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The Nexus of Exchange Rate Fluctuations and the Growth of the Nigerian Manufacturing Sector: A Causal Relationship

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ABSTRACT

This study examined the link between exchange rate fluctuations and the growth of the Nigerian Manufacturing Sector during a thirty (30) year period, 1986 – 2016. Perhaps, one of the greatest development challenges that has confronted Nigeria since 1986 when the fixed exchange rate system was abolished and replaced with the flexible exchange rate system is the designing of policy measures to enhance exchange rate appreciation in Nigeria. This is particularly the case after the abysmal failure for the Structural Adjustment Programme (SAP) devaluation policy package which was designed to aggressively promote export in Nigeria. To address the issue at stake, the methodology adopted for the study is the Granger causality test and Ordinary Least Square (OLS) method to determine the direction of causality between exchange rate fluctuations and growth of manufacturing sector. The findings show that manufacturing GDP caused exchange rate fluctuations indicating a unidirectional causality, and the attendant fluctuations in turn not favourable to manufacturing activities while there is bidirectional causality between manufacturing employment rate and exchange rate fluctuations. There is also a unidirectional causality from exchange rate fluctuations to per capita income and from manufacturing foreign private investment to exchange rate fluctuations. It is therefore, recommended that government should encourage manufacturing activities by

giving incentives and subsidies to local manufacturers so as to increase the sector's contribution to GDP.

Key words: exchange rate; fluctuations; manufacturing sector.

INTRODUCTION

In Nigeria, different exchange rate markets have existed. There have been the existence of the official foreign market, bureau de change, Autonomous Foreign Exchange Market (AFEM) and the parallel market. At the parallel market (black market) foreign currencies are bought and sold usually at higher exchange rates than the official foreign exchange market. While in the bureau de change, transaction is restricted to currencies derived only from private sources.

Exchange rate fluctuations have effect on the manufacturing sector in terms of production (GDP), investment, employment as well as per capita income. The effect of exchange rate on manufacturing sector may be positive or negative. It may be negative if the sector rely more on imported inputs for production, but positive if local raw materials are used so that profitability of the sector is enhanced by producing for export.

The manufacturing sector plays a catalytic role in a modern economy and has many dynamic benefits that are crucial for economic transformation. In an advanced country, the manufacturing sector is a leading sector in many respects. It is an avenue for increasing productivity in relation to import substitution and export expansion, creating foreign exchange earning capacity, raising employment and per capita income which widens the scope of consumption in dynamic patterns. Furthermore, it promotes the growth of investment at a faster rate than any other sector of the economy as well as wider and more efficient linkage among different sectors. In terms of contribution to the Gross Domestic Production (GDP), the manufacturing sector is expected to be dominant but it has been overtaken by the services sector in a number of OECD countries (Opaluwa, Ameh and Umeh, 2010).

Before independence, agricultural production dominated Nigeria's economy and accounted for the major share of its foreign exchange earnings. Early efforts in the manufacturing sector were oriented towards the adoption of an imported substitution strategy in which light industries and assembly related manufacturing ventures were

embarked upon. Up to the 1970's, the prime mover in manufacturing activities was the private sector which established some agro – based light – manufacturing units such as vegetable oil extraction plants, tobacco processing, textiles and breweries. The import – independent industrialization strategy virtually came to a halt in the late 1970's and early 1980's when the liberal importation policy expanded the import of finished goods to the detriment of domestic production. This led to a relative decline in manufacturing production and little or no diversification in products and production processes as projected (Fakiyesi and Akano, 2005). The Structural Adjustment Programme (SAP) introduced in 1986 was partly designed to revitalize the manufacturing sector by shifting emphasis to increased domestic sourcing of inputs through the use of monetary and fiscal incentives. The deregulation of the foreign exchange market was also effected to make non – oil export especially manufacturing, more competitive even though, this also resulted in massive escalation in input costs.

Despite various policy reform measures to revitalize manufacturing, the sector has not contributed significantly to the attainment of self – reliance in the supply of basic and intermediate goods and exportable to generate adequate foreign exchange earnings, raise employment and per capita income which cause unique consumption pattern.

1. THEORETICAL FRAMEWORK

The traditional flow model serves as the theoretical base for this study.

The traditional flow model is essentially based on the principle of the interplay of demand and supply. The forces of the market (interaction between demand and supply) determine the rate of exchange. In the foreign exchange market, equilibrium is maintained in the absence of excess demand as well as excess supply or vice versa in the exchange market thereby resulting in the emergence of another point of equilibrium. However, when there is speculation or expectation of a change in the rate of exchange, this could lead to disequilibrium even without any change in the initial determining factors.

According to Hyung (1972) the economic players in the exchange market are the private and public sectors. While the private sector operates under flexible exchange rate system, the public sector transacts under a pegged system of currency exchange. Based on this, the problem of excess or shortage of demand or supply only affects the private sector

currency exchange transactions. In this direction assuming an excess private demand for exchange denoted as D_e, this excess private demand (D_e) in any short market period depends upon the balance of trade and long term capital flows denoted as t_e, the international interest rate differentials denoted as r and the price of spot foreign exchange rate, X_2

With the above, the world model can be deduced as

$D_e = f(t_e, r, X_e)$ ……(1)

Taking the monetary authority's excess demand for foreign exchange (D_m) as an exogenous variable, the model can then be deduced as:

$D_m = g$ …… (2)

g = an exogenous variable which represents the openness of the economy.

Combining equations (1) and (2) and equating to zero, we have:

$D_e + D_m = 0$ …… (3)

Equation (3) serves as the market clearing condition

This market clearing equation can be used to remove D_e and D_m resulting in the emergence of a single equation that determines the rate of exchange as an implicitly endogenous variable. The equation is symbolized as:

$E X R = f(t_e, r, X_e) + g = 0$ …… (4)

The model gives a good description of flexible exchange rate system under which the private sector operates. The theory postulates that exchange rate is in equilibrium when the difference between demand for and the supply of foreign exchange equal zero. It opines that an increase in domestic interest rate relative to the foreign interest rate results in exchange rate appreciation. This position is logically driven home on the premise that an increase in domestic interest rate is capable of inducing capital inflow to the country. As a policy prescription, the model postulated that for an economy opting for a strengthened and appreciating exchange rate, there must be an increase in domestic interest rate, reduction in prices and real growth rate.

The theory further elucidates on the factors that account for the appreciation or depreciation that may result in the rate of exchange. Increase in domestic prices lead to depreciation of a country's currency against other currencies. This results because such increase culminates into making exports very expensive and such a country's goods will

be price disadvantaged at the international market consequently, the country's foreign exchange supply is constrained. The economy is bedevilled by inflation which is capable of creating a conducive atmosphere for increased imports. The increased imports exert adverse pressure on the Balance of Payments (BOPs) which invariably results in further depreciation of the rate of exchange. Under their model, increase in real income causes exchange rate to depreciate because such increase tends to increase demand for import with negative impact on the current account but with no offsetting increase in capital inflow (Olisadebe, 2000).

It must be noted that while this study is in alignment with the postulation of the theory on the exchange rate being determined by the market mechanism – the interplay of demand and supply, it however discards the policy prescription of the theory. Increasing the domestic interest rate relative to the foreign interest rate will have little or no positive impact on exchange rate appreciation particularly in the Nigerian context; the reason for this is not far – fetched. In Nigeria, there are many structural rigidities impeding capital inflow. Increasing the domestic interest rate in order to attract foreign investment may result in abysmal failure and at the same time complicating the domestic investment situation.

2. LITERATURE REVIEW

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 partners currency, 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 fluctuations and the depreciating nature of such an important economic variable as well as its effect on other sectors of the economy.

Examining the allocation and management of foreign exchange, Anifowose (2002) identified exchange rate as a major tool for pursuing reserve management objectives. This is done through the preservation of the value of the external reserve assets and the maintenance of a stable exchange rate mechanism. According to him, a stable exchange rate reflects a very strong domestic economic fundamental which could result in the strengthening of the value of the domestic currency relative to the convertible currencies in which the reserves are kept. He further elucidated that the exchange rate of a country

may be fixed or managed as it was in Nigeria prior to 1986 or allowed to float in which case the rate will be determined by the interplay of the market forces notably the demand for and the supply of the foreign exchange. He observed that the technique of exchange rate determination had varied over the years in Nigeria in response to domestic economic exigencies with the outlying of the time periods and their variation pattern.

As a policy recommendation, the analyst emerged with the view that the country needs to identify the strategies of external build – up to enable it meet immediate external commitment and thereby strengthen the economic fundamentals of which the naira (the exchange rate) is included. In his words, "though the Central Bank of Nigeria (CBN) had made concerted efforts during the period under review to manage the nation's external reserve, there is an urgent need for a well articulated medium to long – term external reserve management policy guideline for a country like Nigeria that is well endowed with numerous resources which when properly managed could eventually increase the present level of foreign exchange earnings". He thus recommended a more rigorous pursuit of export policy drives which will help in placing the naira exchange rate on a good ground.

Osundiji (2005), observed that the national currency of any nation is a pride of that nation. Also, apart from serving as a medium of exchange, it must serve as a store of value. Its value must be the concern of the government and the people of the nation. He remarked that though the Nigerian exchange rate position is not encouraging, the rate has however encouraged the promotion of non – oil exports and shifted emphasis from general commerce to more productive activities. He opined that while appreciating the concern of the monetary authority by guiding the interest rates, it is necessary for the authority to realize that this cannot be treated in isolation of foreign exchange. This continued depreciation of the naira in the market he said, can neutralize whatever manufacturers would have gained as a result of reduction in interest rate.

Osundiji observed that the poor exchange rate position over the years has promoted non – oil export in Nigeria. This observation has been considered very inaccurate in this study. The exports sector has not recorded any substantial improvement and hence, the naira value has depreciated the more. So, there is no credence given to devaluation.

Bouser – Neal (1999) posited that information following interventions usually lead to adjustment in the portfolio of market participants, thus leading to volatility. This was

based on her empirical findings using the "implied volatility model" derived from the price of foreign currency. She remarked that subsequent information on exchange rate position expectation after monetary authority's intervention is the cause of the movements in the variable.

Evaluating the above position in the context of the developing economies like that of Nigeria, Nwoba (2006) posited that the author's analysis only in the context of developed economies. According to him, for any model to be useful in analysing the effects of interventions in exchange rate stabilization in the developing economies, it should consider the supply of foreign exchange which has remained far inadequate over the years. He observed that this has culminated into speculative attacks on their speculative currencies. The economist enumerated further that the policy of intervention is always effective when the supply of foreign exchange is somewhat adequate and that when applied to an economy with shortage of foreign exchange like Nigeria; there could be high speculative demand by desperate end – users. This eventually results in one directional affair as the apex bank continues to sell to end – users without buying from them at any point in time. This will ultimately amount to the failure of the exchange rate intervention. As a conclusive remark, he opined that for the developing economies like Nigeria, the existence of parallel exchange market (though faceless and illegal) due to foreign exchange shortages and bottlenecks, foreign exchange administration induces fluctuations in the foreign exchange rate.

In his contribution, Ogiogio (2001) expressed that much of concern for exchange rate policy grew considerably in the 1980s when most sub – Saharan African countries embarked on economic stabilization and Structural Adjustment Programmes (SAP). Apart from political instability, he opined that the economic crisis facing most African countries is the result of inappropriate macro-economic policies of which exchange rate misalignment was quite pronounced. This inappropriate exchange rate policy, he observed subsidized imports, penalized exports and inflow of foreign exchange, created economic rents for economic officials who allocated import licenses and enforced import control measures, and distorted the level of tariff protection in the domestic economy.

2.1 THE MODEL

The model adopted for this study is that of Granger (1969) to determine the direction of causality between exchange rate and the specified economic variables. Causality test of Granger assumes that empirical work based on time series data involved in analysis are stationary. Therefore, test of stationarity precedes test of causality. The econometric software used for Granger, test of stationarity and regression is the e-views 7 package.

Test of stationarity using the Augmented Dickey – Fuller (ADF): The starting point is an examination of the time series properties of all the variables by conducting a unit root on the variables, where the order of integration of each series is determined. The ADF test is conducted in the case where error term, u_t are correlated. This is conducted by augmenting the preceding equations by adding the lagged values of the dependent variable (exchange rate, $DEXR_t$).

In conducting ADF test in equation 1 below

$$DEXR_t = \partial EXR_{t-1} + U_t \text{.....(1) } to\ give$$

$$DEXR_t = \beta_1 + \beta_2 + \partial Y_{t-1} + \alpha \sum DY_{t-1} + u_t \text{.....(2)}$$

Where u_t is error term and where $\Delta Y_{t-1} = (Y_{t-1} - Y_{t-2}), \Delta Y_{t-2} = (Y_{t-2} - Y_{t-3})$

The number of lagged difference terms to include is often determined empirically, the idea being to include enough terms so that the error in equation (2) above is serially uncorrelated. But normally, if a time series has a unit root, the first difference of such time series are stationary. Therefore, the first difference of exchange rate taken as: -

$$\Delta EXR_t = (EXR_t - EXR_{t-1}) \text{.....(3)}$$

If computed DF t – value is more negative than the critical value, it is then concluded that the first differenced exchange rate is stationary; that is I(0).

Granger causality test: Granger formulated a definition of “causality” between economic variables which he used in empirical research. He postulated that if a variable (X_t) caused another variable (Y_t), then Y_t would be better predicted using the past values (lagged variable) of Y_t and X_t together than using only the past values of Y_t alone

Thus, the study model is specified as:

$$Y_t = \alpha_0 + \alpha_1 Y_{t+1} + \alpha_2 Y_{t+2} + \alpha_3 Y_{t+3} + ...\beta_2 X_{t-2} + \beta_3 X_{t-3} ..... + ... + E_t .....(1)$$

$$E(e_i X_i) = 0$$

Considering the above definition, if

$$\beta_1 = \beta_2 = \beta_3 = 0$$

X does not Granger cause Y

On the other hand, if any of the coefficients are non-zero, then X does granger cause Y. The specification can be reversed to determine the case of bi-directional causality

$$X_t = \alpha_0 + \alpha_1 X_{t-1} + \alpha_2 X_{t-2} + \alpha_3 X_{t-3} + ...\beta_1 Y_{t-1} + \beta_2 Y_{t-2} + \beta_3 Y_{t-3} + ... + E_t .....(2)$$

$$E(e_i X_i) = 0$$

if $\beta_1 = \beta_2 = \beta_3 = 0$

Then Y does not Granger cause X

But if any of the B coefficients is non-zero, then Y Granger cause X

The first model depicts exchange rate as the dependent variable. Its current rate is made to depend on its lagged values and that of the explanatory variable including the error term. In this study, the explanatory variables include the manufacturing GDP, Per Capita Income (PCI) Manufacturing Employment Rate (MER) and the Manufacturing Foreign Private Investment (MFPI). The lagged values could take more years as the case may be.

The second model is specified simply by switching X and Y. In this case, X becomes the dependent variable. The test is then conducted to determine whether the lagged values of Y are significantly different from zero. If they do, causality is established.

In this study, the Granger model is applied to each of the indicated variables.

The models are specified as follows:

E and D causality model

$$E_t = \alpha_0 + \alpha_1 E_{t-1} + \alpha_2 E_{t-2} + \alpha_3 E_{t-3} + \ldots \beta_1 D_{t-1} + \beta_2 D_{t-2} + \beta_3 D_{t-3} + \ldots + U_t \ldots\ldots\ldots\ldots\ldots(3)$$

$$D_t = \alpha_0 + \alpha_1 D_{t-1} + \alpha_2 D_{t-2} + \alpha_3 D_{t-3} + \ldots \beta_1 E_{t-1} + \beta_2 E_{t-2} + \beta_3 E_{t-3} + \ldots + U_t \ldots\ldots\ldots\ldots\ldots(4)$$

$$E(e_i X_i) = 0$$

E and C causality model

$$E_t = \alpha_0 + \alpha_1 E_{t-1} + \alpha_2 E_{t-2} + \alpha_3 E_{t-3} + \ldots \beta_1 C_{t-1} + \beta_2 C_{t-2} + \beta_3 C_{t-3} + \ldots + U_t \ldots\ldots\ldots\ldots\ldots(5)$$

$$C_t = \alpha_0 + \alpha_1 C_{t-1} + \alpha_2 C_{t-2} + \alpha_3 C_{t-3} + \ldots \beta_1 E_{t-1} + \beta_2 E_{t-2} + \beta_3 E_{t-3} + \ldots + U_t \ldots\ldots\ldots\ldots\ldots(6)$$

$$E(e_i X_i) = 0$$

E and P causality model

$$E_t = \alpha_0 + \alpha_1 E_{t-1} + \alpha_2 E_{t-2} + \alpha_3 E_{t-3} + \ldots \beta_1 P_{t-1} + \beta_2 P_{t-2} + \beta_3 P_{t-3} + \ldots + U_t \ldots\ldots\ldots\ldots\ldots(7)$$

$$P_t = \alpha_0 + \alpha_1 P_{t-1} + \alpha_2 P_{t-2} + \alpha_3 P_{t-3} + \ldots \beta_1 E_{t-1} + \beta_2 E_{t-2} + \beta_3 E_{t-3} + \ldots + U_t \ldots\ldots\ldots\ldots\ldots(8)$$

$$E(e_i X_i) = 0$$

E and I causality model

$$E_t = \alpha_0 + \alpha_1 E_{t-1} + \alpha_2 E_{t-2} + \alpha_3 E_{t-3} + \ldots \beta_1 I_{t-1} + \beta_2 I_{t-2} + \beta_3 I_{t-3} + \ldots + U_t \ldots\ldots\ldots\ldots\ldots(9)$$

$$I_t = \alpha_0 + \alpha_1 I_{t-1} + \alpha_2 I_{t-2} + \alpha_3 I_{t-3} + \ldots \beta_1 E_{t-1} + \beta_2 E_{t-2} + \beta_3 E_{t-3} + \ldots + U_t \ldots\ldots\ldots\ldots\ldots(8)$$

$$E(e_i X_i) = 0$$

Where E = Exchange Rate (Parallel)

D = Manufacturing GDP

C = Manufacturing Per Capita Income

P = Manufacturing Employment Rate

I = Manufacturing Foreign Private Investment

$\alpha_0, \alpha_1, \alpha_2, \alpha_3$ = *Constants or parameters*

$\beta_0, \beta_1, \beta_2, \beta_3$ = *Constants or parameters*

The models were built on the premise that the low level of productivity that characterized the economy during the study period caused the fluctuations in the rate of exchange. In turn, the fluctuations in exchange rate could adversely affect the pattern of production, consumption, investment and employment. Consequently, output (GDP) could be negatively impacted on.

In order to examine the potential contribution of the manufacturing sector to exchange rate stabilization, multiple regressions is conducted to test for the collective impact of the independent variables on exchange rate.

The model is as follows: -

$$E = \alpha_0 + \alpha_1 D + \alpha_2 C + \alpha_3 P + \alpha_4 I + U \text{.....(11)}$$

or simply

$$EXR = \alpha_0 + \alpha_1 MGDP + \alpha_2 MER + \alpha_3 MFPI + \alpha_4 PCI + U \text{.....(11)}$$

Transfor min *g equation* (11) *above* int *o linear form for easy empirical verification to yield*

$$LnExR = \alpha_0 + \alpha_1 LnMGDP + \alpha_2 LnMER + \alpha_3 LnMFPI + \alpha_4 LnPCI + E_t \text{.....(12)}$$

where $Ln = natural$ log *arithm*

$\alpha = the$ *paramater to be estimated*

Source of data and method of analysis: This research work employed basically the secondary data sources from Central Bank of Nigeria's Statistical Bulletin and National Bureau of Statistics (NBS). The study made use of Granger causality model to determine the direction of causality between exchange rate and the specified economic variables, as well as the multiple regression analysis to determine the contribution of the manufacturing sector to exchange rate stabilization. The empirical implementation of the model made use of macro-economic data covering 30 years (1986 - 2016) in order to capture the deregulation era (SAP). The model is examined to ascertain whether the estimated parameters agree with the a priori expectation which states that exchange rate fluctuations will have negative effect on the Nigerian manufacturing sector. The R^2 is to

determine the goodness of fit, while the t-test is used to determine the causal relationship between each of the indicated variables and the manufacturing output. The DW-statistic is used to test for the existence of autocorrelation.

3. EMPIRICAL ANALYSIS OF RESULTS AND DISCUSSION OF FINDINGS

The ADF test, Granger causality test and regression were conducted on the variables using the e-views 7 econometric software and the results are presented below. The choice of lag is provided by paramentisation, this is very important because the direction of causality may depend critically on number of lagged terms included.

Table 1: Unit Root test on Variables using ADF Test

Variable	Test Statistics	Critical Value	Level of Significance	Level
$D(EXR_{(-1)})$	-3.387132	-2.9591	5%	*I*(1)
$D(FDI_{(-1)})$	-4.129628	-3.6576	1%	*I*(1)
$D(MGDP_{(1)})$	-4.899284	-3.6576	1%	*I*(1)
$D(MER_{(-1)})$	-4.092651	-3.6576	1%	*I*(1)
$PCI_{(-1)}$	-3.419711	-2.9555	1%	I(0)

Table 2: Granger Causality Test Result

Direction of causality	No. of Lags	F - Value	Probability	df	Decision
1. EXR → MGDP	4	1.11028	0.42253	18	Accept
MGDP → EXR	4	2.15560	0.17654	18	Reject
2. EXR → MER	4	1.28790	0.36037	18	Reject
MER → EXR	4	2.14921	0.17740	18	Reject
3. EXR → PCI	4	1.80642	0.23216	18	Reject
PCI → EXR	4	1.01613	0.46036	18	Accept
4. EXR → MFDI	4	1.80305	0.56019	18	Accept
MFDI → EXR	4	3.93419	0.05542	18	Reject

→ Not cause

LOS = 95%

Table 3: Regression Result showing contribution of manufacturing sector to exchange rate stabilization.

Dependent variable: EXR

Variable	Coefficient	Std. Error	Test Statistics	Probability
Log MGDP	-1.968792	0.781358	-2.519706	0.0228
Log MER	-1.659959	0.473772	-3.503705	0.0029
Log PCI	3.954317	0.366460	1.079058	0.000
Log MFDI	-1.931562	0.355221	-5.437634	0.0001

R^2 = 0.900089 DW = 1. 906127 F-Stat. = 39.18

The ADF test on table 1 shows that MGDP, MFDI, EXR were integrated of order one, that is to say they are *I*(1) series while PCI was integrated at level.

Granger causality test: the first result suggests that exchange rate fluctuations does not cause changes in the manufacturing GDP (Ho accepted) but the manufacturing GDP truly Granger cause exchange rate fluctuations (Hi accepted). Therefore, the direction of causality is from manufacturing GDP to exchange rate.

The second test shows that exchange rate truly Granger cause manufacturing employment rate. Equally, manufacturing employment rate Granger cause exchange rate fluctuations. Thus, there is feedback bidirectional relationship between exchange rate and employment.

Thirdly, exchange rate fluctuations truly Granger cause per capita income, but the per capita income does not cause exchange rate fluctuations. Therefore, there is no reverse causality from per capita income to exchange rate fluctuations.

Fourthly, exchange rate fluctuations does not cause changes in manufacturing foreign private investment but foreign private investment truly Granger cause exchange rate fluctuations.

Regression analysis: the regression on table 3 shows a parsimonious result with all the indicators highly significant. The DW (1.91) shows that autocorrelation has been removed. The signs attached to the parameter estimates conform with the a priori expectation. The coefficient of determination, R^2 at 90% suggests that 90% of the changes in exchange rate are explained by changes in the Manufacturing GDP, Manufacturing Employment Rate (MER), per capita income and foreign private

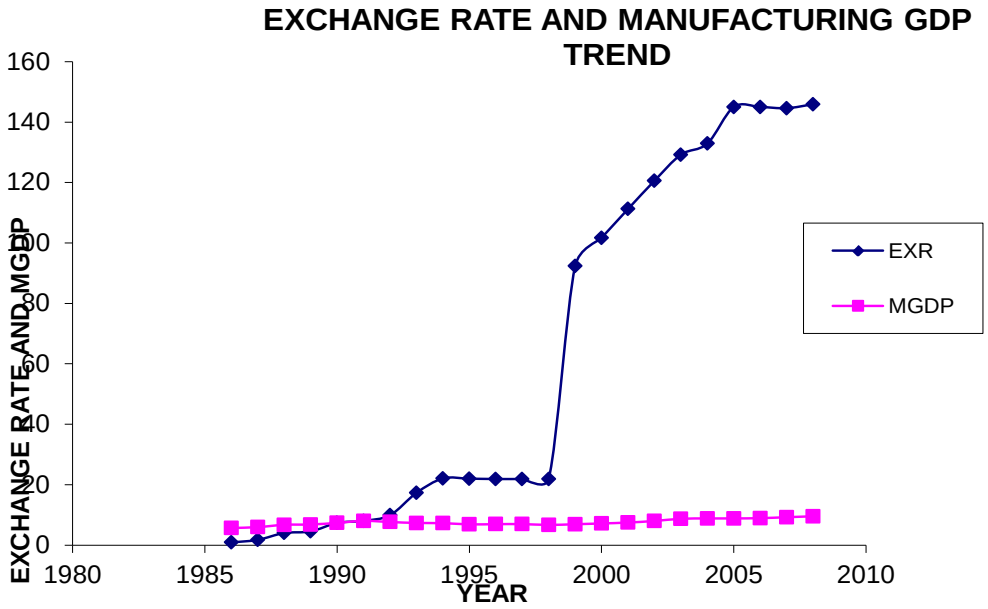
investment. The remaining 10% are explained by variables not included in the model. The F-statistic is 39.18 showing a significant difference between the variance of estimates and the variance of the independent variables. The t – value for regression coefficients are all negative except per capita income and are statistically significant.

With regards to manufacturing GDP, a unit change induces 2.0 unit reduction in exchange rate. Exchange rate responds to changes in GDP. A progressive expanding productivity in the manufacturing sector is needed to sustain a stable exchange rate in the economy.

As for manufacturing employment rate, a unit change also induces 1.7 unit reduction in exchange rate. The manufacturing foreign private investment shows that a unit change induces 1.9 unit reduction in exchange rate while per capita income which widens consumption pattern shows that exchange rate fluctuates by as much as 4.0 units in response to a unit change in per capita income.

The implication of the findings are obvious, Granger causality test reveals that "manufacturing GDP truly Granger cause exchange rate fluctuations" and the attendant fluctuations in the rate of exchange create the problem of uncertainty which leave a negative impact on the manufacturing sector. Fluctuations in the rate of exchange are not favourable to economic activities in the manufacturing sector. The unfavourable exchange rate position in turn contributed to low productivity observed during the study period. This is because many indigenous firms got liquidated due to inability to finance their essential imports. The weakness of the productive base provided no fulcrum upon which the exchange rate policies could rest.

Exchange rate affected manufacturing capacity utilization on which manufacturing output (GDP) and investment depend on. It can therefore be concluded that exchange rate fluctuations had an impact on both manufacturing output and investment. Hence there is an inverse relationship between exchange rate fluctuations and the manufacturing sector's performance. As exchange rate reduces nominally, the exchange value of Naira/US dollar appreciates and the manufacturing sector performs better.



CONCLUSION AND RECOMMENDATIONS

The study examined the link between exchange rate fluctuations and the growth of the Nigeria's manufacturing sector using the Granger causality test and the regression analysis. The results reveal that manufacturing GDP caused exchange rate fluctuations and the fluctuations in turn not favourable to manufacturing activities.

It is observed in the study that the manufacturing sector is yet to meet expectations. It is highly dependent on the external sector for imports of inputs. In addition, the economy lacks technology base necessary for industrial take – off. In order to address the issues at stake, the following recommendations will be necessary.

The policy makers must realize that while formulating stabilization policies for exchange rate in Nigeria, it must be understood that the effectiveness of such policies is a function of the developments in other variables.

Government should encourage manufacturing activities by giving incentives (tax) and subsides to local manufacturers. The technological and infrastructure development level should be improved so as to increase the sector's contribution to GDP and employment activities within the economy.

Change in exchange rate management strategy should be allowed to run a reasonable course of time. Jettisoning strategies at will and on frequent bases has implication for

exchange rate and obvious consequence for a sector (manufacturing) that depends on foreign inputs.

Finally, local sourcing of raw materials should be intensified. This would lead to expansion of export base which would attract more foreign exchange into the country. This could culminate into higher external reserve build – up and reduce adverse pressure on balance of payment. Ultimately, the problem of exchange fluctuations would be totally eliminated or at least minimized.

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year	EXR	MGDP	MER	PCI	MFPI
1986	4.17	9.53	335.2	72.8	2810.2
1987	4.194	7.097	310.7	74	3122.3
1988	6.0484	7.92	280.3	80.9	3637
1989	10.5353	5.75	258.3	80.6	5406.4
1990	9.6067	5.495	340.1	84.9	6339
1991	13.4254	6.2	263.46	90.9	8692.4
1992	20.3396	5.07	271.3	84.2	9746.3
1993	36.2292	5.7	271.26	78	12885.1
1994	59.9598	6.989	271.3	78.2	14059.9
1995	83.6756	5.446	241.1	69.2	27668.8
1996	83.1072	4.917	271.3	67.6	29814.3
1997	84.9717	5.14	241.1	66.5	31297.2
1998	88.5214	5.22	211.3	61.6	34503.9
1999	111.4	4.73	211.6	61.9	36282.1
2000	115.51	3.7	210.7	62.3	37333.6
2001	116.83	4.24	191.7	63.1	37779.6
2002	136.65	4.38	191.8	63.6	39953.6
2003	140.14	4.41	190.5	65.5	45719.4
2004	140.19	3.06	184.9	66.4	102995.8
2005	141.61	2.83	194.4	66.7	133894.5
2006	141.82	2.92	198.7	66.9	134750
2007	142.51	2.58	191.7	67.5	138246
2008	143.22	2.91	192.2	67.8	139450
2009	144.5	2.41	192.26	67	140150
2010	146.3	1.89	193.4	66.9	141250
2011	148.42	1.85	194	68.2	142360
2012	150.24	1.87	194.5	68.5	144125
2013	155.6	1.94	196	68.8	144408.6
2014	157.7	9.75	197.2	69.2	147024
2015	160	9.7	198.5	69.5	147345
2016	165.5	9.65	199.4	70.2	148445