growth of  
Nigeria**

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**Abstract**

The primary aim of the study is to estimate the long run relationship between economic growth (RGDP) and currency devaluation. This study investigated the impact of currency devaluation on economic growth of Nigeria. This was achieved through a review of literature and a test of hypothesis. In order to generate the necessary data for this study, the Central Bank of Nigeria Statistical Bulletin of and publications of the National Bureau of Statistics were used for the period of 1986 to 2012. The Johansen Cointegration method was used for this analysis because the study involves the use of multivariate estimations. The result from the multivariate cointegration test shows that there is at least one cointegrating vector in the relationship between economic growth and the independent variables. This implies that a long run relationship exists among these variables. The autoregressive distributed lags (ARDL) approach is used for the ECM. The error correction mechanism result indicates that short term changes in economic growth may actually be sufficiently explained by currency devaluation and

other factors selected in the model. Thus, we cannot reject the hypothesis of a significant short term relationship between economic growth and currency devaluation. The study shows that in the short run currency devaluation leads to increase in output and improves the balance of payments but in the long run the monetary consequence of the devaluation ensures that the increase in output and improvement in the balance of payment is neutralized by the rise in prices. Our study therefore supports the monetarists' view of currency devaluation. Based on the above it is recommended that the monetary authorities should do what they can to reduce the temporary increase in prices lest it become permanent. Timing at this point becomes very crucial. More so, the Nigerian government should consider devaluation of currency as the last resort to the economic imbalance.

### **Introduction**

The Nigerian government in a bid to bring about quick economic growth after independence import machinery, equipment, raw materials and other technological know-how. In addition both visible and invisible accounts increased while exports lag behind. These result in a deficit called unfavorable balanced of payment. Aguiar (2005) states that a nation experiencing the balance of payment deficit has to adopt both short and long term measures to correct the disequilibrium, and one of the measures is to devalue the nation's currency. According to Yioyio (2013), devaluation is a deliberate downward adjustment to the value of a country's currency, relative to another currency, group of currencies or standard. In otherwords, devaluation is a reduction in the value of a currency with respect to those goods, services or other monetary units with which that currency can be exchanged.

According to Cooper (1971), currency devaluation is one of the most traumatic economic policy measures that a government may undertake and as a result, most governments are reluctant to devalue their currencies. However, a country can be forced into devaluation by an ominous trade deficit. Thailand, China, Mexico, Czech Republic - all devalued strongly, willingly or unwillingly, after their trade deficits exceeded 8% of the GDP. Devaluation of currency is decided by the government issuing the currency, and is the result of governmental activities. One reason a country may devalue its currency is to combat trade imbalances. Devaluation causes a country's exports to become less expensive, making them more competitive on the global market. This in turn means that imports are more expensive, making domestic consumers less likely to purchase them. By making the domestic currency relatively cheaper (i.e devaluation), local production and exportation of commodities is thereby encouraged. This helps to enhance the level of output growth of the economy (Aguiar, 2005). According to Yaqub (2010), governments of different countries devalue their currencies only when they have no other way to correct the economic problem. While devaluating a currency can be seen as an attractive option, it can have negative

consequences. By making imports more expensive, it protects domestic industries which may then become less efficient without the pressure of foreign competition. Higher exports relative to imports can also increase aggregate demand, which can lead to inflation.

The effect of currency devaluation on the economy has long been recognised in the literature. While the traditionalist argued that devaluation would promote trade balance, alleviate balance of payments difficulties and accordingly expand output and employment provided the Marshall-Lerner conditions are met. The Marshall-Lerner condition states that devaluation would lead to expansion in output if the sum of price elasticity of demand for export and the price elasticity of demand for imports is greater than unity. The mechanism behind these positive effects, according to Imimole & Enoma (2011) is that devaluation switches demand from imports to domestically produced goods by increasing the relative prices of imports and making export industries more competitive in international markets thus stimulating domestic production of tradable goods and inducing domestic industries to use more domestic inputs.

The monetarists on the other hand argued that devaluation has no effect on real variables in the long run. The monetarist view is that exchange rate devaluation affects real magnitudes mainly through real balance effect in the short run but leaves all real variables unchanged in the long run. This approach is based on the assumption that the Purchasing Power Parity (PPP) holds. It predicts that in the short run an increase in the exchange rate leads to increase in output and improves the balance of payments but in the long run the monetary consequence of the devaluation ensures that the increase in output and improvement in the balance of payment is neutralized by the rise in prices. These arguments are contentious and therefore require further investigations.

More so, there appears to be inadequate empirical evidence that examine the impact of naira devaluation on the Nigerian economy. It is upon this premise that this study is consummated to empirically investigate the impact of currency devaluation on economic growth of Nigeria.

### **Literature Review**

Currency devaluation is one of the endogenous factors that do affect the economic performance of a nation. Aigbonkhan (1991) observed that the macroeconomic performance in Nigeria started on a good note in the 1970s as the period coincided with the end of the civil war which necessitated the need for massive reconstruction activities. During this period, the total GDP grew at an average rate of 6.2%. The average figure hid the trend in sectoral performances as the total GDP grew at the rate of 21.4% between 1970 and 1971. The growth in the total GDP during this period was mainly driven by petroleum as growth in this sector was 32.4% on the

average with manufacturing sector growing at an average rate of 4.8% and agricultural sector actually declining at a rate of 2% on the average. The period also witnessed an upsurge in the demand for goods and services due to the reconstruction exercise and the increased salary and wages granted on the basis of the Adebo commission's recommendation (The Adebo commission recommended increase in salaries and wages in order to relieve the high cost of living. This increase in salaries and wages was paid in December 1971). According to Ozumba (1978) this led to serious shortages of goods and services and an upward movement in prices with the inflation rate rising to 14.9% on the average during this time.

Imimole & Enoma (2011) noted that the growth rate of real total GDP was negative in 1975, 1978, 1982 through 1984 as well as in 1987. The drought that occurred in the Northern Nigeria was linked to the negative growth rate in 1975. During this year, the total real GDP declined by 2.96% while agricultural output declined by 8.6% in the same year showing that agriculture was a drag on growth for that year. The decline in the real total GDP in 1978 could be linked to the liberalisation of import controls in 1976 which threatened the domestic production of the agricultural and manufacturing sectors. Various policies were put in place to reverse the negative growth rate of GDP in 1979. Such measures included increase in import duties on various commodities, the placing of some commodities under licence or outright ban. Others included concessions to local manufacturers to encourage them to expand their productive capacities and the liberalization of the terms and the availability of credit to farmers.

Following the adoption of the Structural Adjustment Programme (SAP) and the subsequent improvement in the management of the foreign exchange market, the persistent downward pressure on the domestic currency was stemmed for a while (Aigbonkhan, 1991). Some improvements were recorded in the growth of GDP between 1988 and 1990. The main drivers of growth during this time were manufacturing, trading and services. The average growth rate of the total GDP which was <1% in the first half of the 1980s increased to 3.9% on the average between 1986 and 1993 with the highest growth rates occurring in 1988 through 1990. The improved performance of output during this period might be linked to the expansionary fiscal and monetary policies of the government during this period. There was an increased government spending on the development of the rural areas and infrastructural development through the establishment and financing of the Directorate of Food, Roads and Rural Infrastructure (DFRRI) and the National Directorate of Employment (NDE) among others. The total GDP growth rate however, nosedived after 1990 with growth rate being <3% except in 1996 when it was slightly >4%.

It however, picked up from the year 2000 with an average growth rate of 6.4% between 2004 and 2007 showed that there is some correlation between exchange rate

changes and growth rate of GDP. Between 1971 and 1979, the average growth rate of GDP was 6.3%; this was associated with a negative change in exchange rate (appreciation) of 2.5%. The same scenario was repeated between 2004 and 2007 when an average GDP growth rate of 6.4% was associated with appreciation of exchange rate. In other sub periods, when the exchange rate depreciated, it was associated with a reduced average growth rate of GDP. As shown in the higher growth rate is associated with appreciation in 1971-1979 and 2004-2007 periods while the periods of depreciation of exchange rate are associated with lower growth rates (Yaqub, 2010).

According to Yaqub (2010), the major negative fall-outs of the above were persistent balance of payment deficit (external imbalance) and huge fiscal deficits (internal imbalance). The balance of payment problem was identified to be a consequence of the over-devaluation of the Naira. Under the SAP therefore, the exchange rate was to reflect the scarcity value of the national currency. The devaluation of the Naira would enhance the level of non-oil exports; discourage import thus reducing the nominal value of import while increasing the value of exports.

The effects of devaluation on a nation's economy as reported by Hafeez (2013), Sahil (2011), Imimole & Enoma (2011), Ike (1984), Ozumba (1978) has been summarized into positives and negatives. The positive effects are (i) it makes home goods cheaper to foreign countries and foreign goods expensive in the home country. In this way deficit in the balance of payment is corrected; it brings equilibrium in the external and internal value of the currency. So the various imbalances in the economy are removed; it brings about increase in foreign aid since the international lending agencies like the IMF, IBRD insists upon it, especially in developing countries like India, Pakistan, and Nigeria. Foreign investor also feels pleasure to make the investment in those countries where the currency is devalued; it removes the uncertainty in the business circles thereby increasing the rate of investment; and it encourages the inflows of remittances as nationals who are working abroad would prefer to send capital home, because they will get more value in terms of foreign currency. While the negative effects are (i) it is a temporary curve for the unfavorable balance of payment. Its effects are for the short period; (ii) it creates a problem for the consumer because a costly import leads to inflation in the country; (iii) it increases the foreign debt burden in terms of the home currency. This is a big loss for a developing country like India, Pakistan, and Nigeria. Foreign debts become more difficult to service, and they reduce peoples' confidence in their currency; and it brings about competition in devaluation. If one country devalues other countries also follow this policy then the policy will become useless; it causes deterioration in terms of trade.

The upshot of these various considerations is that devaluation in developing countries is likely to be deflationary in the first instance, and thus may "make room"

for any improvement in the balance on goods and services, without active reinforcement from monetary and fiscal policy (Cabellero & Krishnamurthy, 2000).

### **A Profile of Nigeria's Exchange Rate Development**

Between 1960 and 1967, the Nigeria currency was adjusted in relation to the British Pound in a one to one relationship between them. Between 1967 and 1974, another fixed parity was maintained with the American Dollar. This system was abandoned between 1974 and 1976, when an independent exchange rate management policy that pegged the naira to either the US dollar or the British pound sterling was put in place. During this period, a policy of gradual appreciation of the naira was pursued. Because of the huge earnings from crude petroleum export over the period, Nigeria persistently ran appreciable external surpluses in the balance of payments, which supported the appreciation of the naira. The exchange rate over-valuation that followed helped to cheapen imports of competing food items as well as agro-based and industrial raw materials. As a result, there was rapid expansion in the importation of these goods to the detriment of local production of similar goods. When it became obvious that aggregate import demand had outstripped total foreign exchange available for imports, trade restriction through import licensing scheme was introduced (Imimole & Enoma, 2011).

Towards the latter part of 1976, arising from the changing fortunes to Nigeria's economic circumstances, a policy reversal was effected in the management of the naira exchange rate. There was a deliberate policy to depreciate the naira, through this was not systematic. However, a major policy reversal was effected in September 1986 when the fixed exchange rate regime had to be discarded and the flexible exchange rate regime was put in place following the adoption of the SAP. With the adoption of SAP, foreign exchange allocation and import licensing procedures were abolished and transactions in foreign exchange were subjected to market forces under an auction system. This new exchange rate policy helped to remove the over-valuation problem to the extent that the naira now became under-valued. As noted by Honoland & Lane (2003), exchange rate depreciation had since resulted in the dramatic increase in the naira price of imports and this is expected to discourage importation and the naira cost of imported items have also risen astronomically. The very year SAP commenced, exchange rate stood at N2.02: US\$1.00 but depreciated to an average of N4.02, N8.04 and N9.91 to US\$1.00 in 1987, 1990, and 1991 respectively. It further depreciated to N17.30 and N22.05: US\$1.00 in 1992 and 1993 respectively. Following the persistent depreciation of the exchange rate, it became necessary for the exchange rate policy to be completely reversed in 1994 with the re-introduction of a fixed exchange rate regime. By this new arrangement, the exchange rate of the naira was pegged at N21.8861 = US\$1.00. The dismal performance of the economy as the end of that year compelled the authorities to re-introduce the market-based approach under the

autonomous foreign exchange market (AFEM) from January 1995 until October 1999. The exchange rate which depreciated from the fixed rate of N21.8881: US\$1.00 in 1994 to an all height of N81.00:US1.00 in 1995, barely one year after it was fixed, depreciated further to N84.38: US\$1.00 and N92.65:\$15\$1.00 in 1998 and 1999 respectively. It further depreciated to N128.75 between 2002 and 2005. However, relative stability was achieved from 2003 with the rate actually appreciating between 2005 and 2008.

**Methodology**

In order to generate the necessary data for this study, the Central Bank of Nigeria Statistical Bulletin of various years and publications of the National Bureau of Statistics were used. The choice of 1986 as the starting point of our analysis stems from the fact that in that year the Structural Adjustment Programme (SAP), which resulted in massive depreciation of the naira was implemented. Unavailability of data did not permit the extension of the time profile beyond 2012.

**Model Framework and Specification**

It has been observed by researchers that economic growth in Nigeria is affected by several variables such as exchange rate, money supply and inflation, including currency devaluation. In this study, while economy growth is measured by real GDP, the major limitation of this study is in finding appropriate statistical data for measuring devaluation of the naira. We therefore use currency devaluation as a dummy variable and improve the exchange rate data. In view of the above, we present the equation establishing the relationship between naira devaluation and economic growth in Nigeria as:

$$RGDP = f (EXCR, MS, INF, DEV) \dots\dots\dots(i)$$

From the above equation economic growth depends on exchange rate, money supply, inflation and naira devaluation. It is expected from theory that a change in exchange rate, money supply, inflation, and naira devaluation will bring about a change in real GDP. From the above theoretical framework therefore, the economy growth function for Nigeria as it relates to this study may be specified in log linear form as follows.

$$\ln RGDP_t = a_0 + a_1 \ln EXCR_t + a_2 \ln MS_t + a_3 \ln INF_t + a_4 \ln DEV_t + \mu_t \dots\dots\dots (ii)$$

Where:

$\ln RGDP_t$  = Real Gross Domestic Product in the current period

$\ln EXCR_t$  = Exchangr Rate in the current period

$\ln MS_t$  = Money Supply in the current period

$\ln INF_t$  = Inflation in the current period

$\ln DEV_t$  = Currency Devaluation in the current period

$\mu_t$  = Independent normal distribution with a mean of zero ( $\bar{x} = 0$ ). Since this is a constant parameter, an identical distribution holds at every point in time.

The Autoregressive Distributed Lag (ARDL) version of the above model is expressed in the equation below:

$$\ln RGDP_t = \sum_{i=1}^k a_{1i} \ln EXCR_{t-1+i} + \sum_{i=0}^k a_{2i} \ln MS_{t-1+i} + \sum_{i=0}^k a_{3i} \ln INF_{t-1+i} + \sum_{i=0}^k a_{4i} \ln DEV_{t-1+i} + \mu_t \text{ --- (iii)}$$

The primary aim of the study is to estimate the long run relationship between economic growth (RGDP) and currency devaluation. The correct specification of such a long-run relationship that will capture the short-run deviations that might have occurred in estimating the long-run co-integration equation requires an error correction term (Onwiondunkit & Adenuga, 2000; Osakwe, 1983).

Following Pesaran, Shin, & Smith (2001), the error correction representation of the above ARDL model (2) is given by:

$$\begin{aligned} \ln RGDP_t = & \sum_{i=1}^k a_{1i} \ln EXCR_{t-1+i} + \sum_{i=0}^k a_{2i} \ln MS_{t-1+i} + \sum_{i=0}^k a_{3i} \ln INF_{t-1+i} + \sum_{i=0}^k a_{4i} \ln DEV_{t-1+i} \\ & + b_1 \ln EXCR_t + b_2 \ln MS_t + b_3 \ln INF_t + b_4 \ln DEV_t + \mu_t \text{----- (iv)} \end{aligned}$$

Where, the parameters  $a_i$ :  $i = 1, 2, 3, 4$  are the short-run dynamic coefficients, while the parameters  $b_i$ :  $i = 1, 2, 3, 4$  function as the long-run multipliers of the underlying ARDL model.

Theoretically, it is expected that

$$a_1 > 0; a_2 > 0; a_3 > 0; a_4 > 0; a_5 < 0.$$

### Cointegration and Stationarity Tests

Cointegration was used for data analysis having specified the model as shown above. The stationarity or otherwise of a series can strongly influence its behaviour and properties - e.g. persistence of shocks will be infinite for non-stationary series. If two variables are trending over time, a regression of one on the other could have a high  $R^2$  even if the two are totally unrelated (spurious regressions). If the variables in the regression model are not stationary, then it can be proved that the standard assumptions for asymptotic analysis will not be valid. In other words, the usual “ $t$ -ratios” will not follow a  $t$ -distribution, so we cannot validly undertake hypothesis tests about the regression parameters.

According to Engle and Granger (1987), if two time series variables,  $pt$  and  $qt$ , are both non-stationary in levels but stationary in first-differences, i.e., both are  $I(1)$ ,

then there could be a linear combination of  $pt$  and  $qt$ , which is stationary, i.e., the linear combination of the two variables is  $I(0)$ . The two time series variables that satisfy this requirement are deemed to be cointegrated. The existence of cointegration implies that the two cointegrated time series variables must be drifting together at roughly the same rate (i.e., they are linked in a common long-run equilibrium). A necessary condition for cointegration is that they are integrated of the same order (Granger 1986; Engle and Granger 1987). The economic interpretation of integration is that if two or more variables are linked to form an equilibrium or long run relationship between them, even though the series themselves in the short-run deviate from equilibrium, they will move together in the long run. Indeed, a non-stationary variable might have a long run relationship with other non-stationary variables and this does not create a spurious regression if the deviation of this long run relationship is stationary. It implies that these variables are cointegrated.

The Johansen Cointegration method is used for this analysis because the study involves the use of multivariate estimations. The results from the multivariate cointegration test are presented in Table 1 below.

**Table 1: The Multivariate Cointegration Result**

Eigen Value	Likelihood Ratio	5% Critical Value	5% Critical Value	Hypothesized No. of CE(s)
0.821132	80.1740	76.31	83.11	None *
0.413028	38.4088	43.05	50.09	At most
0.369411	29.2506	38.44	41.36	At most
0.250036	16.1147	21.39	24.01	At most
0.193840	9.0273	13.76	15.22	At most

\*(\*\*) denotes rejection of the hypothesis at 5%(1%) significance level

As we can see from the table, the Eigenvalue for the null hypothesis of no cointegrating vector among the variables is significant at the 5 percent level. Thus, we reject the hypothesis of no cointegrating vector among the variables. This implies that there is at least one cointegrating vector in the relationship between economic growth and the independent variables. This implies that a long run relationship exists among these variables.

### Dynamic Analysis

The dynamics of the pattern of economic growth in Nigeria within the context of short term movements in its main determinants such as currency devaluation, money supply, exchange rate, and inflation is captured within an error correction model (ECM)

in this study. The autoregressive distributed lags (ARDL) approach is used for the ECM. The error correction mechanism result for the model is reported in table 2 below.

**Table 2: ECM Estimation of Determinants of Economic Growth**

Variable	Coefficient	T-Ratios
C	-35.6141	2.000
EXCR	0.2610	3.109
MS	0.1581	2.025
INF	-0.3130	-3.118
DEV	-0.0192	-1.047
ECM (-1)	-0.614	-3.152
$R^2 = 0.613$	$F = 13.03$	$D.W = 2.03$

The result has impressive diagnostic statistics, suggesting that short term changes in economic growth may actually be sufficiently explained by the factors selected in the model. The goodness of fit of the model is relatively high; the R-squared value of 0.613 indicates that up to about 61.3% of the systematic short run variations in RGDP at any given time is explained by the explanatory variables and the ECM term. In the same vein, the F-statistic value of 13.03 passes the significance test at the 1% level, thus, we cannot reject the hypothesis of a significant short term relationship between economic growth and all the independent variables combined.

The particular contribution of each of the variables to short term movements in economic growth is determined by observing the individual coefficients of the explanatory variables in terms of sign and significance. A close investigation of the individual coefficients of the variables reveals that only that of inflation (-0.3130) and devaluation (-0.0192) do not have the expected positive sign; all the other coefficients possess the expected a priori signs. This result indicates that inflation and currency devaluation tend to reduce the economic growth of Nigeria.

In particular, we focus on the significance of the coefficients in the model. The coefficients of EXCR, MS and INF pass the significance test using the t-statistics. The coefficient of currency devaluation (DEV) fails the test. This shows that only exchange rate, money supply, and inflation affect economic growth of Nigeria significantly, although the effect of inflation is negative. Currency devaluation, although has a negative impact on economic growth of Nigeria, its impact is insignificant. The error correction term has the correct negative sign and also passes the significance test at the 1 percent level. This shows that any short-term deviation of GDP from equilibrium in the short-run will be restored in the long run. The value of the error correction term (-0.614) is relatively high, meaning that adjustment to equilibrium in the long run is rather fast. Indeed, about 61.4% of the adjustment of economic growth in the long run

is completed in the first year. The problem of autocorrelation is not present in the results since the Durbin-Watson statistic value of 2.03 shows absence of autocorrelation in the results

Finally, we report the long run (steady state) result for the estimations. The relevance of this estimation is based on the fact that the variables in the analysis have been shown to be cointegrated (exhibiting unique long run properties). The result of the estimated long run model is reported in table 3 below.

**Table 3: Estimated Long-run Result**

Variable	Coefficient	T-Ratios
C	-28.5874	1.8236
EXCR	0.2291	4.7582
MS	0.0983	2.4410
INF	-0.3200	-3.7512
DEV	-0.0031	-1.3562
R <sup>2</sup> = 0.562	F = 9.24	D.W = 1.59

The goodness of fit statistics for the results are also impressive. The R<sup>2</sup> value of 0.562 is relatively high and indicates that about 56.2% of long run economic growth is explained by the selected variables. The F-value also passes that significance test at 0.05 and shows that the relationship between the dependent variable and all the independent variables combined is strong.

The major variable of our study (currency devaluation) has a negative coefficient in the model. This implies that currency devaluation negatively affect economic growth of Nigeria.

### Conclusion and Recommendations

Although currency devaluation would promote trade balance, alleviate balance of payments difficulties and accordingly expand output and employment it switches demand from imports to domestically produced goods by increasing the relative prices of imports and making export industries more competitive in international markets thus stimulating domestic production of tradable goods and inducing domestic industries to use more domestic inputs. The result of our analysis shows that although exchange rate, money supply, and inflation affect economic growth significantly, currency devaluation has a negative and insignificant impact on economic growth of Nigeria during the period under review. We have also seen that there is often a sharp increase in prices in the period immediately following devaluation, as importers attempt to pass on to their customers all or most of the increased cost of foreign goods. To the extent

that these price increases, some of which are not otherwise sustainable, get built into wages and other local costs, they will undermine the devaluation.

The study shows that in the short run currency devaluation leads to increase in output and improves the balance of payments but in the long run the monetary consequence of the devaluation ensures that the increase in output and improvement in the balance of payment is neutralized by the rise in prices. Our study therefore supports the monetarists' view of currency devaluation. Based on the above it is recommended that the monetary authorities should do what they can to reduce the temporary increase in prices lest it become permanent. Timing at this point becomes very crucial. More so, the Nigerian government should consider devaluation of currency as the last resort to the economic imbalance.

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