

Currency Devaluation and Manufacturing Output Growth in Nigeria

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Abstract

This study examines the impact of currency devaluation on manufacturing output growth in Nigeria between 1980 and 2014. It employs Augmented Dickey Fuller for stationarity test, Engel-Granger cointegration for long-run relationship, ordinary least square for long-run estimate and Granger causality test for causal relationships. The findings reveal that although all the variables are stationary at first difference, a long-run relationship exists between the variables. It further shows that all the variables except import exert positive effect on manufacturing output growth. The result suggests the need for currency appreciation rather than depreciation as the sector depends heavily on the importation of equipment's, machineries as well as most of its raw materials. The causality test shows that there is a unidirectional causality running from, exchange rate, import and Credit to Private Sector to manufacturing output. The study therefore concludes that both monetary and exchange rate policies in Nigeria were not successful in achieving the growth of the manufacturing sector in Nigeria as expected. Thus, there is the need for the review of the current exchange rate policy towards appreciation and a monetary discipline that will restore the value of the naira.

Keywords: Exchange rate, devaluation, inflation rate, manufacturing outputs.

1. Introduction

According to IMF and World Bank, devaluation is referred to as instrument for fiscal equalization and stability, particularly in the Developing nations where several countries are indebted to these financial institutions. Devaluation of currency became popular in Nigeria when Babangida-led administration in 1986 instituted the Structural Adjustment Programme as a policy designed to achieve a realistic exchange rate for the naira that was over-valued, which is equally unhealthy for economic growth and development of the Nation since overvalued currency further worsen balance of payment problem (Todaro, 1989).

Todaro (1981) asserts that currency devaluation is when a country's currency is devalued or more strictly depreciated when the official rate at which its Central Bank is prepared to exchange the local currency for dollar is increased. Also, Otega et al. (2013) posits that, there exists an inelastic and significant relation between trade balance, its determinants and their major findings include; exchange rate induce an inelastic and significant relation on trade balance in the long run, there exist no short run causality from exchange rate to trade balance and money supply volatility contributes more to variance in trade balance than exchange rate volatility. While Asinya & Nelson (2014) examines the factors that played major impacts in exchange rate depreciation in Nigeria, some of the factors listed were; government policy, the external sector and macro- economic performance. The depreciation of the naira has several implications for economic development in Nigeria. First, they argued that, the depreciation of the naira would stem imports since the increase costs arising there from would discourage importers is faulty because the economy is heavily import dependent, the propensity to import is very high in Nigeria today, thus the imports are price inelastic. Secondly, it was argued that, depreciation usually make export products cheap or at least competitive in the international market, thus enhancing demand. This argument did not take into account two important factors: the elasticity of demand for the export and the pricing pattern.

Nonetheless, the reality that emerged shows that Nigeria export products are essentially inelastic and the prices of the export products are fixed by the international market and are not positively correlated to changes in the naira exchange rate. Other adverse effects of depreciation include: unemployment, lack of direct foreign private investments, increased external debts, balance of payments disequilibrium and low per capita income. On this note, this study examines the effect of devaluation on manufacturing output in Nigeria. Other sections of this study are divided into four parts. Section two discusses the literature review, while section three presents the methodology of the study. The fourth section presents the data analysis, results and discussion. The last section discusses the conclusion and policy options.

2. Literature Review

Asinya and Anoka (2014) examine exchange rate depreciation and government policies in Nigeria. Government policy of the early 1980 that led to 'gradual depreciation' of the naira exchange rate was to encourage exports and reduce the high import dependence of the economy. The study uses the method of regression analysis with Ordinary Least Squares (OLS) econometric technique and a time series secondary data from 1980–2011. The data was first examined for unit roots using the Augmented Dickey Fuller (ADF) and Phillips-Perron (PP) tests. A co-integration regression was then used to examine the long run relationship among the variables. The short-run Vector Error Correction (VEC) model was also used to determine the speed of the adjustment to equilibrium. It was empirically shown that, there is significant relationship between government fiscal and monetary policies and exchange rate depreciation. The results further revealed high explanatory power of the coefficient of multiple determination (R^2) and the overall model was significant. Hence, government can curtail the naira depreciation by adopting a flexible exchange rate regime, reducing external trade imbalances and checking the performance of some macroeconomic variables.

Alemu, Aye & Mengistu (2014) investigated how depreciation could affect the export sector in selected Asian countries. The study found no evidence for the effect of depreciation to improve trade balance of about 14 Asian economies. Apparently, the researcher conducted a specification test to determine which estimation methods would be more appropriate for the study. According to Gujarati (2003) and Hausman (1978) as sighted by the researcher also conducted fixed effect model (FEM) and the random effect model (REM). Hence, the researcher is of the view that REM is much appropriate for the study. In addition to the REM, the study also used the feasible general least square (FGLS) with corrected heteroscedasticity standard errors so as to check the consistency of the results. In fact, heteroscedastic models are usually fitted with the FGLS regression since the estimates assume that the disturbances are heteroscedastic. The empirical results revealed that the effect of currency devaluation on trade balance in selected Asian economies was found to be statistically insignificant. In other words, no evidence was found for devaluation to boost trade balance. This was perhaps due to the fact that exports did not respond as expected; which may be due to a decline in terms of trade for primary commodities and manufactured products or due to heavy dependence on imported inputs. When trade volumes do not respond to exchange-rate changes, the trade balance moves in the "wrong" direction and as a result, devaluation makes the country's trade deficits even worse at least in the short term.

Aiya (2014) posits that Devaluation of currency is one of the global public policies prescribed by the Bretton wood institutions for economic recovering in poor nations, with reference to Nigeria. This policy is not only necessary for reversing balance of payment deficit but also to finance programmes that stimulate growth and standard of living. In spite of devaluation policy adopted in Nigeria coupled with myriad poverty alleviation programmes, Nigeria is still classified among the poorest nations in the world. Against this background, the study examined people's perception of the impact of currency devaluation on the performance of poverty alleviation programmes in Nigeria with Edo state as a study area. To achieve this, the author utilized primary and secondary sources of data. 1, 350 respondents were selected across, the three senatorial district with multi-stage sampling technique and administered questionnaire. The collected data were analysed and revealed among others that devaluation exacerbates poverty in Edo state and Nigeria in general. The generated data was statistically analyzed through the statistical tools of simple percentage and chi-square ($\alpha 2$). The simple percentage was used to determine the distribution in terms of personal data and responses to the research variables on the subject matter while the chi-square ($\alpha 2$) was used for the hypothesis formulated in the study. GAMMA (γ) was used to measure the degree and direction of the relationship between variables. Their findings is thusly; that there should be proper funding of the programmes; there should be safe-net to protect the vulnerable; there should be people's oriented policy rather than externally dictated ones etc.

Abdullahil, Abdul-Hamid, Chowdhury & Shahanara (2013) examines the impact of depreciation on domestic output growth and price level of Bangladesh. Exchange rate along with some other traditional factors like investment spending, bank credit, narrow and broad money and labour force have been taken into account to evaluate the influence of exchange rate fluctuation on economic growth and price level of Bangladesh. The macroeconomic time series variables are made stationary to employ regression techniques.

These series was made stationary through differencing using ADF (augmented Dickey-Fuller) test, the time series considered in the study tested for unit roots to check their stationarity. All variables are found to be stationary in level form except real GDP. That is, real GDP contains a unit root in level form. But at first difference level, real GDP becomes stationary. Consequently, all variables are used in level forms while real GDP is used at first difference level. Finally, the ordinary least square (OLS) method is employed to arrive at the regression equation for the desired coefficients.

The study finds that depreciation has an expansionary effect on output level and price level and the overall result is consistent with the view that depreciation leads to inflation fostering the output growth. Therefore concluded that depreciation, which is essential to regain export competitiveness, should be handled pragmatically to uproot its adverse implication on long term economic growth of Bangladesh that might occur due to import contraction.

Ogundipe, Ojeaga and Ogundipe (2013) attempts an empirical investigation of the impact of currency devaluation on Nigeria trade balance using the Johansen co-integration and variance decomposition analyses from 1970-2010; The empirical results indicate that there exist a long-run stationary relationship between trade balance and its determinant- domestic income, domestic and foreign money supply, domestic interest rate and nominal exchange rate; as employed in the study. Also, there exists an inelastic and significant relation between trade balance and its determinants. The major findings include; exchange rate induce an inelastic and significant relation on trade balance in the long run, there exist no short run causality from exchange rate to trade balance and money supply volatility contributes more to variance in trade balance than exchange rate volatility. The paper concludes with important implications for policy makers because it provides evidence supporting the fact that level of money supply has a major impact on trade balance adjustment and that devaluation of the exchange rate worsens the trade balance of Nigeria in the long run.

It is therefore worthy to note that an exchange rate policy of devaluation or depreciation cannot be solely undertaken to influence Nigeria's trade balance. The observed relation between exchange rate and trade balance has important policy implication for Nigeria; as continuous and sole devaluation/depreciation of the currency would further worsen the trade balance. This implies that policy makers need to take cognisance of the impact of exchange rate changes on trade balance in an environment where market liberalization is a topical issue in policy debates. There finding is similar to the claim by Damoense and Agbola (2007) that a monetary expansion stimulates domestic demand and increases export demand, and thus worsen trade balance; this would not be unconnected with the consuming nature of the Nigeria economy, the government should concentrate on policy that would standardized and raise money supply to the real sector which has the tendency to increase volume of goods available for exports and reduce demand for imported goods (Ogundipe et al., 2013).

Sibe, Nembot and TafahEdokat (2012) considered whether or not the devaluation of the CFA Franc enabled the member countries of the EMCCA zone to reach their objective. The study was carried out from 1980 to 2006, and it was divided into two sub periods (1980-1993 the pre-devaluation period) and (1994-2006 the post-devaluation period). The panel data regression analysis was used throughout this research work. The elasticity approach, which is called "imperfect substitute" model, was the method used in the analysis of trade balance. The key is to test the influence of the trade flow on the relative price, or rather, whether the depreciation of currency will improve the trade balance.

There results show that the devaluation of the CFA currency has improved the competitiveness of the EMCCA countries' economy and had also improved the trade balance of the EMCCA countries; but not up to the level expected by policy makers in other to foster a desirable trade balance account of the countries; as was propounded by most economic analyst, while trying to explain the benefits of such economic policies which according to them will pull the EMCCA countries out of the economic slump of the eighties. And there recommendations are; Incentives should be set up in the EMCCA countries in other to stimulate local consumption and intra- regional trade. These incentives could be materialised in the form of infrastructure construction such as road communication facilities such that there will be a real free movement of people and goods. By so doing these will reduce import and thereby improve trade balance within the EMCCA zone. The different government of the EMCCA countries should change their mode of government expenditure that is focused principally on importation which renders their economies vulnerable to external shocks. More emphasis should be put on the fight against "institutional corruption" in other to enable the emergence of economic yielding project still in the coffers. Doing so will create employment, stimulate economic growth and leads the countries towards development. Therefore, the EMCCA economies will reduce it dependency toward developed economies.

Nembot, et al. (2012) evaluates the impact of the devaluation of the CFA1 franc on the trade balance of EMCCA2 countries. We have put emphasis on We have put emphasis on a panel data regression model analysis to estimate our parameters from 1980 to 2006. The study conclude that the devaluation of the CFA Franc had a positive impact on the trade balance account of the EMCCA countries, whereas this impact was not sufficient to bring about a meaningful transformation in the competitive advantage position of the EMCCA countries. Thus we propose some policy measures to be undertaken by the EMCCA monetary authorities such as; the amelioration of intraregional exchanges which will result to a consistent reduction of imports, and as a result and increase in exports. Moreover, EMCCA countries should envisage the creation of their own currency with a

flexible exchange rate which will enable all the member countries to have control over their monetary policies, thereby giving these economies some level of economic independence.

Brahmana and Ooi (2011) examine the effect of monetary variable on output and inflation in Malaysia. The result of their study provides evidence on the important role of money in terms of variability in price and output. They also found interest rate to be important factor in output variability. The paper concludes that there is no evidence of causality from real GDP to price suggests and that the excess of aggregate demand as a result of increase in real GDP is just absorbed by growth in aggregate supply.

Mohammad (2009) examine the link between nominal devaluation and real devaluation with special reference to Ghana. To find this relationship, they employed some sophisticated tests such as ADF, P-P & Ng-Perron unit root tests; ARDL Bounds Testing, and DOLS test for the long run correlation. The findings of the study suggest that nominal devaluation leads to real devaluation both in the long run and in the short run in the case of Ghana. This study has attempted to verify the long run positive relationship between nominal and real effective exchange rate changes. It examined whether nominal devaluation leads to real devaluation or not, suggest that nominal devaluation leads to real devaluation not only in the long run but also in the short run. The results are consistent with most of the earlier empirical findings. It is also observed that the association is stronger during flexible exchange rate regime.

Klau (2008) in a study compared the economic performance of two groups of countries adopting different exchange rate policies. These are; CFA countries adopting fixed exchange rate regime and the Sub-Saharan Africa adopting flexible exchange rate regimes. The result of vector error correction indicates that both country group currency devaluations have a positive impact on economic activities. However, his conclusion is in contradictions with previous studies which indicate possible contractionary effects of devaluations on economic activities.

Alli (2008) examines the present performance of the Nigerian manufacturing sector thereby reviewing a surveyed result of the study conducted by the Manufacturers Association of Nigeria (MAN) in 2007. The review indicated that manufacturing firms faced their difficult time during the period under study. It was also disclosed that manufacturing activities have encountered financial difficulties and other crises which has resulted to a reduction in the number of firms operating at a break-even level and the large percentage as much as 60% are running to a shutdown position. Some of the reasons as illustrated by MAN resulted to the above phenomenon are; "high production costs, high interest and exchange rates, influx of foreign imported commodities, numerous type of taxes, insufficient effective demand as a result of low disposable income, other problems includes too much bureaucracy and rigorous inspection processes at the Nigerian ports that resulted to delay in clearing raw materials and other spare parts" (MAN, 2008).

Adenikinju and Chete (2002) empirically analyzed the Nigerian manufacturing sector in terms of productivity over a 30-year period showed that the performance of the manufacturing sector was satisfactory for the period 1970 to 1980. But, from 1980 onward there is a clear downward trend in terms of GDP growth and the level of profitability. The oil price collapse of 1983 in the international oil market has also negatively affected the performance of the manufacturing sector. This particular problem has resulted to decline in government revenues that reduced foreign exchange earnings. The government in turn came up with various initiatives that aimed at strict control of its trade such as various imports duties, imports licences and other restrictions that control the quantity of importation of some identified items. This has badly affected the performance of the manufacturing sector as it resulted to many problems especially with getting the needed inputs and other machines which resulted to massive industrial shut downs and under capacity utilization that greatly decline the output of the sector.

Adejugbe (1994) studied what effect trade policy have on the performance of Nigerian manufacturing after 1985. The author observed that in an attempt to make the Nigerian trade regime liberal, promote manufacturing performance and import export activities the government has taken some policy actions. For example the government implement a flexible exchange rate policy and liberalized trade policy as a result some major improvements in terms of reducing tariffs and increasing the rate of trades. At this same period, import duties on imported commodities was also increased, especially those considered to be substitute of domestic products. The government also made other steps in reducing import duties on major inputs and machineries used by the manufacturing sector. These policy options were adopted by the government with the aim of protecting the domestic manufacturers through the policy protectionism to enable them become highly productive in terms of output and efficient in their production process.

3. Methodology

This study relies on the supply side perspective of growth theory to examine the contribution of currency devaluation to manufacturing output growth. Following Solow (1975), it is assumed that output (Y) depends positively on both capital (K) and Labour (L). Thus the production function is stated as:

$$Y = f(K, L) \quad (3.1)$$

Where; Y = Aggregate Real Output /Gross Domestic Product (GDP), K = Stock of Capital, L = Stock of Labour.

The aim of this study is to examine the impact of currency devaluation on manufacturing output growth in Nigeria. Therefore, the study augment the above traditional neo-classical production function with currency devaluation, credit to the private sector to replace capital, import and export as additional inputs with exchange rate, inflation and interest rate as control variables. Therefore, equation (3.1) becomes:

$$\text{Output} = f(\text{CPS}, \text{EXCH}, \text{INF}, \text{INT}, \text{NIMPO}, \text{NEXPO}) \quad (3.2)$$

Rewriting the model in a linear form, we obtain:

$$\text{Output} = \beta_0 + \beta_1 \text{EXCH}_t + \beta_2 \text{INF}_t + \beta_3 \text{INT}_t + \beta_4 \text{CPS}_t + \beta_5 \text{NIMPO}_t + \beta_6 \text{NEXPO}_t + \epsilon_t \quad (3.3)$$

Then, the corresponding error correction model using four lags will be specified as:

$$\Delta \text{Output} = \beta_0 + \beta_1 \Delta \text{EXCH}_t + \beta_2 \Delta \text{INF}_t + \beta_3 \Delta \text{INT}_t + \beta_4 \Delta \text{CPS}_t + \beta_5 \Delta \text{NIMPO}_t + \beta_6 \Delta \text{NEXPO}_t + \beta_7 \text{ECM}_t + \epsilon_t \quad (3.4)$$

Where β_{1-6} represent the short-run elasticities of the variables while β_7 is the coefficient of the error correction term which is the lagged value of the residual derived from the cointegration regression of the variables and it indicates the speed of adjustment of the system to the long-term equilibrium path in response to short-term deviation of the variables from their long term paths.

This study used a yearly data of the variables from 1980 to 2013 which was sourced mainly from the Central Bank of Nigeria statistical data and WDI, 2014. This study therefore included in the model based on availability of data the following variables:

Manufacturing sector output (OUTPUT) measures the non-oil manufacturing sector output; inflation (INF) is measured by consumer price index in millions of Naira; exchange rate (EXR) measures the market exchange rate of U.S Dollar to Nigerian Naira, expressed in naira; credit to private sector (CPS) measures by the total domestic credit to the private sector of the economy in millions of Naira; interest rate (INT) is measured by the commercial banks interest rate on time deposit maturing in 12 month. export (NEXPO) is measure by total annual export of non-oil manufacturing products; and import (NIMPO) is measured by total annual importation of semi-finished and finished goods.

Based on economic theory, we expect the sign of the coefficient of inflation and credit to private sector (β_2 and β_3 respectively), to be positive. This is because, economic theory has established that an increase in the supply of money will lead to inflation and stimulate economic activities, raise profit and lowers interest rate thereby making capital more accessible to manufacturing firms and hence, increase in manufacturing output. Increase credit to the private sector means more credit (capital) to the manufacturing sub sector, hence positive relationship.

On the other hand, the sign of the coefficient of interest rate and exchange rate are expected to be negative (i.e. β_4 and β_5), as there is an inverse relationship between output and the rate at which banks and non-banks financial institutions lend to private investors. Conventional economic theory shows that devaluation can generally leads to an increase in the level of output, since it can enhances production particularly in export and import competing sectors (increase competitiveness of the economy in general and manufacturing sector in particular) as such exchange rate is negatively related to output.

For the purpose of achieving the objectives of this research work, we employ the following modelling strategy to test the relationships (causality, long run elasticities and short run elasticities) between non-oil sector performance, inflation, interest rate, exchange rate, import, export and credit to private sector in Nigeria. First, we test for stationarity of the time series data and in case of non stationarity, we take first difference of the data in order to achieve stationarity. Second, we test for the long term elasticities between the different variables, choosing as the dependent variable the manufacturing sector output. Finally, we test formally for the cointegration of the time series.

4. Estimation Results and Interpretation

4.1 Unit Root Test Results

The Augmented Dickey Fuller (ADF) test was conducted at level and at first difference using both trend and intercept with the null hypothesis that, the series has no unit root (not stationary) against the alternative hypothesis that the series does not have unit root (are stationary) in order to differentiate between mere correlation and an underlying causal relationship. Table 4.1 below presents the result of ADF unit root test:

Table 4.1: Unit Root Test using ADF

VARIABLES	ADF AT LEVEL		ADF AT FIRST DIFF	
	t-stat	Prob	t-stat	Prob
Non-oil output	-0.80941	0.8029	-8.2065	0.0000
Exchange	0.21124	1.0000	-2.8612	0.0649
Credit private sector	3.9783	0.9274	-5.7458	0.0000
Interest	-1.9601	0.3019	-4.82373	0.0005
Inflation	-2.3044	0.1770	-4.4035	0.0017
Non-oil import	0.5798	0.8619	-4.9823	0.0017
Non-oil export	1.133	0.9967	-4.82423	0.0005

Source: Author's computation (2016).

The test indicates that, all the variables are found to be stationary in their first difference at 1% level of significance except CPS (credit to private sector) which is stationary at 10% level of significant. Thus, the variables are not stationary at level but are all stationary in their first difference. As such the variables are integrated of the same order.

4.2 Cointegration Test using Johansen Test

Table 4.2 and 4.3 below report the result of co-integration based on Johansen procedure. The test indicates that there is existence of four (4) cointegrating equation based on Trace Statistic and Max-Eigen Statistics at 5% level of significance.

Table 4.2: Co-integration Rank test (trace)

Hypothesized	Trace		0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.917201	235.3839	125.6154	0.0000
At most 1 *	0.841603	155.6612	95.75366	0.0000
At most 2 *	0.764208	96.69640	69.81889	0.0001
At most 3 *	0.618609	50.46268	47.85613	0.0279
At most 4	0.302867	19.61691	29.79707	0.4492
At most 5	0.217148	8.071977	15.49471	0.4578
At most 6	0.007410	0.238003	3.841466	0.6256

Trace test indicates 4 cointegratingeqn(s) at the 0.01 and 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Thus, the null hypothesis that there is no cointegration can therefore be rejected at 5% level as both trace test and maximum eigenvalue statistics are greater than their critical values. The result therefore indicates the existence of relationship among the included variables.

Table 4.3: Co-integration Rank Test (Maximum Eigenvalue)

Hypothesized	Max Eigen0.05			
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.917201	79.72270	46.23142	0.0000
At most 1 *	0.841603	58.96482	40.07757	0.0001
At most 2 *	0.764208	46.23372	33.87687	0.0011
At most 3 *	0.618609	30.84577	27.58434	0.0184
At most 4	0.302867	11.54493	21.13162	0.5929
At most 5	0.217148	7.833974	14.26460	0.3958
At most 6	0.007410	0.238003	3.841466	0.6256

Maximum Eigenvalue test indicates 4 cointegratingeqn(s) at the 0.01 and 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values.

4.3 Long-run Estimates Using OLS Technique

Although, co-integration established that there is a strong relationship between the estimation parameter and not degree of significant of each variable. Therefore, there is need to establish level of variation of each variable.

Table 4.4: Long-run Estimates (OUTPUT)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	8344.116	1822.927	4.577318	0.0001
CPS	0.002469	0.000474	5.208619	0.0000
EXCH	14.98542	14.26924	1.050190	0.3029
INF	7.181711	34.55481	0.207835	0.8369
INT	214.8526	127.9449	1.679259	0.1046
NEXPO	4.75E-05	0.000277	0.171356	0.8652
NIMPO	-4.06E-05	0.000253	-0.160494	0.8737
R-squared	0.787859	Mean dependent var	15563.85	
Adjusted R-squared	0.740716	S.D. dependent var	6136.604	
S.E. of regression	3124.755	Akaike info criterion	19.11334	
Sum squared resid	2.64E+08	Schwarz criterion	19.42759	
Log likelihood	-317.9268	Hannan-Quinn criter.	19.22051	
F-statistic	16.71227	Durbin-Watson stat	1.837448	
Prob(F-statistic)	0.000000			

Source: Author's computation (2016).

From Table 4.4 above, CPS have a positive effect on output every one unit of output is positively increased by 0.2% of CPS, exchange rate has 1498%, inflation 718% , interest rate 21485% and export 47% while import has adverse effect on level of output of manufacturing industry. The R-squared -all the estimated parameter of the variation variable accounted for 79% while adjusted R square accounted for 74% base on this result, it is good estimation parameters.

4.4 Long Run Estimates (Normalized cointegration)

The long run relationship of the variables from the normalized cointegration result with respect to non-oil manufacturing sector output provides the evidence regarding the long- run dynamic adjustment among manufacturing sector output as a proxy of the performance of the sector, inflation, interest rate, credit to private sector, import, export and the exchange rate as presented below:

Table 4.5: Long Run Estimates

Normalized cointegrating coefficients (standard error in parentheses)						
OUTPUT	EXCH	CPS	INT	INF	NIMPO	NEXPO
1.000000	313.3224	0.088846	42.21484	299.4668	0.112477	-0.124000
	(72.4929)	(0.01076)	(367.587)	(116.352)	(0.01319)	(0.01353)

Source: Author's computation (2016).

The normalized cointegration equation as presented in the table above show long-run coefficients of our independent variables as they affect the dependent variable. It specifically shows the effect of each individual variable on the dependent variable. The result of each individual variable is explained below:

Exchange Rate (EXR): Although conventional economic theory indicates that, devaluation can generally leads to output expansion because of the fact that, it may enhances production in export and import-competing sectors of the economy. Devaluations may also cause contractionary effect through the channel of the external debt denominated in foreign currencies. It is obvious that devaluation may increase the amount of the resources used for servicing the external debt and thus crowd out domestic investment (Morley, 1992). The long run coefficient of the rate of exchange of the Nigerian naira against dollar as presented in the table above shows a positive relationship between exchange rate and manufacturing output.

This might be due to the nature of the Nigerian manufacturing sector which is highly import dependent interns of major inputs, technology and spare parts, any decrease in the value of the Naira against dollar will result to a corresponding rise in the cost of production of the manufacturers and hence decrease in its output.

Devaluation in Nigeria has also negatively affected the manufacturing sector by reducing its domestic competitiveness, as the output of the domestic firms cannot compete in the market with foreign imported ones in terms of price. Although imported products are better in terms of quality, there prices are cheaper to that of domestically produced ones due to high cost of production.

Another reason as to why exchange rate devaluation exerts a negative effect to manufacturing performance in Nigeria is that it results to low profit margins in the sub sector. Profit is revenue minus cost and since devaluation result to increase in the cost of production it lowers the profit margins. Similar result was also obtained by Rogers in his study in Mexico (Rogers, 1995).

Credit to Private Sector (CPS): the coefficient of the credit to private sector shows that there exist a positive relationship between credit and manufacturing output. The result specifically implies that a one unit increase in the rate of credits to the private sector holding the effect of other variables constant, will lead to a corresponding increase in manufacturing output by 9% and vice versa. This is however in conformity with theoretical postulations and confirms the result of previous studies such as that of Ernest (2013).

Interest Rate (INT): From the long run estimate presented in the table above, the coefficient of lending rate is positive suggesting that 42.21% increase in interest rate has direct relationship with one unit of manufacturing output. The result therefore is in conformity with economic theory and supports the findings of Ernest (2013).

Inflation (INF): The estimate for the long run coefficient of Inflation indicates a long run positive relationship between output in the manufacturing sector. This is comfort with theoretical postulations.

Constant rise in the volume of money in the economy has resulted to high rate of inflation over the years that have rendered the value of the Naira at disadvantage compared to other currencies. This also result to high cost of production in the manufacturing sector as manufacturing firms in Nigeria depends on the importation of machines, spare parts and inputs.

Moreover, increase in inflation has also resulted to constant demand for higher wages by the labour force as there is an increase in the price of goods and services which reduce their real wages due to increase in the inflation in the economy which may be due to excess money supply or imported inflation with other thing being equal.

Import (NIMPO): the coefficient of import has a positive long run relationship with non-oil manufacturing output. Since Nigeria is import dependent country, with effect of devaluation of Naira which will also encouraged foreign investors to produce cheaper than local investor who will find it difficult to compete favourably with their counterpart in other currency. Therefore 11% increase in import of raw materials, machinery and goods will have a corresponding relationship on one unit of output.

Export (NEXPO): This has a negative relationship with the non-oil manufacturing output which does explained the effect of devaluation on Nigeria manufacturing out, this also explained why many factory failed in Nigeria. There are other factors which may have contributed to this negative relationship like political instability in the area of policy inconsistency, economy factor in the area of inflation and persistence devaluation of Naira etc.

4.5 Granger Causality Test

Table 4.6 reports the result of the Granger causality test.

Table 4.7: Granger causality test

Null Hypothesis:	Obs	F-Statistic	Prob.
EXCH does not Granger Cause OUTPUT	32	1.78238	0.1875
OUTPUT does not Granger Cause EXCH	32	0.02152	0.9787
INT does not Granger Cause OUTPUT	32	1.15029	0.3316
OUTPUT does not Granger Cause INT	32	1.22910	0.3084
INF does not Granger Cause OUTPUT	32	0.57968	0.5669
OUTPUT does not Granger Cause INF	32	0.13900	0.8708
NIMPO does not Granger Cause OUTPUT	32	0.03715	0.9636
OUTPUT does not Granger Cause NIMPO	32	3.43763	0.0468
CPS does not Granger Cause OUTPUT	32	1.50384	0.2403
OUTPUT does not Granger Cause CPS	32	2.64421	0.0894
NEXPO does not Granger Cause OUTPUT	32	0.03347	0.9671
OUTPUT does not Granger Cause NEXPO	32	3.87583	0.0331
CPS does not Granger Cause EXCH	32	0.57762	0.5680
EXCH does not Granger Cause CPS	32	3.95991	0.0310
INT does not Granger Cause EXCH	32	2.51726	0.0994
EXCH does not Granger Cause INT	32	2.16918	0.1338
INF does not Granger Cause EXCH	32	2.21445	0.1287
EXCH does not Granger Cause INF	32	2.14309	0.1368
NIMPO does not Granger Cause EXCH	32	0.17519	0.8402
EXCH does not Granger Cause NIMPO	32	1.10548	0.3456
NEXPO does not Granger Cause EXCH	32	0.09893	0.9061
EXCH does not Granger Cause NEXPO	32	1.10982	0.3442
INT does not Granger Cause CPS	32	0.79759	0.4607
CPS does not Granger Cause INT	32	3.50561	0.0443
INF does not Granger Cause CPS	32	0.36830	0.6953
CPS does not Granger Cause INF	32	0.87076	0.4301
NIMPO does not Granger Cause CPS	32	1.25352	0.3016
CPS does not Granger Cause NIMPO	32	12.8869	0.0000
NEXPO does not Granger Cause CPS	32	0.18727	0.8303
CPS does not Granger Cause NEXPO	32	10.2574	0.0005
INF does not Granger Cause INT	32	3.39184	0.0485
INT does not Granger Cause INF	32	5.75338	0.0083
NIMPO does not Granger Cause INT	32	2.39035	0.1107
INT does not Granger Cause NIMPO	32	0.29793	0.7448
NEXPO does not Granger Cause INT	32	0.85722	0.4356
INT does not Granger Cause NEXPO	32	0.00410	0.9959
NIMPO does not Granger Cause INF	32	0.06379	0.9383
INF does not Granger Cause NIMPO	32	0.32215	0.7273
NEXPO does not Granger Cause INF	32	0.27970	0.7582
INF does not Granger Cause NEXPO	32	0.30099	0.7425

NEXPO does not Granger Cause NIMPO	32	4.72830	0.0174
NIMPO does not Granger Cause NEXPO	32	7.69805	0.0023

Source: Author's computation (2016).

The result shows that there is a unidirectional causality running from, exchange rate, import and Credit to Private Sector to manufacturing output. There is also a unidirectional causality on the other hand between exchange rate and credit to private sector, interest rate, import, export to credit to private sector. Thus, inflation and interest rate, import and export are bidirectional causality in our model. It also shows that interest rate is granger caused by both exchange rate and inflation. This implies that passed values of import, credit to private sector and exchange rate have a predictive ability in determining the present values of manufacturing output. Past values of inflation also helps in the prediction of the future value of interest rate. Thus, there is a strong dynamic causal relationship among the variables in our model.

5. Conclusion and Policy Options

The study empirically examined the impact of Devaluation of Naira which is monetary policy instability or improving on the manufacturing performance of the Nigerian economy from 1980 to 2013. Based on our findings, it was observed that, Nigeria's exchange rate management policies over the period favour the continues depreciation of the Naira exchange rate, but that has not resulted to significant growth of the manufacturing sector as the contribution of the sector to GDP has continuously felled over the period. Our result therefore suggest the need for currency appreciation rather than depreciation as the sector depends heavily on the importation of equipment's, machineries as well as most of its raw materials. The significant negative effect of interest rate on the manufacturing performance of Nigeria shows that, credit is still costly to access by the manufacturers and this contribute to the marginal performance of the sector. Both inflation and credit to private sector exert an insignificant effect in stimulating output of the manufacturing sector. The study therefore concludes that both monetary and exchange rate policies in Nigeria were not successful in achieving the growth of the manufacturing sector in Nigeria as expected. Thus, there is the need for the review of the current exchange rate policy towards appreciation and a monetary discipline that will restore the value of the naira.

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