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**Full Paper****RELATIVE CONTRIBUTION OF FOREIGN DIRECT INVESTMENT (FDI) ON THE PERFORMANCE OF THE MANUFACTURING SECTOR IN NIGERIA**

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**ABSTRACT**

The study identified and assessed the factors affecting manufacturing sector performance in Nigeria. This was with a view to examining how the inflows of foreign direct investment affect the manufacturing sector performance in Nigeria from 1986 to 2005. Secondary data were used for this study. These data, which included manufacturing output, FDI flows into the manufacturing sector, real per capita income, Federal Government capital expenditure, interest rate, exchange and inflation rates, from 1986 to 2005, were sourced from the Statistical Bulletin of the Central Bank of Nigeria (CBN). The results of the study showed that foreign direct investment ( $t = 3.23, p < 0.05$ ), Federal Government capital expenditure ( $t = 3.19, p < 0.05$ ), exchange rate ( $t = 4.01, p < 0.05$ ), inflation rate ( $t = 2.15, p < 0.05$ ), and real per capita income ( $t = 1.99, p < 0.05$ ) positively affect the manufacturing sector and significantly determined the performance of the manufacturing sector in Nigeria; while interest rate had a negative but significant effect on the performance of the manufacturing sector ( $t = -2.96, p < 0.05$ ). The study concluded that inflows of foreign direct investment (FDI) exert significant positive effect on manufacturing sector performance in Nigeria, thereby setting a platform for rapid industrialization.

**Keywords:** *Superalloy, nickel, Electron microscopy, Heat-affected zones*

**1. INTRODUCTION**

Attracting FDI has been a key aspect of developing countries development strategy, since investment is considered a crucial element for output growth and employment generation. In the context of economic reform, the state's role has now shifted from an active player in productive economic activities to a provider of enabling environment of doing business. Private investment, both domestic and foreign, is viewed as the driving force of the economy (Christopher, 2005). Capital inflows can make significant

contributions to the country's economic growth and development in terms of easing the constraints of low levels of domestic savings and investments. It is also expected to help modernize production by transferring technological know-how, while increasing domestic productivity, competition and improving international competitiveness. It as well facilitates integration into the world market, domestic participation in globalised production patterns, and the creation of forward and backward linkages with the domestic economy. In so doing, it will have a multiplier effect on the whole economy and could thus be a key element in spurring growth (Christophe, 2005). Without any doubt, Javorcik (2004) pointed out that many developing countries place attracting foreign direct investment (FDI) high on their agenda expecting the inflows to bring much needed capital, new technologies, marketing technique and managerial skills therefore emphasis is placed on the contribution of FDI to increasing productivity and competitiveness of the domestic industry. Local firm can benefit from productivity gain, technology transfers, employee training, and access to markets among others. According to Hirschman (1958), one industry may facilitate the development of another by one condition of production in the other, thereby setting the pace for further rapid industrialization. If foreign firms introduce new processes or products to the domestic market, or buy domestic inputs; domestic firms may benefit. However, such backward and forward linkage between the foreign and domestic firms creates an environment where the foreign processes can be easily learned by the domestic firms.

Industrialization process seems to be the main hope of most developing countries such as Nigeria that have large population. It is therefore anticipated that the excess labour resources in the country can only be absorbed by the desired positive developments in the process of industrialization (Ajakaiye and Ayodele, 2001). However, Yesufu (1996) noted that industrialization has been a central economic policy that has been pursued in the Nigerian economy since independence. He maintains that the word "industry" is used as a synonym for manufacturing industry in developing countries. . Therefore industrialization "is the process of accelerated institutionalization of the manufacturing process or techniques in a predominantly rural and technology backward economy. Over the years, successive governments in Nigeria have accepted and pursued industrialization as a way of transforming the Nigerian economy. To enhance the realization of this objective, several concrete and aggressive steps have been taken. Considering the importance of the manufacturing sector in Nigeria, the first, second and third and in particular, the fourth national development plan (1981-85) strongly emphasized industrialization in form of manufacturing and craft activities. The various industrial development policies, perspective



plans and the medium-term economic plan identified the position of the manufacturing sector in the economy.

The manufacturing sector came into a special focus in the adjustment programme primarily to create the condition for sustained growth, including an improved flexibility to adjust to changes in the economic environment. Manufacturing sector's strong relations with the external sector makes the consideration for industrial strategy quite strategic in the policy packaging. The adjustment measure was designed to facilitate the growth of the industrial sector and also to internalize a substantial part of the benefits of export oriented industrialization. However, the overall performance of the economy indicates the objectives envisaged in the programme were not fully achieved.

The National Economic Empowerment Development Strategies-NEEDS hinge the growth of the economy on private investment. It, therefore, stresses the evolution of a private sector led, market-oriented economy with competition as the driving force. The manufacturing sector is expected to grow by at least 7% over the 2004 to 2007 period (NEEDS, 2004). The manufacturing (including Micro, Small and Medium Enterprises) sector is acknowledged to have huge potential for employment generation and wealth creation in any economy (Akpobasah, 2004). One of the strategies of the economic reform programme was that private sector would be re-invigorated and supported to champion the cause of sustainable development of the economy. The most pertinent obstacle in achieving this is the shortage of capital. A developing country like Nigeria where masses are poverty-ridden and marginal productivity is extremely low; mobilizing savings for investment purpose constitutes a major challenge. However, foreign capital has played a major role in the development of the industrialized countries (Obadan, 2004). And in the developing country like Nigeria where there is low rate of capital formation, foreign capital inflows can make significant contributions to the economic growth and development in terms of easing the constraints of low levels of domestic savings and investment. Nigeria like any other developing countries, in need of rapid development has made effort to increase the rate of industrialization by entering into pact with foreign investor and providing an enabling environment for foreign investment. This was emphasized by Ndebbio (1991) that the growth of the manufacturing sector is a very important propelling force in the economic growth of any nation because the sector has backward and forward linkages with all other sectors of the economy.

The main objective of this study is to identify and assess the factors affecting manufacturing sector performance in Nigeria. The purpose of this study is to review the industrial performance in the Nigerian economy, particularly with respect to the manufacturing sector. It is the manufacturing sector that drives the economic growth process, provides a breeding ground for entrepreneur, fosters technological and associated productivity growth and creates employment opportunities. This study covers the period between 1986 and 2005 for data availability. The period lies within the period when attempts were made to encourage FDI by Nigeria government and the period when the major economic reform started in Nigeria. For example, the federal government introduced series of reform measure such as the structural adjustment programme (SAP) in 1986.

## 2. REVIEW OF LITERATURE

According to Haddad and Harrison (1993), host country firms can learn from observing the export activities of multinational enterprises operating in their country. Local firms may also be able to take advantage of the infrastructure that develops to support the export-oriented activities of foreign firms in term of transport, communication and financial services. In the final analysis, local

firms would also experience productivity increase as superior method 'spilled over' from foreign subsidiaries to the host economy. World Bank (1997) concluded that for an economy to grow implies openness to external inflow of resource which facilitates greater integration into global markets, hence promoting growth through greater competition, innovation and access to foreign savings. Chen and Demurger (2002) provided empirical evidence on the link between FDI and Manufacturing sector performance in China's provinces. Using a sample of 23 manufacturing industries regrouped into three big industries. Two different approaches were distinguished. Firstly, it aims at measuring the contribution of FDI to industrial output growth and productivity, and secondly to assess the performance of foreign invested enterprises in comparison to the domestic firms in order to assess their potential impact on the China's industry. As noted above, along with the increase of FDI flowing to China, there has been an increase in the share of Chinese export attributed to foreign firms. The direct impacts of FDI can be explained by reference to the theory of the multinational firms itself. According to the theory (Dunning, 1993) multinational firms hold ownership advantages in terms of marketing skill, technology, distribution networks and management practices. Examining data for Mexican manufacturing, Kokko (1994) finds that spillovers are positively related to the host economy's capacity to absorb them. Similar finding for the Uruguayan manufacturing sector are reported in kokko et al. (1996). Although the study suggests that weak technological capability at the firm level may also be an obstacle. This is consistent with some recent research results from Ireland and India. It shows that the presence of foreign companies in the Irish economy has a life enhancing effect on indigenous firms and plants in high tech industries, suggesting the presence of technological spillovers, but no effect on indigenous low tech firms and plants. With respect to developing countries, Kojima and Ozawa (1984) further argue that inflows of FDI into labour-intensive industries that hold comparative advantages will stimulate exports. Technology transfer is easier in these industries because the technology gap between the host and investing country is low.

Akinlo and Odusola (1997) examined the effects of structural adjustment programmes (SAP) on the Nigerian manufacturing industries. Theoretically, the adjustment was aimed at enhancing efficiency in manufacturing industries but many industries experienced increased production costs, low output, low productive capacity and a poor capacity utilization level. One leading factor that probably contributed to the manufacturing sector's weak performance is the exchange rate (Akinlo, 1996). Ndebbio (1990) in his study identified the factors influencing capacity utilization as foreign exchange availability manpower, political facility, adequate transportation and communication infrastructure. Similarly Nwachukwu (1993) has shown that bank loans and advances lending rates and government expenditure contribute to the growth of output in Nigeria. Ariyo (1998) studied the investment trend and its impact on Nigeria's economy over the years. He found that only private domestic investment consistently contributed to raising GDP growth rates during the period considered (1970-1995). However, given the foregoing literature review the motivation for this study is to investigate the how local content could be increased in the industrialization effort via manufacturing sector in Nigeria.

Technology transfer plays a key role in economic development and has been identified in the endogenous growth theory as one of the main contributors to growth. Technology transfer takes place through a variety of transmission channels, the most important of which is the transnational corporations' operations in developing countries, or the FDI inflows to these countries, as it is assumed that for a company to go international it has to possess higher technologies and superior efficiency of operations. This is presentably, transferred to the locally owned firms in the host country.

### 3. RESEARCH METHODOLOGY

The central task in this section is to construct a model relating the various variables identified as key factors within the content of manufacturing sector performance and foreign direct investment. This is derived by using production function framework.

The model assumes an aggregate production function.

$$Y = f(A, K, L) \tag{1}$$

Where equation (1) describes the relationship between manufacturing output, capital K and labour L and Where A is an overall index of technology and efficiency and also it encompasses all the economic wide augmenting factors as identified from previous studies that factors affect the performance in manufacturing industries, they include inflation rate, exchange rate, loans and advances, per capita income, interest rates, degree of openness of the economy, information and communication technology, Government capital expenditure, liberalization of the Nigerian economy among others.

From all these variables, only eight variables are selected for the paucity of data.

- QM – Manufacturing Output
  - GDP –Gross Domestic Product
  - INFLTN – Inflation Rate,
  - EXCH – Exchange Rate,
  - RPCI – Real per Capita Income,
  - FGCE – Federal Government Capital Expenditure
  - FDI - Foreign Direct Investment
  - INTR- Interest Rate
  - OPEN - Openness of the Economy
- From the Cobb-Douglas production function of

$$Y = AK^aL^b \tag{2}$$

We assume that the aggregate production function satisfies the Inada's (1964) conditions that is

$$F(0) = 0, F^1(K) > 0, F^{11}(K) < 0 \tag{3}$$

Assume that L is fixed.

$$Y = AK^a \bar{L}^b \tag{4}$$

$$Y = \varphi AK^a \tag{5}$$

$$\text{where } \varphi = \bar{L}^{-b} \tag{6}$$

Taking the log of both sides of equation 5

$$\text{Log}Y = \text{Log}\varphi + \text{Log}A + a\text{Log}K \tag{7}$$

Differentiating equation (7), we have

$$d \log Y = d \log A + a d \log K \tag{8}$$

According to the endogenous growth theory A is endogenously determined by economic factors. From equation (8) we can estimate the growth rate of y as

$$r_Y = r_A + ar_K \tag{9}$$

Equation (9) is usually referred to as a source of growth equation (Berg 2001). It shows that the rate of growth of output is the weighted average of the growth rates of productivity of factors plus the rate of growth of total factor productivity A and K respectively.

Where  $r_A$  is the total factor productivity. i.e.

$$r_A = f(FDI, INFLTN, RPCI, EXCH, FGCE, INTR, OPEN) \tag{10}$$

Equation (9) becomes

$$r_y = \beta_0 + \beta_1 FDI + \beta_2 INFLTN + \beta_3 EXCH + \beta_4 RPCI + \beta_5 FGCE + \beta_6 INTR + \beta_7 OPEN + ar_K \tag{11}$$

Following Mankiw et al. (1992) and Knight et al. (1993), there is possibility of incorporating additional explanatory variables in the classical Solow model in order to capture the causes of economic growth. The purpose of including these variables is because they are assumed to influence the performance in the manufacturing sector. Share of Manufacturing Output in GDP was used as an indicator for performance.

Here we have included the error term to capture other variables not included in the model.

$$Qm / GDP_t = \beta_0 + \beta_1 FDI_t + \beta_2 INFLTN_t + \beta_3 EXCH_t + \beta_4 RPCI_t + \beta_5 FGCE_t + \beta_6 INTR_t + \beta_7 OPEN_t + ak_t + e_t \tag{12}$$

Equation (12) constitutes our estimating model. Secondary data was used for the study. Annual data on manufacturing output, FDI inflows into the manufacturing sector, domestic capital formation, exchange rate, inflation rate, federal government capital expenditure for the period 1986-2005 was sourced from Statistical Bulletin published by the Central Bank of Nigeria.

### 4. RESULTS AND DISCUSSION

The empirical analyses are carried out using the cointegration and Error Correction to determine both the short run and long run relationship between the explanatory and the response variables. Table 1 presents the unit root tests for the variables at the levels of the series and at first difference. In section cointegration tests between index of manufacturing and explanatory variables was carried out, while Table 2 presents the estimate of the Error correction model having determined the cointegrating relationship that exist among the variables included in the model. The empirical results reported in this study were obtained using Econometric – view statistical package.

#### 4.1. Testing for Cointegration

The results of the unit root test show that all the variables were random walk processes. It does not however imply that in the long-run the variables could not express long-run convergence i.e. long run equilibrium. Hence the need to subject the residuals generated from their long run static regression to Dickey – Fuller test or Augmented Dickey – Fuller test to see if they are stationary. The stationarity of the residuals is potent evidence that there is evidence of convergence to long-run equilibrium among the integrated variables. To be able to ascertain whether there is cointegration among variables of interest, it is necessary to initially determine the optimal lag length of the variables to be used.

The results of this test as reported in table 1 depict that the series were non-stationary at their levels as indicated by the ADF and PP statistics that are greater than their critical values (-3.0521 and -2.9006) at five percent significant level. But at first difference, the table indicated that the series were stationary. This showed that the variables were indeed I (1) series or integrated of order 1. The problem of spurious regression is therefore likely to be encountered if the model is specified dynamically at the levels of the series. Having realized that all the variables for this study were of unit root and therefore non-stationary, a cointegration test was further carried out.

From Table 2, the Akaike Criteria (AC) and Schwarz Bayesian Criteria (SBC) indicated that the optimal lag structure for the VAR upon which the cointegration analysis is to be based is one. Having determined the optimal lag structure, the cointegration test was carried out using Johansen cointegration test which is a superior test that lies on asymptotic property and therefore sensitive to error in small sample. It is also robust to many departures from normality as it gives room for the normalization with respect to any variable in the model that automatically becomes a dependent variable. It also allows cointegration test to be carried out when the variables are of different orders of integration; and also gives room for the application of Error Correction Mechanism (ECM). The results of the Johansen cointegration is presented in Table 3.

Table 1: Unit Root Tests: Testing for Stationarity of the Variables

Variable	ADF*(1 lag)		PP*(3 lags)		Order of Integration
	With Intcpt.	No Intcpt.	With Intcpt.	No Intcpt.	
INTR	-0.1476	-0.7491	-2.2399	-3.1776	I(1)
DINTR	-3.6208*	-2.6037*	-4.7897**	-4.7882**	
LGDP	-2.1637	1.8417	-1.6516	-1.6405	I(1)
DLGDP	-3.1054*	-2.6195*	-8.5009**	-8.7153**	
LQM	-2.0643	1.5818	-1.0267	-1.0124	I(1)
DLQM	-3.4090*	-2.3760*	-2.9599	-3.7927*	
INFL	-2.5782	-1.2878	-3.244	-3.3118	I(1)
DINFL	-4.0131**	-4.1560**	-4.5348**	-4.5133**	
EXCHR	-2.1236	-0.4788	-1.177	-1.678	I(1)
DEXCHR	-3.5371*	-3.6913**	-6.671**	-7.1997**	
LFDI	-1.399	3.2439	-2.0326	-2.1325	I(1)
DFDI	-3.0572*	-1.9741*	-3.0054*	-3.5347*	
LFGCE	-1.9392	2.6048	-2.0135	-2.3256	I(1)
DLFGCE	-3.6805*	-1.9901*	-3.3421*	-3.8976*	
LRPCI	-2.4616	0.8329	-1.9876	-2.0976	I(1)
DLRPCI	-4.1769**	-4.0599**	-4.0546**	-3.6785*	
LKAPT	-0.9232	2.6737	-1.8974	-2.2232	I(1)
DLKAPT	-3.6443*	-1.9832*	-3.0012*	-3.8973*	

  

Mackinnon Critical Value				
Level:				
1%	-3.8572	-2.7057	-3.5188	-4.0836
5%	-3.04	-1.9614	-2.9001	-3.4696
First Difference:				
1%	-3.8877	-2.7158	-3.52	-4.0853
5%	-3.0521	-3.0521	-1.9627	-3.4704

NB:\*(\*\*) denotes statistical significance at 5% and 1% level respectively  
 Source: Computed by the Author (2010) using EViews Package.

Table 3, indicated that the null hypothesis of no cointegrating vector (against the alternative of one or more) was rejected while the alternative hypothesis of at most 1 cointegration was upheld. The Maximum Eigen-value and Trace test indicates 3 cointegrating equation(s) at 5% level of significance. Specifically, the result of the

cointegration test suggested that there were at least three cointegrating relationships between the response and explanatory variables.

Table 2: Optimal Lag Length Determination

Information Criteria IC	Akaike Criteria (AC)	Schwarz Bayesian Criteria (SBC)
$\rho$		
1	-0.761766	-0.952768
2	-0.063681	-0.596641
3	-0.098721	-0.471197
$\rho =$	1	1

Note:  $\rho$  indicates the lag length to use for Cointegration test. Source: Computed by the Author (2010)

Table 3: Co-integrating Tests

Eigen value	0.794	0.725	0.632	0.308	0.192	0.069
Hypothesis	r=0	r=1	r=2	r=3	r=4	r=5 r=0
Maximum Eigen value	47.420*	38.704*	30.000*	11.035	6.378	2.138
95% critical value	40.078	33.877	27.584	21.132	14.265	3.842
Trace Test	135.676*	88.255*	49.551*	19.551	8.51	5.2.138
95% critical value	95.7546	69.819	47.856	29.797	15.495	3.841

Notes: VAR include two lags on each variables and a constant term. The estimated period is 1986-2005. None of the deterministic variable is restricted to the co-integration space and maximum eigen value and trace test statistics are adjusted for degrees of freedom. The critical values are taken from MacKinnon-Haug-Michelis (1999). The \* indicates rejection of likelihood ratio tests at 5% significant level.

#### 4.2. Co-integrating Results

Johansen procedure was used to identify a long-run manufacturing growth amongst the cointegrating vectors. In determining the number of co-integrating vectors we used degrees of freedom adjusted version of the maximum eigen-value and trace statistics, since the existence of small samples with too many variables or lag Johansen procedure tends to overestimates the number of co-integrating vectors (Civcir, 2003). These test statistics strongly reject the null hypothesis of no co-integration in favour of three co-integration relationships.

Having explained the unit root and co-integration tests, the co-integrated equation 1 is re-specified as an ECM using Engel-Granger two-step method (lagged residual as error correction term). All the variables (second order first differenced) in the equation are stationary and therefore ordinary least square (OLS) method gives consistent and valid estimates (Enders 1995). The model is estimated by OLS method and the residual is tested for autocorrelation error. The model makes use of annual time series data and has lagged dependent variable as explanatory variable. A series of diagnostic tests are conducted to verify stability and to evaluate the predictive accuracy of the model. These tests are essential to judge the validity and acceptability of the conclusions drawn from the model estimates.

The results of model estimation and the various diagnostic tests are presented below. Equation (12) is estimated using the index of manufacturing production as the dependent variable. The results of parsimonious model is reported with the signs of all estimated coefficients as expected in the parsimonious model in Table 4. From Table 4, interest rate spread has a negative but significant relationship with index of manufacturing production. A one per cent rise in the interest rate spread decreases index of manufacturing

production by 3 per cent. This is not surprising in Nigeria since high lending rate without corresponding increase in deposit rate (i.e. high interest rate spread) has been identified as a principal factor responsible for high cost of production in manufacturing sub-sector. World Bank (2002) revealed that high interest rate in the Nigerian financial system is a reflection of the extremely poor infrastructural facilities and inefficient institutional framework necessary to bring about substantial reduction in the risk associated with financing an extremely traumatized economy. Olorunsola (2001) also showed that the business environment in Nigeria in general is very risky and uncertain, coupled with inefficient judicial system, which makes it difficult for banks to easily enforce contracts. Government capital expenditure has a positive and significant relationship with index of manufacturing production at level and at first difference.

Table 4: The Parsimonius Error Correction Model

Dependent Variable: D(LIMP)

Method: Least Squares

Sample (adjusted): 1986 2005

Included Observation a: after adjusting the endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.398202	2.312931	0.604515	0.5512
D(LIMP(-1))	-0.4392*	0.130044	-3.37782	0.0025
D(LFGCE)	8.4598*	1.639197	5.792848	0
D(FGCE(-1))	2.4032*	1.018512	3.192018	0.0039
D(INFL(-1))	0.21748**	0.101369	2.145434	0.0422
D(LOPEN(-1))	-0.5113	0.375651	-1.361115	0.1912
D(LKAPT)	4.82824*	0.564706	8.661613	0
D(LKAPT(-1))	2.43219**	0.55782	4.394787	0.0284
D(INTRS)	-2.13008**	1.08661	-2.960298	0.0497
D(LFDI)	3.6435**	0.85641	3.232759	0.0167
D(LFDI(-1))	2.7696**	0.768712	2.588012	0.0365
D(LRPCI)	0.9988**	0.501143	1.993034	0.0417
D(EXCHR)	0.2763	0.513242	4.018426	0.1257
ECM (-1)	-0.4088*	0.103308	-3.958062	0.0006

  

R-squared	0.789574		
Adjusted R-squared	0.745735		
S.E. of regression	12.53943	Akaike info criterion	8.072490
Sum squared resid	3773.695	Schwarz criterion	8.352729
Log likelihood	-115.0873	F-statistic	18.010840
Durbin-Watson stat	2.258838	Prob (F-statistics)	0.000000

Source: Computed from the data

Note \*significant at 1percent, \*\*Significant at 5 per cent

A one per cent increase in government capital expenditure increases index of manufacturing production by 2.18 per cent. The implication of this finding is that the fiscal operations of the Federal government up to 2005 have usually resulted in large and growing

provision of infrastructural facilities like roads, electricity and subsidizing manufacturing inputs. The positive relationship of the federal government capital expenditure variable is suggestive of the fact that the nature of government spending is such as to encourage manufacturing sector growth in terms of provision of enabling environment. Foreign direct investment has a positive and statistically significant relationship with manufacturing sector performance. This is as expected. However, it had been posited that efficiency seeking FDI will tend to locate in those destinations that are able to supply skilled and disciplined labour force. Fung et al. (2000) report that labour quality is an important determinant of FDI, such that as more foreign direct investment is targeted towards the manufacturing sub-sector, it will induce the development of the sector in Nigeria. Banks' credit to the manufacturing sub-sector has a positive but insignificant relationship with index of manufacturing production. The reason for this finding may be attributed to the negligence of commercial bank in lending to this sector. The development institutions which are expected to finance manufacturing sub-sector in Nigeria have failed due to harsh environment in which they are operating (Adebiyi, 2004). Inflation rate has positive and significant relationship with index of manufacturing production. A one percent rise in inflation rate raises index of manufacturing production by 0.2 per cent. The implication of this finding is that high inflation rate exerts a substantial impact on index of manufacturing production and, thus, one must interpret the growth in the index with caution. From the over-parameterized error correction model, inflation rate exert negative impact on index of manufacturing sub - sector. This is usually true in developing countries like Nigeria, where the public has no confidence in the government and policy announcements cannot influence public expectations. Exchange rate has insignificant positive relationship with index of industrial production. The implication of this is that government fiscal deficits, which have been largely financed through CBN credit, as CBN is statutorily required to underwrite un-subscribed debts issues, as well as grant direct credit in the form of Ways and Mean Advances (Ojo, 2001). This mode of deficit financing directly increases the monetary base and increases the level of excess liquidity with adverse consequences on exchange rate, price level, and manufacturing sector performance. Co-integration is revealed in the index of manufacturing production model. That is to say that there is a long-run relationship between the dependent variable (share of manufacturing in GDP) and its explanatory variables (Foreign Direct Investment, Inflation Rate, Exchange Rate, Federal Government Capital Expenditure, Interest Rate, and Real per Capital Income).

In summary, since it is a known fact that for manufacturing sector to grow in an economy it must have been attracted by some factors in the country, factors that affect manufacturing sector performance in Nigeria were examined.

The same result was arrived at using the Breusch – Godfrey serial correlation LM-test as the F-statistic gave a probability value of 0.45012 and the nR<sup>2</sup> value generated a probability value of 0.407898. Both results did not reject the null hypothesis of the absence of serial correlation. The Ramsey RESET test statistic of 5.6845 with probability value of 0.0202 indicated that the model was correctly specified (See Appendix).

An understanding of the underlying factors that affect the performance of the manufacturing sector is important for rational policy formulation and implementation. Federal government capital expenditure had a positive relationship with manufacturing sector performance. This is expected and consistent with results of previous studies, suggesting that both of these factors will encourage manufacturing sector development. Moreover, the coefficients of the two variables are statistically significant. The positive relationship of the inflation coefficient suggests that the development within the macro economy is such that it encourages manufacturing sector



growth and development. This indicates that the various policy initiatives aimed at encouraging investors is yielding the expected results in Nigeria. Among these are the abrogation of the indigenization policy and the promulgation of the NIPC decree. Real per-capita income growth has a positive relation with manufacturing sector development and is statistically significant. Hence as the economy improves, manufacturing sector is enhanced. However, banks' credit to the manufacturing sub-sector proxied by interest rate spread has a negative but significant relationship with index of manufacturing production. The reason for this finding may be attributed to the negligence of commercial bank in lending to this sector. The development institutions which are expected to finance manufacturing sub-sector in Nigeria have failed due to harsh environment in which they are operating (Adebiyi, 2004).

## 5. CONCLUSION

In conclusion, the results obtained from the regression suggest that the overall performance of the sector is largely dependent on the explanatory variables that are statistically significant and, empirically validated that appropriate policies, conducive economic environment were indispensable for sustainable growth in the sector. It shows that FDI is a significant factor that influences the growth of manufacturing output.

## 6. RECOMMENDATIONS

The study reveals that understanding of the underlying factors that affect the performance of the manufacturing sector is important for national policy formulation and implementation

1. Federal government capital expenditure had a positive relationship with manufacturing sector performance, suggesting that increased federal government capital expenditure be advocated and properly channeled to the procurement of public utilities, basic infrastructures and especially alternative sources of energy. These factors, when actively pursued, will encourage manufacturing sector development.
2. The positive relationship of the inflation coefficient suggests that the development within the macro economy is such that it encourages manufacturing sector growth. And to ensure a sustained growth and development in the manufacturing sub sector, economic policy should focus on macroeconomic stability with relatively low rates of inflation.
3. Also, increase in per-capita real income leads to a rise in aggregate demand in the economy and consequently the manufacturing sector performance is enhanced.
4. Lastly, the interest rate that has a negative but significant relationship with manufacturing production; Government should reduce the Marginal Rate of Return to a single digit so that banks can have lending rates of one digit. Banks should allocate about 60 per cent of their loan portfolio to the development of manufacturing sector that has a greater capacity to generate sustainable employment.

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